Truck Technologies of the Future

By

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Table of Contents

Chapter VII: Convoys and Artificial Intelligence 184

Acknowledgments

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Introduction

Technological advances in the trucking industry are moving ahead at a very rapid pace and this is due to several reasons. Much of the innovation is coming from industry to squeeze out more productivity and achieve greater economies of scale in a quest for efficiency and profits. Some of the innovation is coming from environmental movements and regulations to prevent pollution. Still many new technologies are born out of safety issues and together for all these reasons we see research and development in the transportation sector we find adequate money flows for both radical new ideas and incremental increases in current technologies; the is lots R&D in Trucking.

Today we see alternative fuels, new materials, virtual reality simulators, advanced aerodynamic designs, increased efficient engines, stability control systems, virtual dashboards, real-time GPS monitoring, efficient routing software and tire pressure in cab monitoring as just a few of the rapidly increasing technologies in the trucking industry and we will discuss them in this book.

If a trucking company or any independent operator can save one half to 2 miles per gallon on an 18 wheeler, then the cost savings is well worth the money to upgrade. Lighter materials, better aerodynamics and more efficient motors are a prime concern of anyone in the transportation sector.

Safety is also a huge issue in trucking due to insurance costs, downtime and lawsuits. Because of the shortage of truck drivers, which is now over 150,000 faster training times using virtual reality simulators not only saves money and fuel, but also saves lives. All this equates to less cost per mile driven and greater efficiency and profits for independent truck drivers and corporate trucking companies.

In the future trucks may drive them selves and deliver their cargo to their destinations and be completely monitored at all times, although that is still a long way off. In this book we will discuss thought-provoking and philosophical questions about the future concepts in technology for the trucking industry. I hope you will enjoy a future look at the road ahead in the transportation sector.

I appreciate you taking the time to read this book. If you have any questions, comments, concepts, hate mail, research or case studies please feel free to e-mail them to us and perhaps we can make mention of them in our next edition or with your permission to include them in our next book. Thanks again.

Sincerely,

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Chapter I

Where Are We Today

Transportation History

There is considerable evolution in modern day trucking and when we say evolution we are keying in off the theory as described by Evolutionists. In this theory evolution speaks of hunter-gatherer tribes roaming around, having seasonal patterns knowing where to find the food and transporting themselves by walking. Later agriculture based became prevalent as a more recent activity. And we know from written history of the last 10,000 years that mankind transported them selves for water, food, battle and later trade on the backs of animals, in the hulls of boats and on people powered apparatuses.

In the America, as the colonies grew they built up the area, by building trails and roads. As the we grew from a group of colonies into Nationhood, soon we built inter coastal boat transportation, then trains, trolleys, barges, submarines, cars, trucks, buses, blimps, aircraft, helicopters, etc.

Today transportation impacts every single part of our daily life and it is the Flow of Transportation, which is the one of the most important flows to insure quality of life and higher standards of living. Trucks because of there ability to go where there were no tracks grew as the transportation device of choice to deliver goods and services to market. Today without trucks nothing would reach its destination because ***if you bought it; A Truck Brought It!***

Indeed today we realize that if the trucks stopped our distribution system would collapse and there would be empty shelves in 5 days and riots in the streets within 7-10 days and people starving shortly after that. Not a pretty picture and thus we must study the transportation models of our Nation and continually look for ways to improve it and the trucks themselves. If you would like a better understanding of the history of trucking then I suggest that you peruse the

American Trucking Association Website and learn the history and what is being done each and every day to improve safety, reliability, training, efficiency and maintain the flows of our civilization. Indeed, I also recommend touring some of the many fine trucking museums in the United States as well. Our Think Tank Trucking Technology Team (T5 Group) recommends this one as a must see;

The Golden Age of Trucking Museum; http://www.goldenagetruckmuseum.com/

The T5 Group realized the importance of this research study going in and perhaps this is why it was promoted above so many other very worthy subject matters on the list. In fact Trucking and Transportation is a major component of all the other issues and challenges we face in our society. Trucking crosses every single major importance and transportation is an underlining theme of the health, wealth and strength of a Nation from both an economical and sustainable standpoint. This is why our T5 Group started with the history of our nation and the transportation and distribution systems which made it possible in the first place.

> "After just a little research you will certainly conclude that we have come a long way. As a matter of fact after visiting nearly every truck, aviation, railroad, trolley, ship museum in the country, I would have to say that we have put a huge emphasis on transportation in this country, from day one. We owe it to the *forward progression of our Nation* - all we are and all we have built to press on and continually look for areas of improvement to maintain this monumental task."

It is a good thing we do too, because the efficiencies in the flow of transportation have helped our Nation become an economic powerhouse. We must continually work to upgrade our country's transportations systems and use our innovative spirit to propel the technologies available to make it even more efficient. Part of the reason we are so successful today, is because we were able to transport materials to factories, products to market, services to people, those people to work and the things we needed to build or civilization. This is how our transportation system brought itself and us to the modern era. Think about it.

State of the Industry and Statistical Facts

Recent Trucking Industry Trends

No one can deny that 2005 was a rocky year for the Trucking Industry and it seems to be fairly easy to say that 2006 was no walk in the park either, as both years were bathed in challenge and change. But there are some positive aspects in all of this too. For instance the robust economy had freight up over past years, which sure beat the recession periods before and after 9-11. Of course costs were up too and much of the surge in Diesel price was passed on to the shipping and trucking company customers. Still high diesel prices take their toll on the little guy (independent truckers) and along with other increased regulations things have been far from a walk in the park.

Many large trucking corporations were not as affected by all this as you might think, as some record profit taking was posted in consecutive quarters. These profits allowed the stronger trucking companies to buy up other companies and we witnessed some rather large consolidations.

The DOT's hours of operation rules and regulations were postponed, as it looked rather catastrophic for some trucking companies due to the way their terminals were spaced out along with the fact of lack of adequate overnight truck parking in the country. Meanwhile there were more trucks on the road than any other time in US History, which has been noticed by all. It seems the highway accident statistics are too easily taken out of context inciting bureaucrats to more law-making regulations. The truth is there were fewer accidents per mile driven. Truck per mile driven accident statistics were down in 2005

In 2005 more small trucking companies went out of business, due to the efficiency of the larger trucking companies taking advantage of economies of scale and increased enforcement and highway road taxes and fees. Many also blamed the greater number of Mexican trucks on the road, although in 2006 we saw a slight tightening of Mexican trucks here in the United States and increased regulations for a while.

The sulfur in diesel fuel elimination rules coming forth helped truck engine manufacturers greatly with the introduction of cleaner engines. New truck sales pick up too for this reason while hurting used truck sale prices while those trucks end up in Mexico, Central and South America. Some of these Mexican trucks will drive back over the border using our highways to deliver in the United States anyway, thus the pollution will be back, as critics of the new sulfur less diesel fuel complain.

The new ACE E-Truck Manifest System is suppose to improve border safety and presumably stop some of the ill-repaired trucks from entering our nation. E-filing streamlines the system and creates permanent records for fast review and yet for some smaller trucking companies it does require new equipment, employee training and additional efforts; **cost.**

In 2006 we saw more supply diesel price spikes, although not as bad as in 2005 after the Atlantic Tropical Hurricane Katrina and Rita, which took out I-10 and oil infrastructure. It was amazing to see the bounce back and how the trucking industry and economy weather the aftermath of the storm. Indeed higher fuel costs did give an advantage to railroad competition. Still now we saw the limits of the railroads at maximum on many regional routes and could not take much more freight and thus the remainder had to go by truck.

In November of 2006 to second quarter of 2007 we saw interesting dropping of tonnage loads by truck and the railroads hit a curve in Q1 of 2007 also. Much of the freight tonnage is tied together between industries due to the piggy-back services and economic conditions of the nation as a whole.

It appears that DOT regulatory issues may be a challenge for the trucking industry moving forward as you never know what kind of half-baked theory a regulator or the bureaucratic mess might come up with next. This is not an opinion based comment and not subject to political correctness, as there is enough of a history to prove it as fact indicated the T-5 Group. Linear thinking regulations are the birth place for the law of unintended consequences; the Transportation Industry can surely attest to that truth, as has been indicated in the past by **Ronald Reagan** on many occasions.

We will also see more technology come into play in the industry for instance automatic shut off systems for stolen truck loads or hazardous material tanker trucks which have been hijacked, which are already in the works. We will also see more use of simulators to train truck drivers like the airline industry used. We will see more trucking terminals, which set up fuel cell pumping stations and point-to-point strategies, thus conserving costs in fuel.

Technologies will be introduced to overcome the increased fuel cost hardships on the industry and this will usher in new truck aerodynamics designs. Increased insurance costs will mean that companies will have to lower accident rates and thus be compelled to invest up-front in safety devices. On the horizon we now see research and development on the first viable robotic convoys for military use.

One of the most impressive new developments is coming in new materials and corrosion control coatings and although very costly right now that will not be the case for long as wide spread use in many industries comes into play. The high cost of fuel will propel such technologies in trucking faster than in most industries due to the savings with lighter weight materials.

Other good news will be issued by the DOT and in NTSB reports lowering of trucking accidents, fewer deaths and proof that four-wheelers are indeed heeding the warnings and listening to the PR of the National and American Trucking Association with regard to “No Zones” or truck blind spots. Thus we will also see many more awards for truck driver safety to the biggest unionized trucking companies and also to Wal-Mart transportation, with a far superior trucking safety record, due to their thousands of experienced and quality drivers.

Interestingly enough the goals of Global Warming Alarmists, Environmentalists and the Trucking Industry coincide a lot more than most realize. Using less fuel, increasing safety, streamlining routes and advances in energy saving and low pollution motors are in everyone's best interest. It is merely a matter of finding the right mix to match and pressing on to see these

innovative changes come to fruition. So these are just a few of the items that are on the road ahead for the trucking industry.

Trucking and the Economy

Truck Tonnage and Economic Indicators

As the United States rolls into another Election Season with high stakes for both parties we seem to be getting some mixed economic indicators. First the Stock Market is now at an all time high, but we did see a hiccup and a quick bounce back return. Of course everyone in the trucking industry should have seen it coming due to the truck tonnage fluctuations.

Indeed, trucking industry economic indicators are not all that drives the balance. Foreclosures are on the rise and the home equity is at the lowest point in over a decade even though for now home ownership is right at its all-time high. The other thing on people's minds is will the Feds raise rates or hold again? Another factor which is troubling to many economists is the trade deficit with China and the unfortunate deterioration of the truck tonnage index in early 2007.

In August of 2006 it dropped 2.1 percent and the year prior even with high oil prices and fuel costs it was up .8 and usually or historically rather July and August are up. This meant that retailers were sketchy on things and fear of a problematic Christmas Season in 2006. They were right to be, as it didn't break any records. Of course fuel had dropped and that meant the consumer had slightly more spend-able income when Christmas came and Natural Gas was also down. In first two quarters of 2007 it went back up. What does all this have to do with trucking?

Well, just about everything, although even with strong economic indicators in other sectors, I am troubled by the truck tonnage rates very much and we need to tread lightly here. This is a crucial time, even with many sectors having inflows due to recent spending bills. The Economics of Trucking are a major part of the strength of our nation.

Trucking industry consolidation

Well as predicted it appears that the Trucking Industry will be making some consolidation and we see that Fed Ex has bought yet another ground transportation trucking company; Watkins Trucking. This is a huge acquisition nearly one billion dollars in all. Watkins Trucking is an LTL or less than load carrier and it runs offices in Canada and Mexico, giving Fed Ex Ground a huge boost in North American International Trade. UPS has also announced a very big merger in the coming future although has not entirely disclosed what that might be?

It appears we will continue to see large mergers in the Transportation Sector long into the future and especially in the next two-years as the fuel prices remain high and those carriers who are most efficient take home larger amounts of the profit and re-invest to further increase efficiencies thru economies of scale. Companies like Fed Ex and UPS are in a league of their own, clearly using their size and diversity to their advantage, while capitalizing on all aspects of the business cycle, competition and high fuel prices.

Other large trucking companies will work to insure that they are not left on the side of the road getting in on the action of international cross border freight with Mexico. With railroads running maximum capacities, trucking will see strong growth picking up the slack, in fact both sectors stand to gain due to scarcity. Still all this is predicated on economic conditions and the question is; are we in for a downturn and pendulum shift in the next few years?

Artificial Inflation

A quick thought on Inflation; a question has arisen at the T5Group during Truck Industry dialogue of whether interest rates should be raised due to inflation? One thought, which kept coming to mind, was the delicate issues with the housing bubble. Some in the group did not

believe it to be a significant factor others were worried that a rise in interest rates would be met with a big reaction in the stock market, thus causing reactionary moves by corporation shippers in turn affecting truck tonnage loads, economies of scale and profitability.

Some of us were concerned that the inflation is ***not due*** to strong consumer demand in the market place where companies are able to charge more but because of artificial wholesale inflation caused by fuel prices which was artificially driving up costs of every thing else. Even though in one quarter in 2006 we had a steady decline in the diesel fuel prices for five straight weeks you must remember that the previous high fuel prices are built into that inventory being sold, thus inflation was still on the rise.

When artificial inflation from high fuel prices exists, it will rear its ugly head in items which are *not consumer electives* but rather regarded as necessities, things like food, milk and services. This drives prices up in the markets that these things effect such things as restaurant prices, catering services, hotel services, private school tuition and even government costs.

Even though food is not a consumer elective, but a perceived necessity, these higher prices still drive up costs in non-electives. Now if you take out the 'factored in' costs of the fuel for the increases and the expectations of consumers to higher prices due to this fact for instance the increased costs of fuels a 6.7% increase in cartage to get the food to market, then you can see why this artificial inflation, should not be calculated into the decision to raise interest rates.

When you look at this artificial inflation caused by oil prices you have to take this into consideration in the over all inflation situation, and allow for things to re-stabilize things before raising rates to curb so-called inflation. The artificial inflation rates must be adjusted and taken out the inherent additional costs in everything due to the increased costs in fuel, **a necessity**; before rendering a interest rate hike.

So do you raise rates in times of unrest and fear and instability or do you wait for a bit and allow a few things to come back into perspective and stabilize in a free market setting. If you allow interest rates to slow the flow of monies in all parts of the country now, as many are not getting their fair share of the money flow, you will see regions come into harder times as they have not recovered like the areas of supreme money flows near and around Fed Banks.

Larger cities, which suck money in and allow it to flow in circles, need to be adjusted first and slowly, but not using inflation data, which is biased due to a spike in fuel. Of course there is no real way to do this, as money, like the weather knows no boundaries.

There are very few items, which are not effected by fuel. Also let's look at water supplies and weather effecting food prices and spikes and factor that out too. Then we can find true inflation and I submit to you it is small enough to call for a stern warning of future scrutiny, but not a raise just yet, but a warning to all it will come and could come at any time as needed or required by superior data and to give the Fed back another lever to move in the future if needed to re-stimulate, because as we know when fuel prices stay high for too long we get recessions, as per historical data.

As China becomes a user of more and more oil and fuel, we will see demand increase and the supply play catch up creating huge gaps and we are 10 years out for any realistic use of fuel cells in trucking and even the hybrids which can perform up to the abilities of reciprocating engines, still are too costly. Russian oil is seven years out, so there is a gap in supply issues and demand issues which means we will have higher prices in the future.

Raising interest rates in mid 2007 and completely killing the housing market now is not a good concept, as that could significantly cause a consumer confidence fall-out. The American middle class and lower class consumers are already running redline in credit card debt and higher house payments, fewer spend able dollars hurting retail, thus hurting jobs.

Meaning higher fall-out rates, distressed sales and serious issues with income to long-term and short-term debt ratios, which affect consumer spending and thus truck tonnage load rates because if they are not buying, there is nothing that needs to be shipped by truck. Raising interest rates? Maybe, but be careful we are not out of the woods yet. The point of this discussion at the T-5 Group is to demonstrate how inter-connected our economy is to trucking, distribution and how every single thing in the industry effects our Nation's Financial Health.

The Flow of Transportation

One of the most important things in any civilization is the flow of transportation. Think of all the things in your household, all of those items, TV, refrigerator, sofa, plants, items in the garage, etc. Where did they all come from? Well they came from destinations all over the country from factories, warehouses or retail outlets and as the saying goes; *if you bought it, a truck brought it.*

You see the items in the store were produced, whether they are agricultural products which were grown, raw materials which were collected or whether they were manufactured. All these items of course came from where they were produced or collected. The components were transported by perhaps multiple transportation devices; Trucks, planes, Trains, ships, barges or pipelines or most often a combination of these methods of transportation. But believe The T-5 Group when we tell you that 99% of the time a truck was in the distribution loop.

Whether the product or service was delivered right to your home or to a retail outlet it came by truck. If it was delivered to your doorstep, these types of product delivery companies, service companies, everyday needs and emergency professionals have to stay efficient to conserve costs and operate on a strategic grid plan to insure proper service to all on a timely basis. Such transportation systems can be studied and controlled by use of computer programs such as the ones designed by ESRI with hundreds of vendors who design add on systems. Today routing software, JIT (just in time) modeling and advances decision making tools propel greater efficiencies in real-time information flows in trucking.

Transporting energy, water, fuels, cable TV, etc also work on a grid theory in order to make delivery possible. No matter what macro or micro system of transportation you are describing, the key to survival is in simple redundant systems and logistical processes. And although we now have high tech tools, really this is nothing new to human beings, the history of the species is filled with pre-planning, use of maps, scrolls and strategic thinking to help in safety, time savings and multiple destination delivery and pick up locations, see the point?

It is essential that we should continue research on all types of new and improved methods of transportation such Magnetic Levitation Trains, Hyper-Sonic Aircraft and space craft, Pelican type super transports, Mega-Cargo Blimps, Air-Cushioned Trains, Self Driving Trucks, Smart Cars, Pilot-Less Trains, UAVs, Underwater Unmanned Vehicles, RLV-Reusable Launch Vehicles Space Craft, Road Surface Safety Materials, Warning Systems, Artificial Intelligent Routing Systems, Simulator Training, Light Weight Materials, Real-Time Information and Communication Systems, Ergonomics, Aerodynamic Designs, Intelligent Highway Technologies, Smart Roads and Traffic Controls and yes even Flying Trucks.

It is important as populations expand to work on the Flow of Transportation components that improve the efficiencies without increasing cogs in the wheel with over burdensome rules for operators, slow moving steering committees, long-term bureaucrat heads, confines on R and D, duplication of regulations by states, pet projects, linear decision making and pure partisan politics. When transportation fails us we are put into a very bad situation. For instance in 1892 we saw the collapse of 4 railroads, right after the banks failed, 10's of thousands became unemployed and thus the panic of 1893.

If we study history we see that when transportation fails stability becomes uncertain and chaos will ensue. We saw during the recent Blackout Power Outage of 2003 when the subways stopped, traffic signals stopped, gas stations could not pump and the transportation stopped. Although people kept calm you can see the transportation issues with the movement of people. On the day and days following the International Terrorist events on 9-11 we saw the grounding of all commercial aviation transportation, taking out a major sector of travel, but really this is nothing; can you imagine three days without trucks?

After 9-11 we experienced chaos, which worked to rectify and re-stabilize itself. Many people who were stranded soon found out that there are a multitude of other methods of transportation. These other forms of transportation included Amtrak, rental cars, Greyhound and Trailways, Tour buses, private cars, motor homes, trucks, etc.

Whereas these back up systems in place of air travel may not have been as convenient, but a heck of a lot more convenient that the expeditions of Lewis and Clark or great migrations of families in covered wagons. Even the first automobile to travel across the United States set a record; it took exactly 66 days. Today you can drive it in four or five if you have to. Think about it.

Having redundancies and today's technologies in transportation we have protected the system for nearly any eventuality. This is why we need additional choices of transportation. Shuttles, Taxis, private cars, buses, trains, aircraft, ferries, etc. The more choices and the more competition the better prices, level of services and quality. This means people can get where they need to get to, in order to fulfill their needs and desires or pursue their dreams, goals and happiness.

Having public transportation break down is as bad as having the roads in disrepair. One problem we have also is the roads in this country need to get more attention. What I usually see is construction projects that take years on major freeways, block traffic, slowing logistics and make families traveling wait. This costs society as it is blocking or bottle-necking the flow of transportation costing the efficiencies of trucking, which is already stressed with over regulation, high insurance costs and fuel costs.

Insurance costs in trucking are also a key cost and are also passed onto consumers and vendors and after 9-11 there have been many other reasons for high insurance on the businesses, many smaller trucking companies are really hurt by this and regulations and fuel costs are tough also with increased competition from large super consolidated trucking companies for independent or smaller trucking companies. Trucking will have to find new and innovative ways to improve efficiencies to continue.

One thing which is becoming more typical is the piggy back on the flat bed rail car approach in which a truck trailer or cargo container on wheels is delivered across the country and the tractor hooks up to it and takes it to it's final destination. This means that fewer trucks will be on the road and the driver shortages that the industry is experiencing will not increase safety issues with newer and inexperienced drivers filling those jobs.

Each time a truck is in an accident with a four-wheeler, the DOT does a report and this increases the costs for all trucking companies and adds to even more regulations. The auto manufacturers continue to make and sell more cars to keep the factories open and increase profits in that sector. The result of course is that we are seeing the freeways and large cities have huge peak time traffic jams from too many cars. We are seeing more accidents too.

Much is being done to prevent these increases in accidents and protect the public, although we are also seeing less attention to the road with cell phones, DVD players, surround a sound entertainment centers, which is creating sensory perception over load. The military has done testing in combat stress situations on this and the reality of the performance of the human brain with such distractions is all too real and can lead to accidents as well.

One idea came into our T-5 Group was to put a little light on the dash boards of cars so when an ambulance, fire truck or police car with lights and sirens was on it would flash on the dash board to alert drivers to pull over and automatically interrupt all that "noise" distraction. This could very easily be done with a small network sensor in every car and a small light on the dash, which would activate automatically when an emergency vehicle was within one-eighth of a mile away.

In case you are wondering why we study the auto safety issues in our Think Tank or why the T-5 Group, which specializes in Trucking Industry is so intent on these things is because over 42,000 people a year lose their lives in traffic accidents and over two-thirds of trucking accidents are caused by 4-wheelers doing stupid things and causing a trucking accident. Are you are worried about the Iraq conflict? This is 10 times greater and it is an on-going perpetual problem that persists in the United States.

Another huge issue of cars mixing with truck traffic has been studied to death, probably due to the deaths, which can result. I can tell you having driven some 500,000 miles around the country that when you are on the open highway and you separate the speeds of cars and trucks by too much for example trucks drive 55 and cars drive 70 you are asking for an accident to happen. Slowing down the trucks and causing differentials in speed causes more accidents, it does not prevent them.

There are many places in this country where the speed differentials are like this. What happens is cars try to pass at bad times adjust for the trucks and end up causing an accident. Did you know more traffic deaths are caused going up hills than down hills? Why due to the severe speed differential, slow vehicles and fast vehicles trying to pass or adjust and fit in between cars moving in faster lanes, many of these accidents are rear collisions or partial rear collisions. These are among some of the most severe accidents.

Trucking is very proactive in their safety innovations due to the previously discussed insurance costs. A new warning system will soon be located on trucks to warn them of an impending rollover risk. The devise will be activated either by transponder on the roadway or roadside service vehicles. It is possible that the number of truck rollovers per year will be cut by over 45%.

One thing we must realize is when we make rules to help in aspects of safety they must not slow the flow of traffic or transportation. They should solve both problems, improve flow and improve safety. For instance when improving the roads there are special markings, which work better in inclement weather such as fog, rain or wind storms. Also available to us are incredible new roadway materials, which reduce road noise, help the tires grip better and stop quicker, repel water and do not ice up as easy. Similar techniques have been learned to prevent ice from forming on bridges. By implementing smart technologies and simple innovations which are not cost prohibitive we can improve safety, increase efficiency of our highway system and not over burden and already overtaxed industry, which is so vital to our Nation.

There are many problems with freeways and toll ways in America. First the toll ways in America are clogging the flow of traffic. With the proper systems in place like the Los Angeles, Atlanta, Baltimore video cameras on the freeways and the system in Seattle run by Battelle, there are ways protect the people, monitor the flow, prevent International terrorist attack using our road ways and alleviate any impending rush hour grid lock.

All toll ways should disappear in all states and interstate toll ways and highways and become freeways. This increases flow and removes the cancer blocking the transportation life-line. For those roadways areas which are to remain toll-ways, they should be all charged electronically. We should take all the information we know about flows and information and use them to keep our systems safe and take all the traffic information, weather information, daytime population migrations, census data and we put it all together and display it on a 4-D model we can watch and study to improve traffic flow.

By doing this we can see what the roads on the NY Toll way into NYC are doing with pot holes the size of wheel barrels and destroying truck undercarriages and suspensions on even the Hummer SUVs. Giving your hard earned money to pay toll and then being subjected to bumpy roads which are ruining your car or bending the undercarriage steering system on your truck only causes more problems down the road such as misalignment, excessive tire ware, decreased fuel efficiency and/or a blow out at a very bad time and place.

Imagine paying to drive on a road when you cannot even keep from having your Big Gulp or Starbucks popping out of the drink holders all over the floor of your new rig? This is modern bureaucracy at best and highway robbery at least, but to be fair to the NY Toll-way system, the 101 and 118 Freeways in California are about as bad ever since the North ridge Earth Quake. Also the I-10 East of Houston all the way to Lake Charles, LA are utterly horrendous, as well as the I-20 and I-30 Freeways in Arkansas are a fine how do you do to travelers and the Wal-Mart trucks. There is no excuse for such roads in such a modernized country. Surely we can fix the roads and prevent equipment failure for a smooth transportation flow. The Highway System in our nation is an important part of The Flow of Transportation that is so much a part of Trucking in America.

In these areas mentioned we see the traffic is very bad due to people slowing down to 35 miles per hour in places to negotiate the potholes, ripples in the road and constant bumps. The current bidding process for road projects is also flawed due to the mandated minority bidding requirements. The HUB process is also flawed and the entire idea of minority bidding quotas is a politically correct notion, which is incorrect thinking. In fact it has become used and abused and fails to even come close to providing minority businesses with opportunity.

The theory was ill though and now the public pays for it over and over again with projects, which are in default of contract, take extra months and years to complete and are awarded to those who cannot perform and have little track record of ever performing. All these delays cause a restriction of flow, artificial choke points, continuous detours and costs to companies which are passed onto the consumers like an additional tax on society.

No one ever talks about this stuff, but it happens every day in government contracts all over America all in the interest of political correctness. It is a waste of money and rewards mediocrity. The best person should get the job regardless of race or color. So much is at stake in our infrastructure for transportation in America it requires reality based thinking, not political correctness without consideration of performance risks.

The flow of transportation affects our lives in a very big way and it is unacceptable to approach such contracts to be given out using the current method. In the US there are surface streets, which are outrageous as well. In Missoula, MT they have an intersection called "Dysfunction Junction", which is an understatement. Although this is just one example, AAA puts out a list of the most dangerous roads in America with the most accidents. There are over 100 listed.

Now most states have grid lock laws which makes it against the law to block an intersection when the cross traffic has a green light. Downtown streets in metro areas across the country are in gridlock during rush hours. The traffic on the freeways near the center of large cities all the way out to the suburbs is outrageous. Much to this is due to improper planning. We can do better than this and indeed our Nation's economic health depends on it.

How did this problem get so big and why are we having these challenges with Transportation in America?

Our T-5 Group was determined to get to the bottom of all this and thus went back many generations to have a look at the real development issues in America. What we concluded was that the problem was simply due to the natural progression of our civilization and did not have much to due with planning moreover it was the simple case of incremental evolution of our Nation's growth.

You see the cities in America started where there was a river (water supplies) and small populations sprung up, then the railroad steam engines needed a place to fill up the water. Eventually the towns got larger and grew near the rail stations. Then as people moved outward, usually North and West or upstream away from odors or water with pollution in it. Of course behind the downtown areas they grew without regards to modern day planning methods, making increased surface transportation rather difficult.

Industry was set up near the railroad and this became the lower rent district perfect for distribution infrastructure, trucking companies and industrial areas. Eventually, the larger cities were connected by way of a highway system and the smaller cities by two-lane highway type roads. Today it is simply an extension of that type of endless growth. The suburbs are farther out and grow until they hit a mountain, river, Indian Reservation or Ocean.

Currently, master planned communities and larger city planners design the outlining areas with ring roads. Yet even with all these modern theories you still get the terms; Spaghetti Bowl, Mixing Bowl and Cluster Muck by those who have to navigate such areas where major roads all come together. One little fender bender and the entire system breaks down. When cities are built around bodies of water a ring road theory or design fails because ring road concept serves the center, but in the center is only those fish, If you look at large cities near bays, the successful ones with transportation flows have concentric rings around the outside of the lake or bay.

There is no way to build for every potential eventuality, but ring roads and expressways are needed or the transportation and distribution system fails. Once that happens the civilization or local economy is not served and every man, woman and child, business, agency, non-profit and industry also suffers. Transportation is connected to every single facet of American Life and it is just like that little song;

> *"The foot bone is connected to the leg bone, the leg bone is collected to the hip bone, the hip bone is connected to the..."*

In other words all roads are connected in some way to all other roads even if a ferry is in-between, perhaps why they are always considered part of the highway system. All roads are connected to all bus stations and all railways connect and intersect to all roads. And all airports are connected to one another and to the ground transportation. Ring roads and proper surface street infrastructures separate the good transportation flows from the bad ones.

Some cites have done better than others in this regard, but one only has to look at places like San Francisco and the Bay area to see the problems. If you look at 101 and 280 Freeways on the West side of the bay you can see attempts at a solution with connecting highways, but they are far and few between. Even down lower in San Jose the last minute expressways are hard to navigate and were put in too late. East Bay is a complete disaster and you can see why BART was necessary.

There are many good examples of ring roads which have been done correctly for instance Houston, but when you add people so fast, even a well done system can be overloaded. Most of our major cities are now over loaded. The problems are that we are not utilizing our transportation systems correctly. Today in America we have peak periods where no one can get anywhere and times when the streets are literally empty. We have the same problem at Airports, where aircraft are usually parked in the middle of the night and fewer and fewer red eye flights these days. Instead we should be trying to figure out a way to use these resources better.

There is tremendous growth at our airports for instance Dallas, Las Vegas, Atlanta, San Francisco, Phoenix and LAX just to name a few. The FAA is in need of less regulation from other bureaucracies to do its job as well as some privatization. The EPA routinely withholds monies to airports until they comply with EPA and will withhold funds or add in those costs in their funding as mandates. The problem is that first you need to expand the airport and thus increase revenues then you can solve these other issues.

Having been around airports all my life and discussing things with small, medium and large Airport Managers and Executives their issues are not being served and their hands are tied behind their backs with mandates from the DOT, Congress, EPA, Homeland Security, it is amazing they are still able to even function. My Grandfather was the former head of the FAA at an International Airport and these issues are very old, they have been going on for years.

Airports are an integral part of our transportation system just as the highway system is for our Nation's trucks and distribution system. The similarities of cause and affect of both transportation sectors became obvious while pouring over the data with the T-5 Group on the Future of Trucks and the Trucking Industry. It is readily apparent that the entire transportation sector needs a reality check with regards to regulations and government oversight and intervention.

We have some really great border line world-class transportations systems in the US but they are not cohesive in all regards. Alas, but with a little fine tuning they certainly could be and with all the space we have in this country we have so many possibilities of making it logistically perfect, people friendly, efficient in operation, safe from International Terrorists, redundant without worry of break down and cost effective to increase usage and confidence with the patrons.

To do this we must prevent trucking regulations which are duplicated in every state and often contradictory. EPA laws must take into consideration free-market mechanisms to clean the air. We have seen severe restrictions and forced deadlines, which should have never better considered. Much of this has been due to reactionary rule-making rather than well thought out long-term planning. Political Grandstanding and linear thought has no place in Trucking.

When large items need to travel down existing roadways and are considered wide loads, long loads or oversized loads they often have different rules for different states, highways, federal and even some counties have their own rules making it difficult to get a much needed part to a power plant, military base, infrastructure project, building, government agency, business or individual.

When the trucking industry or any businesses for that matter has to deal with all these different, often redundant rules and regulations that do not match they cannot use the existing transportation system efficiently and when these things happen it hurts the flow of products and services to the over all people that it was built to serve. In addition to this every permit, fee, fine or rule imposed causes and increase in cost and an over all tax on society.

When we slow any form of transportation, increase regulations these costs are passed on. When companies are over taxed passed the amount their customers can afford sales stop and they have two choices, file bankruptcy like United Airlines, Delta Airlines, Consolidated Freightways, Penn Central Railroad, Budget Group, Laidlaw, etc. or exit the market place or change their market mix. Now we could discuss the transportation sector and bankruptcies of the last three decades for 36 hours and never get to the bottom of it.

What needs to be considered is that when regulations to prevent accidents slow the flow of transportation to the point that profit cannot be made because the costs for rider ship or shipping a product is out of sync with reality of the free market then we all lose. Friedman Economics comes into play here and the two major novels of Ayn Rand, we cannot use linear thinking to run the wheels of government bureaucracy due to media stirred controversy.

Transportation must be above all that if we are to insure the integrity of it's flow. The flow of transportation cannot be compromised by the mere threat of International Terrorism, nor should we allow it to be used against us. By making the transportation system all encompassing, no one problem can stop the flow. No one terrorist act can prevent our system from serving the will of the country and people.

All rules, laws, regulations, incremental changes, and screening in all forms of our transportation infrastructure must use the most technological advanced systems to see that we can move people, products and services efficiently, cost effectively and quickly. I hope you have enjoyed this brief essay on *"The Flow of Transportation"* with regards to the Trucking Industry as part of **Trucks of the Future.** Indeed, I do drive a truck; http://www.carwashguys.com/blitz.html or Mobile Command Center as I continually research The Trucking Industry.

Flow of Transportation in 2007

One of the most important flows of any civilization is indeed, the Flow of Transportation and Distribution, without it the civilization cannot remain efficient and most likely will eventually collapse. Often when NGOs Non-Government Organizations go to third world countries they immediately run into problems while trying to give aid.

There are no runways, railroads, canals, docks, terminals and in many cases no roads either. In other words they have food and aid to deliver, but no way to bring in a truck to deliver it to the villages that so desperately need assistance. Sometimes they are forced to bring in supplies on Elephants, Camels and donkeys; a very slow and cumbersome process. Sometimes in the United States we take our Transportation, Highways, Distribution System and Trucking Companies for granted; that is a really serious mistake. Let me illuminate this subject with a quote from Dr. Nathalie Fiset;

> *"When I was in Bolivia because of the landslide, miles and miles of trucks were stuck and could not go back for weeks. Their cargo composed mostly of food like bananas had long rotten and the smell was bad. Roads are a major factor in trucking economy in those countries."*

A trucking companies worst nightmare is a regular occurrence in the Third World, so the T-5 not to be too critical, as we do live in the land of abundance and the greatest nation ever created in the history of mankind. Our job is not to lambaste the system or condemn it's most dedicated contributors, rather to point to areas of obvious improvement and to see them to fruition.

Consider the issues that these other nation-states face. One of the goals in helping the Third World is to help set up commerce and trade, education and dig wells for water. But if they cannot get in the supplies, building materials or equipment, the chances of accomplishing these goals are not very good. The Flow of Transportation and Distribution and its importance can best be shown by this example.

If you look at the first world nations of the world you immediately notice their incredible logistics systems of roads, ports, railways, freeways, subways, canals and airports. When considering the importance of these items we take for granted it becomes quite evident why building the Trans Continental Railroad and the Interstate Highway System in the United States was so vitally important in the growth of our Nation.

If we look at nations like China and India we see they too are hot on the trail to build their transportation and distribution infrastructure and investing Billions of dollars in getting it done, as well the should be, because without doing so, they can never get to the next step. The T-5 Group wishes to make a comment at the dividends gained by nations who spend up front for massive transportation and distribution networks and infrastructure and remind you how it all works and how free-markets deliver the goods efficiently. And then we can talk about securing the system and the technology to make it even better.

Flowing Transportation

A main component of a healthy human civilization is the flow of its transportation. The transportation of people, products and services throughout the society to serve mankind is an essential part of any Nation or State.

The Flow of Transportation has been discussed in committees, focus groups, association meetings, Think Tanks, Government Agencies and even at the kitchen table for years. It is one of the major issues of importance to on-going vitality and sustainability of any civilization. Without the blood flow the bodies dies and at the heart of the system lies a Nation's transportation system.

During my travels across the country nearly 500,000 miles visiting every city in the United States and Canada over 10,000 population and observing the traffic flows; often stuck in them for hours in major cities and listening to people and citizens in the suburbs and rural areas about the challenges their local traffic or bus services. I began to look at the flow of transportation with a much keener eye. I started to see the good, the bad and the ugly. We have made incredible strides in the US in our transportation sector, but we cannot rest on our laurels now.

Realize that all of us use some form of transportation to get around, even if it is people power like Lance Armstrong, well maybe not as fast but some of us still peddle to the store, to work or around town. It wasn't so long ago that a fast and reliable horse was a must. Now then my mission today is to open this discussion by describing my observations and knowledge of transportation and to get you to think about your observations while traveling around. As you drive around town today or tomorrow, think about this topic and how vitally critical it is to our society and civilization.

As one observes our current set of transportation systems and how they interact and get us from A to B, we will see that it greatly effects our daily lives. Obviously my observations about the flows of transportation will be different than yours and yours different than that of relatives, friends or neighbors; different perspectives of the same set of interacting transportation systems.

You may even have some great ideas to help us fix and modify the flow of transportation to help the most amount of people that it serves. Maybe you can find the key to make it better, the missing component if you will, thus improve the efficiency of transportation and therefore bettering the flows of civilization and increasing our quality of life and standard of living.

Our transportation system is an integral part of how we live and work. It is a modern marvel indeed. For every minor increase in its efficiency there is an exponential increase in our lives. Teach your kids to be observant of the flows of transportation and understand its value. The flow of transportation has helped our nation become all we are today. Explain why trucks and the trucking industry are so vitally important to the greatest nation ever created.

Traffic Clogging the System

Truck Traffic in the United States is up and with all this construction traffic is slowed. With the construction and the hours of service limitations on drivers being reduced, more trucks are needed yet there is a shortage of qualified people. These are tough issues and hardships on the industry and some companies are resorting to hiring parolees as drivers due to the fact there are no drivers. No rest stops to hold the trucks either due to the increase. More trucks driving fewer hours equates to more trucks on the roads, not less.

Many cities are rebelling with ***"No Trucks"*** allowed on city streets such as in New Jersey. Stay on the freeway and keep driving even though it is now against the law to drive more than eight hours and traffic is increased due to number of trucks, increased permit regulations, down sizing of state staff to issue permits, reduced hours to issue permits. What is going on here?

Well there is so much traffic that people do not want the trucks on the road now? But without trucks, America Stops. So the solution is to over regulate the trucking industry. Unfortunately by messing up Americas distribution system we are crippling America, and I would not be surprised if there is a nation wide truckers strike if these trends continue, as it has happened before.

A Nationwide Truckers strike would be disastrous indeed, as no one wants to see this nation fall to its knees. It would take less than 6 days and then there would be rioting in the streets, runs on what was left at the grocery stores, no power, nothing. If Diesel keeps creeping up we may see it at another 45 cents per gallon we will be hard pressed to sustain that for any real length of time.

Freeway of Free Parking Lot

The other day I was in a non-familiar city and I was trying to get directions at a fuel station. The directions were quite good turn left go two blocks, turn right get in the left lane make a left turn go three blocks and the freeway will be on your right and then go two hundred miles and you will be where you want to go - Easier said than done.

Indeed I did get to the freeway and get on the on ramp and start to accelerate only to hit my brakes and then sit there for 10 minutes. Why? Because what some people call a freeway is not a freeway at all. This so-called freeway was more like a free parking lot, as I sat in traffic for nearly 2 hours trying to get out of the Metroplex.

Eventually I got to the edge of the city and the traffic started going again and I eventually ended up at my destination 200 miles away. The last 160 miles took me only 10 minutes longer than the first 40 miles. It seems like the freeways in the United States of America are more like ***free parking lots*** *and therefore we should change the name*.

For instance if you want to go to the grocery store simply get on the freeway wait until the traffic stops. Stop your car get out click your automatic door locks; beep, beep; hop the fence, buy your groceries and come back to your car and it will still be in the exact same spot.

Folks, these are not freeways these are free parking lots. So after Congress approved the Transportation Bill; they should have put some money in there for parking lots, lots and lots of them, because that's what they are. The T-5 Group's primary mission in highway planning is to stop this insanity.

Beyond Borders and Interstate Commerce

The dire warnings of allowing Mexican Trucks to enter the United States to deliver product were not anywhere near the scare tactics we heard would occur. But that is not to say that there have not been problems, there certainly has been many fatal accidents and problems. You must admit that the claims of the Union Truck Drivers are bathed in reality and some of those claims indeed do have merit and these are some serious issues to consider.

Many of the trucks coming over from Mexico are in a state of disrepair, with all sorts of safety and mechanical issues. Many are big polluters as well. If you consider where these trucks originally came from it is not so hard to figure out why.

You see many of the trucks being driven by Mexican Drivers have come from the United States. These are our old trucks, which are no longer in service. There are many reasons for trucks no longer in service. Some have expired of their leases, some are simply too old and worn out to operate or they do not comply with current emission standards for pollution control.

Some of these trucks have been flagged out of service at truck scales or at inspection time and are not allowed to be used anymore on US highways as per the DOT. Then all these trucks end up as trade-ins at new truck dealers and/or go to used truck lots or truck and equipment auctions. Trucking company entrepreneurs come over from Mexico and buy these trucks to use.

Then something happens which is beyond my most *Trucking Industry Analysts* comprehension, we allow them to deliver products in our country from Mexico and drive here anyway? One member of the T-5 Group asked;

> *"Can I ask a simple question? Why do we bother to have such safety standards in our country if we allow this? It is as if we enforce our own companies and allow the Mexican trucking companies a different set of standards, which basically violates our laws. What are we thinking?"*

Indeed, he makes a strong argument and so perhaps we might make some predictions now that this will eventually lead to additional rules and regulations and scrutiny as more and more people notice the challenges and problems that these ***Mexican Trucks*** are causing? As more lives are lost on our highways and more accidents occur these issues will have to be addressed.

Hispanic American Trucks

What do you call trucks from Mexico which come into the United States and pollute the air and do not comply with air quality or EPA rules for trucks? What do you call a truck from Mexico, which is not mechanically sound and may have many equipment violations?

What kind of faulty equipment problems you ask? Well, faulty brake systems, worn out electrical systems, non-functioning exhaust control systems, oil leaking engines and fire hazard fuel lines for instance. What do you call a truck from Mexico, which is a rolling violation and mirrors a portable junkyard? Now this is not to say that **ALL** the trucks from Mexico are like this, but the fact is most of them really are. Apparently due to political correctness, one news outlet got offended when our Think Tank used the term; **"Mexican Truck"** as they had people call in to complain and asked that we stop using the term; **"Mexican Trucks"** as that is a negative connation on **Mexicans** we are now told. The T-5 Group Member told our group privately later that afternoon;

> "I have nothing against Mexicans. I do however have something against most of these Mexican Trucks with faulty equipment taking advantage of an un-level playing field with regards to pollution controls and the safety of the American people. Specifically, I have a problem with a mom and her 3 kids in a mini-van cruising down a grade on an highway, who should have to pay with their lives for bad policy if that truck runs them over because it cannot stop. And indeed, I am not politically correct you guys know me, you know how I am, but I see their perspective. What would you like me to call these trucks coming over from Mexico?"

Another think tank member on the team suggested maybe we should call them; **"Hispanic Trucks"** or **"Mexico Trucks"** or even **"Hispanic American Trucks."** The critic of the **"Mexican Truck"** term offered only criticism with no solution. Meanwhile we have these trucks, which are from Mexico which are dangerous, do not follow the rules and are serious environmental problems.

The critic should give us a "Term" to use, and we will be glad to use it and even use the term in the next edition of **Trucks of the Future** if that would make everyone feel happy on the definitional side of politically correct terminology in the Trucking Industry?

This is kind of silly of critic Think Tank Member don't you think? What term does he want us to use? "Mexican American Trucks, Illegal Trucks from Mexico, Environmental Mobile Disaster Trucks, Smoke Bomb Trucks or Rolling Junk Yards," Let us know on that. If anyone in the Trucking Industry has any ideas please be so kind as to help guide us.

Death of the Independent Truck Driver

The Independent Truck Driver has been in the cross-hairs for decades and they are a dying breed. In 2005 we saw major commercial carriers post major profits, due to a strong and robust economy and the ability to pass the fuel price spikes and fluctuations onto their customers. Even as the price of fuel came back down the trucking companies were slow to re-adjust the prices downward and made significant strides on the float. Thus able to keep the difference and book it in as profit. This was often not the case for the Independent Truck Driver who bit the bullet as he or she filled their rigs at the pumps.

The Independent Truck driver saw increased insurance costs and increased competition from the larger carriers and they had to keep prices low to compete, while also unable to take advantage of economies of scale or the piggyback rail strategies of the largest carriers. We saw increased scarcity of the independent truck driver in 2006 as new regulations of hours of operation came into play along with issues of EPA low-sulfur engine requirements.

Although the postponement of such regulation has helped a little it was not enough to save many of the departed independent truck drivers. Indeed as we saw large profits from some of the biggest commercial trucking companies, we also saw many others show dismal results. Fuel price spikes in 2006 were expected to be the same or worse than those in 2005 said some commodity and trucking industry analysts, since they were not quite as bad, that helped a little.

Additionally the freight index or amount of loads shipped was expected to drop somewhat and it did even in 2007. All this will increase load costs for the customer and further squeeze out the independent truck driver. Good luck to all and keep on trucking.

Independent Truck Drivers Have It Tough

It has never been easy to be an independent truck driver and with the high fuel prices, high cost of insurance and in saying bureaucracy including out of control taxes it is a wonder that there are any Independent truck drivers left at all. And the ones who are left are upside down in truck payments and are not making very much money.

At the **Online Think Tank** we talk a lot about logistics, distribution and transportation and we are quite alarmed at the challenges that the independent truck tremors had to deal with. Recently one independent truck driver told us;

> *"The past 10 years of my life have been pretty tough, if you ask me. I have been a CDL driver since 1984 and never really found a driving job I wanted to keep, so I have jumped many times to different positions, hoping the next will be better... and its not."*

Our response is one of sadness indeed, I am deeply troubled with the Trucking Industry in the US, specifically the number of "Independent Truck Drivers" who have been forced into BK and trucks repo'ed. I often will tune into Rolly James or George Noory and listen to the complaints about the *Mexican Truck Driver* issues, increased costs and over regulation.

I remember once talking to an OK State Trooper and he said that he could flag 95% of the trucks from Mexico with ***Out of Service tickets***. It is amazing. Even worse we have pollution laws here and then our old junk gets shipped to Mexico and they buy it and then drive it here, but no American driver could, it would not pass a single weigh scale inspection.

Anyway, the T-5 Group of the Online Think Tank understands all these issues, as many of us have been in the Trucking Industry for decades. We see the same problems with Independent Truck Drivers and Owners as those that the American Farm Family faces. There are issues, and no it is not funny at all; we see this in many industries, then watch the larger companies force undo restrictions on the small business person, who then cannot compete, even if they lower price. If we lose the competitive edge in trucking that the Independent Trucker brings to the Free Market, we will find yet another industry weak in customer service.

Then what do we get? Well, we get the larger companies cutting costs to bare bones, hiring mal-contents and newbies and increasing accident rates, thus prompting more restrictions and regulations. Meanwhile the Rail Industry has taken a bite and in December of 2007 we watched another drop as the truck load tonnage rate fell 2% and no one said anything. Stock market reflected this just as the Q1 Corporate results came in. Everyone should have seen that coming after looking at the trucking industry stats since Mid October?

Fuel prices do not help either, it gives an advantage to rail which can bulk buy in advance and the last big trucking company holds out to raise rates, starves the little guy, of course FedEx is the weather vain, and when they raise rates dominoes are in motion. Companies which need shippers then go hunting for best rates and that sexy sales lady waltz'es in and sells the Independent Truck Driver's rear end out of a job or takes the account from their best company shipping clients. Yes, the T-5 Group, well we see all that.

Luckily Independent Truckers are a tough breed and do not give up easily and they are survivors thru thick and thin, able to weather the storm - Impressive group of folks indeed.

Trucking Company Consolidation

The amount of consolidation in the trucking industry in the last decade has been truly incredible. In fact in the last few years it has been wild and the number of mergers and purchases have been interesting to watch. We have seen in the last two years several large trucking companies announcing huge profits due to hedging against fuel prices and increasing efficiencies due to economies of scale.

Large Profit takers were out buying up their competition and increasing their areas of service through acquisitions. Now in 2007 with oil prices pushing upward and Hurricane Season coming and of course the looming Iran Nuclear Weapons Showdown most in the transportation sector are not so optimistic on fuel prices. In fact many have significantly raised rates to be assured they are not slaughtered.

There were some carriers including Covenant Transportation with losses and some companies are now talking Mergers. In fact the CEO of UPS has said the company may consider an extremely large acquisition. This makes a lot of sense, but who might that be? Would it be Yellow/Roadway, a Rail Road, Covenant or some other Cargo Container Company like CSX?

When UPS says; “extremely large” they would mean big as they themselves are enormous. So who are the players and will UPS indeed kick off a huge string of mergers once again in the Transportation Sector like FedEx did a few years ago with their move into FedEx Ground and FedEx Freight? One thing is for sure the game continues and the strong eat the weak. A slowing economy could mean more mergers to try to incrementally increase profits thru economies of scale or it could mean that some of those previous mergers go into the corporate record books for some of the worst business decisions ever made and no one wants to be left holding that bag if it were to suddenly and un-expectantly pop.

Of course one has to ask where room is left for the Independent Truck Driver who made trucking what it is today and lifted the Industry up to the heights of popularity it enjoys?

Labor Shortages, Training and Simulators

Trucking Jobs and Shortages

What are trucking companies looking for in a resume? Absolutely nothing, as there is a shortage in trucking of over 135,000 truck drivers and by the end of 2007 industry analysts expect the shortage of truck drivers to be in excess of 160,000 truck drivers. They are looking for anyone who can breathe and be taught how to drive a truck without crashing it.

If you are looking to drive a truck for a living and perhaps even see the country, then a driver job is waiting for you and your resume only needs to show that you have the driver's license in good standing and that you are trainable. Basically go show up and sign up and start this week for training.

You see, trucking companies need people to drive so badly that they are taking people who barely speak English or even had just gotten out of prison and have felonies on their record. If you have a felony on your record about the only kind of truck you cannot drive is a Haz Mat truck or for a trucking company, which has big military contracts to haul their freight.

The trucking companies will train you to get your commercial drivers license and offer you a fairly decent starting wage and they are competing with each other for truck drivers and so you need to shop around and look for the best deal for you. Let us just say it is a ***driver's market*** and this would be a good time to take advantage of a new career as a truck driver.

Female Truck Drivers

The number of female truck drivers has steadily increased over the years and today there are more women truck drivers than ever before. Not only are there more local women truck drivers, but there are also more long-haul truck drivers who are female.

In 1995 there were 130,000 female truck drivers and in 2005 there were 155,000 female truck drivers stated the **ATA - American Trucking Association**. These figures are confirmed by the Bureau of Labor Statistics, part of the US federal government. The number of female truck drivers is increasing at a greater rate than ever before and by the end of 2007 is expected there will be over ***200,000 female truck drivers***.

The real issue is that there is a shortage of truck drivers in the United States that over the next decade could be as high as 700,000 and someone has to fill the gap. Interestingly enough female truck drivers tend to be very safe drivers and therefore they make excellent candidates.

Next time you pass a truck on the freeway perhaps you will look over and notice that it is not a male driver but rather a female and realize she is not alone, as there is a growing number of female truck drivers on the road and that trend is expected to continue well into the next decade.

Truck Driver Health

Well after traveling some 500,000 miles in a rather large Truck Style Recreational Vehicle, I must say that when I stop at Truck Stops, I am a little concerned for our truck drivers who come in, as they are out of shape, many are obese and they look like they are very near a diabetic collapse. This is a serious issue, because without truck drivers our nation is dead in the water and nothing will make it to the shelves of the retailers or to or from our businesses and factories.

Something must be done to assist them. Perhaps the truck stops need to chill out on all the junk food they sell and start selling things that are better for these drivers. Truck Driver Health is at Issue and we already have a shortage of truck drivers in this nation and if these guys and gals get any worse than on their health they will be in some deep serious health declines.

Luckily I have noticed a couple of truck stops addressing this issue. Flying J and Pilot Truck Stops now have bananas, apples and other good to eat foods out front. Perhaps this is due to the growing concerns from the American Trucking Association, American Diabetes Association or maybe just truck drivers saying;

"Hey why can't you sell something other than junk food in here?"

The issue of Truck Driver Health is a serious one and it is an issue that must be addressed, because if we don't we may lose quite a few good men and a huge number of very patriotic Americans. The T-5 Group addressed this issue as one of extreme importance.

Transit Strikes - Labor Has the Upper Hand

Did you know it is a strategy of cities to not negotiate with their unions during times of high fuel prices; same with School Districts and their bus drivers? But do you know why Transit Strikes inevitable during times of High Fuel Prices? It is because those agencies save a boatload of money, if the drivers go on strike for a month. This means no fuel costs for a month? The Unions know this too and they know that the money that is saved they can get back in pay to them.

Sounds like a good deal all the way around right? Not so, what about the people who pay for garbage service, ride the bus to work or need their streets swept and all the drivers are enjoying a free vacation, knowing they will negotiate for higher pay to make up for it. Meanwhile we are all stuck with no services. In fact the longer the strike lasts the more both sides make out, as all that budget money is saved. The Unions get more for the employees and the Bureaucrats come out saving budget.

Unfortunately the rest of the civilization suffers because is a businessman cannot get his labor to work, as the buses stop and then he will not make a profit. If people cannot take the bus then they end up driving and clogging the streets with more cars and you cannot find parking and we get more rush hour gridlock? All this means more costs for everything, less profit, less tax revenues collected and the entire system breaks down due to inefficiencies. Our T-5 Group has been studying these factors as part of our over-all Online Think Tank "Flow of Transportation" Study.

Bus Simulators

Every week in the United States we have bus accidents and many people are injured. Our T-5 Group decided to take Google News Alerts for "Bus Accidents" and after two-years it was rather alarming the statistics. Often people are killed and occasionally many people die. Many times this is due to adverse conditions such as heavy traffic, severe weather or dangerous conditions. You would think a bus driver would be trained for such, yet we all know that weather conditions change rapidly and a bus driver on a route familiar with may not change his driving methods.

The best way to over come this is to use VR or Virtual Reality Simulators to give the driver a taste of worst-case scenario that they may some day experience. For instance ***"black ice"*** no matter that they will be driving in South Texas where they never have black ice or practicing in heavy traffic during a Hurricane Evacuation when the thunderstorm cells whip on shore.

We train airline pilots this way and even truck drivers now. For instance an airliner fully loaded will take off, one engine will go out, then they will take out two-hydraulic systems and put smoke in the cockpit with faulty warning lights blinking or not working and they will do this all in near zero-zero conditions.

The rule of thumb, "fly the airplane first" keep up your airspeed and control and rapidly work thru the emergencies in the order of most important. Not as easy as it sounds, when you have a full load of people and you are under a high stress situation. But this type of training is how we maintain our incredible level of safety in airliners. NASA puts the Space Shuttle Pilots thru the same tests.

Below are a few online links of value for those like the T-5 Group, which research these things.

- http://www.faac.com/trucksimulators.htm
- http://en.wikipedia.org/wiki/Flight_simulator
- http://pao.ksc.nasa.gov/sim/index2.html

By making all bus drivers go thru simulators you will put the driver thru unusual and high-stress chaotic situations, so they can practice what to do when a tire blows out on a slippery highway, under heavy traffic, with an unruly set of passengers, during a Hurricane evacuation, as the bus goes sideways and in extremely poor visibility. Think on this, we should do this.

Truck Simulators

For fast-moving companies that are involved in the virtual reality simulator industry sub-sector it will be necessary to collect images in real life as fast as possible and then digitize those images or videos into workable pieces that can be used for computer games, video games or virtual reality simulators. One of the strategies that is recommended by the Online Think Tank is to have a road crew in a high-tech motor home that also has a number of cameras on the front, sides and back of the vehicle. These cameras will take footage to be used in the virtual reality simulator.

For instance there will be cameras that are looking into the rearview mirrors as the vehicle goes down the road and one in the back to look at the road behind them. There should also be a video camera on the right side of the vehicle at about the height of the driver's head for the trucking simulators.

Virtual reality simulators will need more data much faster in the future and need to capture this data in digital formats so that they can use those when designing their systems. Since the need for capturing this data is so important, it makes sense to have a high-tech recreational vehicle set up to go capture images anywhere and everywhere.

Trucking companies will need footage for all types of situations, conditions and roads. The virtual reality Road crew team should be on the road 100% of the time capturing images and each night if they are not filming they should be sending back the day at using a high-speed Internet satellite antenna relay. This would provide the maximum amount of content needed to move very fast in the marketplace for a virtual reality simulator company. By having diverse footage long-haul truck drivers can be trained extremely well.

VR Truck Simulators

What will your living room look like in 2020 with all the new nifty high-tech entertainment devices available in the future? Already we see the flat panel large screen Television monitors and the new Xbox 360 is certainly incredible too. Then there is surround a sound and also little ear-buds for perfect sound with little tiny electronic gadgets like the iPod.

Is it possible that in the future they will add holographic projection to these devices too? A literal virtual reality setting in your own living room; that is to say the future of Virtual Reality in your living room may appear more real life than the real world. And probably more exciting, challenging, entertaining and fun as well?

At home drivers who might score the best points or safety records could give permission to the producers of the game to give their scores to trucking companies who could bid for their salaries to drive trucks, knowing that the highest scores mean the fewest accidents, saving the company money allowing them to up the pay scale for the VR Driver and potential future employee.

Trucking Simulators Discussed

At the T-5 Group we often say that if you want to change the world you take something from one industry and apply it to another. History has shown this, for instance many of Leonardo DaVinci and his drawings to the Bicycle Mechanic Wright brothers who were first in flight. Well in that same tradition the Makers of Aircraft Jet Simulators, Lockheed are now producing a prototype Truck training simulator.

http://www.trucking.org/safetynet/drivers/dtda_seminar.html

You can buy video games simulators in trucking just like the aviation ones by Microsoft already, sometimes art really does influence reality, 3D Virtual reality that is. Why? Well because there are certain things you will not wish to do in a truck during training, which will help a new driver learn experiences. For instance driving off the road accidentally and then doing a gentle slow down, ride it out recovery rather than jerking the wheel and finding your self jack knifed along with 40,000 -60,000 pounds of payload on your side in a ditch. This project is a joint venture with GE.

http://www.truck.net/showdetail/rec_id/1025

Obviously you do not want to purposely blow out a front right tire in a snow storm with black ice on the road while passing on a two lane narrow bridge with construction vehicles parked there over night, which could easily happen on Pennsylvania's Toll Ways in the winter. The goal being total control, pre-planning, calm cool and collected response and not panic, which could lead to death, injury and closing of a major arterial piece of infrastructure.

Of course these simulators are not cheap, but they potentially could save more lives than the newly enacted hours of operation rules by the DOT which will actually lead to higher freight costs, more trucks on the road and therefore more inexperienced new drivers, more congestion, more pollution and that means more accidents, not less.

Lockheed has some good ideas for the project and we stand to learn a lot about human behavior, accident psychology and survivability of Murphy-ism. Combine this with a new state of awareness in transportation with regards to International Terrorism; your new drivers will be your last and permanent line of defense.

Just think if Todd Beemer would have had all the training given to the Delta Force or Navy Seal Team Six prior to the hi-jacking; probably a different result. In theory this is what the t-5 group is suggesting be included in truck simulators of the future.

Also realize that with safer trucks and systems which measure tire pressure, instant weather reporting, GPS, etc, these new trucks or a new driver could possibly drive for years without a single incident and each mile with no incident makes them a little less attentive and gives them a false sense of security, when things do finally go wrong. Still Truck Simulators can make up for this and keep the potential crisp in their minds.

But again if they end up relaxing and not taking it seriously then one day the inevitable; they might end up upside down in the ditch and we have seen enough of those in our travels to know it happens. High winds, blow-outs, boredom, unsafe four wheelers, heavy traffic and road conditions and yes even equipment failures; it happens. And as Lockheed will tell you after testing all those X-Planes, "Events Occur" so then with this truth known, why not do them in a simulator first.

Indeed, I can recall my dad, an airline pilot, now retired flew the DC-10 O'Hare Accident scenario safely in a simulator after the controls were put into the simulator exactly as those during that fatal flight. Imagine the positive aspects of this for trucking?

Chapter II

The Nations Highways

Infrastructure Project Traffic Disruptions

Currently we have trucking and transportation companies running redline delivering goods, materials, parts, services and people to destinations, industry and market faster than ever before and we are maxing out our infrastructure, highways, toll-ways, freeways and surface transportation like railroads, canals and light-rail people moving systems. But what can we do we cannot stop everything now; we need it all running smoothly.

Yet some argue that the infrastructure is in a state of disrepair right now. In many regions of our nation this is true, however, as we build new infrastructure, add lanes to freeways, put in more rail, what happens? Well, the new construction causes further delays and thus more vehicles, trucks and trains must be put into the system to carry more goods, people and stuff to the various destinations. Thus compounding the problem you see?

If we build more roads or expand existing roads we will impede traffic and exacerbate the problems, if we do not we have continued traffic gridlock in the future. Best to wait for an economic downturn and remember where the problems were and do the fixing of the system in the down cycle, as it employs those people out of work and uses those set aside monies for the projects and the government gets a better deal for the contract.

Transportation Flows all maxed out

Have you noticed the increased traffic in our major cities and major transportation arteries? Have you been seeing more of the middle finger than ever before as the stress of the traffic takes its toll on the over stressed driver who is killing productive time or time that they could be at home with their family in another more quality human endeavor, namely raising the next generation.

Well then you have also perhaps considered the amount of lost productivity in the United States of America due to traffic flows, poor traffic management and increased number of vehicles on our highways, toll ways, freeways and surface streets. Have you ever considered how much this costs small businesses, which are already under the gun with high fuel prices? Or how hard it must be for companies to move their products to market? Indeed it is a real problem and one, which is not going away anytime soon. The lost revenue to our over all economy from these challenges on the flow of our transportation affect everything we do, everywhere we go.

As transportation flows get maxed out whether it is by rail or truck, we cannot move anymore products, materials or even services any faster and this can provide shortages. Indeed even worse off we cannot upgrade our infrastructure without further temporarily impeding a flow, which is already operating at redline. A priority for our Nation's transportation infrastructure should be to use existing highways in a more efficient manner and re-direct traffic flows as needed.

Transportation Bill and Billions Planned

Why build better transportation models;

Should we spend billions and billions of dollars upgrading the current distribution systems in order to handle the increased capacity, which will be needed? The current distribution models are old and archaic. The railroad is ancient and our roads and highways do not make a lot of sense, there are better ways to move stuff that would be more efficient too.

There have been many ideas floated such as giant canals to deliver salt water to desalination plants and floating cargo on giant aerial sky barge like blimps. Some have discussed magnetic levitated high-speed rail, even with the unfortunate and spectacular German derailment killing all aboard as it hit a Utility Truck on the track.

In the future there will be Star Trek like transporter rooms perhaps and currently some brilliant MIT Graduate Students are taking the printing concepts sending the cad cam design and printing what you need where you need it. Perhaps a room full of molecules can be waiting for the design description and simply assimilate. Sure, that is likely in the future too. Meaning you never need to ship anything really, as everything is made up of the periodic table right? It is made on the spot.

So, you ask if all this is coming why spend Billions and Billions of dollars in incremental, upgrades, repairs and modifications of our transportation infrastructure.

> *"Because we have too and because even on the short side of the timeline these technologies are 40 years away even for simple items and 100s of years away to perfect complex objects"*

This answer was brought to our T-5 Group by some of the hyper-futurists in the Online Think Tank. In other words we have the problem now and if we do not solve it, no amount of wishful thinking will cause it to disappear by way of magical, mystical or Sci Fi fantasy. We stand here today with a real problem and challenge that must be dealt with.

Transportation Projects and Traffic

Often politicians tell us that they are planning new transportation projects to help alleviate traffic and they tell us what they are completed everything will flow smoothly. But this is never the case because they always take longer than expected to be completed and they always cause massive traffic slowdowns, disruptions and traffic jams because lanes are blocked and cars have to slow down to get through a smaller compressed area or choke point. They are also over budget.

This is why any time someone says that they are planning a traffic or transportation project that will solve all our problems; don't believe them. Besides by the time the transportation project gets done there will be even more traffic to deal with. Additionally if you are a small business person you know that when ever they try to do something new or work on a project near your store you lose business because people cannot get to you to buy your products or services.

It is amazing that we spend billions of dollars a year in the United States of America on transportation projects to alleviate traffic and inevitably we cause traffic jams. These issues are not geographically specific indeed there are constant stories like this from coast to coast. There has to be a better way.

Texas Super Highway Corridor

One of the greatest transportation projects to come along in the last 100 years in the United States has to be the plan for the new Texas corridor or superhighway. Now many people in Texas have no problem with the Texas corridor or highway, unless of course their property happens to be in the way and might become a victim of eminent domain.

Indeed Texas politics are filled with controversies over Eminent Domain, and so often full and fair market value was not paid, which is also an issue. For those who do have it come thru their property, they might be able to work something very good out with it. I see all the issues and yet I know it is needed. **NIMBY; *Not in My Back Yard*** is a problem in this country so is; **NOPE or *Not On Planet Earth***. And unfortunately the real issue is that everyone ties it all up in the courts and thus everyone loses out on the infrastructure.

The truth is that the Texas corridor or superhighway makes sense and we will need more of those in the United States as our nation grows to 420 million people by the year 2020. We will need bigger highways and freeways to move more freight and people and we need to get a move on and start building these projects now. Sure it is a massive undertaking, but if we don't do that to you imagine the traffic gridlock in 20 years. It would be smart to have several East to West highways this size and many North to South; perhaps one running down to South America too - too futuristic for you? Think about 50 to 100 years from now, the time to build it is now.

Of course this is a real hot button in the Trucking Industry as most Unionized Trucking Companies are completely appalled at the thought and want the project killed along with any foreign trucks or drivers driving on American Highways. The issue will be the longer we wait to build such the things the more they will cost in the future when the land is filled in by civilization and imagine the civil litigation at that point? Of course huge infrastructure projects like this have not always proven to be profitable endeavors and we need to look no further than the Euro Tunnel or Chunnel to debate the other side of the equation.

Euro Tunnel Bankrupt

Public transportation is typically problematic as it creates its own wind of bureaucracy. The Euro Tunnel is no different in that it has to deal with all sorts of rules and regulations. We see in the United States many crisis situations in the public transportation sectors. Bus systems are found to be often losing money and wasting dollars. We see the BART Trains in San Francisco as well upside down in cost per rider VS costs to run the system, although making a strong comeback.

Each time a large transportation project is made to jump thru nearly impossible hoops of regulation we see issues where they become inefficient and are unable to reasonably serve the common good. Let's look at the Amtrak in the United States which seems to be a pet project of many a politician. It has never made any money and always been a drain on the taxpayer. In Canada we see privatization helped their counter part to the Amtrak. But still with over regulation, favoritism to other government transportation in competition with such systems we see more of the same issues really.

It is estimated that the Euro Tunnel may never emerge from bankrupt. We also know with the increased security costs that it has been less traveled; hurting tourism and raising costs. Everyone knows it is a target of Radical Terrorists as well. It is also a sore spot on National Security for England. The Euro Tunnel is used by many to enter the UK illegally. These are just a few of the more recent factors affecting the profitability of the Euro Tunnel.

The Euro Tunnel was not cheap to build either and it has considerable debt, which it cannot pay from profits, as there are none. The company running it fired all their board of directors for lack of performance. The current board is currently under some musical chair issues and the rental company owning those party chairs wants them back.

We are seeing worldwide issues with public transportation, which is run by private or public sectors. They are not working; rider ship is at issue with regards to the scare of International Terrorists, especially after the Madrid Train Bombing, India Train Bombing and the London Tube. Some conspiracy theorists think that it is only a matter of time before the Euro Tunnel is attacked to further tighten the screws on the European populations.

These same conspiracy theorists look at similar smaller targets in the United States such as the Baltimore Tunnel, California Bridges and Bart System, Boston Tunnel and Washington Ferries. But whether or not the conspiracy theories hold any water, it appears Al Queda is also looking at these things and taking digital pictures as well. The question is will the economics, Lawsuits, over regulation and banks shut down some of these transportation projects before the International Terrorists or Bird Flu virus predictions?

If they remain un-profitable, underwater, debt laden they will continue to be an underground bottomless pit of taxpayer resources. If the prices are raised to cover the costs the ridership drops and they lose their purported economies of scale. If they are not economically viable or if people are afraid to use them for fear of catching a disease or being in the wrong place at the wrong time during an International Terrorist attack then we have a very serious problem worldwide with out human transportation flows. Please think on this, we need some solutions. It is not working and if all those people use cars instead then we jam the highways and no trucks can deliver products.

Flexible Concrete On Ramps

Well, if we are going to re-design our highways and infrastructure so that it will last for 50-100 years and take the abuse of that level of traffic, then how can we best leverage our technologies, in materials, high-tech systems and future vehicles to insure that it all works?

A company in Portland, OR has been using various mixtures of Flexible Concrete for years and recently taking their mixture and refining it with the use of some NASA Level scientists they have made a flexible concrete, which is 500 times more resistant to cracking, 40% lighter and could help in the bumpy road issues, which destroy equipment and cause dangerous safety issues for traffic. There have been lots of roadway tests and the new flexible concrete has withstood the challenge.

The T-5 Group proposes using these space age, technologically advanced, flexible concrete mixtures for circular tight on and off ramps, which will take up the kinetic energy of large trucks and cars, which move into the corner too fast. This will lower the number of truck accidents from over turns each year and save countless car accidents and SUV rollover deaths.

As the flexible concrete takes the kinetic energy from the vehicle it will give it back at the end of the turn like riding a wave on a surfboard. As long as we design the material for a certain speed of flex, it will take away the energy as you go into the turn for safety and then give it back to you as you finish the turn saving you fuel on the acceleration into traffic.

Do you remember playing with hot wheel cars as a kid? Well how would you like to get a little energy back now that you are an adult? After all with fuel prices as high as they are it would be wise to save a little energy, save your brakes and not have to step on that gas pedal so much?

http://www.physorg.com/news3985.html

Who says roads have to be so un-flexible to our needs, we make those roads, let's make them do what we need? We have spent hundreds of Billions of dollars in Transportation Bills funding these roads let's use our best brains and technologies to make it count.

Freeway Solar Panels for lighting

In the state of New Mexico they are using freeway solar plant panels during the day to gather energy for night lighting on their freeways, which will enable a reduction in the number of deaths on the interstate in NM. This is being done to help with the alternative energy monies set aside and is one of the initiatives that the government has sponsored.

Due to new innovations in solar energy technology, which develops five times the amount of energy for half the cost of the solar panels this finally makes sense from an ROI standpoint. A few years ago the return on investment would not have been possible, but today it is.

There will be 22 modules that will hold up to four panels each which is enough to power up six to eight homes for a year and they will be a long interstate 25 and motorists can see that the state of New Mexico is indeed working on alternative energies. The panels will be 10 ft. square and are only one of a number of new projects to help diversify the energy needs of the state.

Shortly after 2010 the State of New Mexico's goal is to have over 10 percent of its energy gathered for renewable sources such as solar or win. Today, the state of New Mexico actually has a law on the books that it must provide 5 percent of its energy through alternative energy and renewable sources.

What if all states and all freeway systems and highways used this sort of lighting? Could United States of America also save 3-5% percent of its energy by 2010 in following the lead of the State of New Mexico? At the annual governors meet in Washington D.C. many of the state governors indeed had similar proposals and this is just one thing they are doing to see these goals to fruition.

Trucking and Safety

Cars and trucks do not mix

Truckers often complain about the four-wheelers. Trucking accidents were down in 2004 by the number of miles driven per accident. However the totals were slightly up as 11% more trucks are on the road because the economy picked up and more products had to be delivered to market.

This is a huge issue of cars mixing with truck traffic and it has been studied to death. Probably due to the deaths, which have resulted. I can tell you having driven some 500,000 miles around the country in a 72-Foot NASCAR style Truck and Trailer mobile command center that on the open highway that separating the speeds of cars and trucks by too much (55 and 70) that you are asking for an accident to happen.

Safety; Trucks and 4 - Wheelers in WV

Recently, when I drove through West Virginia and spent some time in the mountains traveling around to the smaller cities and meeting the very nice folks I noticed something about West Virginia and that is many West Virginians are horrible drivers when they are around trucks.

On average they make very bad decisions and you would assume that people in West Virginia who are used to dealing with heavy industries and have quite a few trucks in their state driving through and also delivering to those industries would be smarter and more careful on the small two-lane highways that meander through the state when driving around trucks.

What many drivers may not know and this really goes for any state is that trucks may weigh between 40,000 and 100,000 pounds and when you are in a big truck like that you cannot stop as fast as a car. I imagine that if West Virginians are horrible drivers around trucks they are even worse when it comes to railroad crossings. Looking at the statistics we really need a more comprehensive Public Relations Campaign to teach people about trucks.

Many states, which had problems with drivers around trucks have instituted truck safety public relations projects. West Virginia needs a better program to prevent truck accidents involving cars, which either will not get out of the way or do very stupid things and end up causing an accident, which kills them.

If we want to save lives on the West Virginia highway we really need to institute a better truck safety program. When statistics of automobile accidents involving trucks cross an artificial data point monies must be provided to educate these drivers, if not we will have more lives lost unnecessarily to auto accidents.

Why Road Rage Occurs During Hot Weather

Have you ever noticed that most road rage cases happen in the summer time when it is really hot? It is true and you can ask any highway patrol officer about this. It can be bumper-to-bumper traffic for hours, but if the weather is cool, chances of road rage cases are low that day.

Maybe this is why we call those who commit road rage as “hot heads” because they really are hot and of course their blood is boiling too. In fact one study suggests that road rage is 60% more likely as the temperatures reach 100 degrees and 80% more likely after 105 degrees.

But still you ask; Why Road Rage Occurs During Hot Weather? Well, the truth is no one is quite sure why, only that it. As we enter this hot season we will see more road rage and you can if you want to refuse to participate. How so you ask?

Well it is simple really, when you see someone flipping you off, do not make eye contact and adjust your speed to allow them to pass or go along their merry way. No need to incite the person who has just given you a hand signal as to their IQ level “1” or told you that you are “Number 1” which chances are you already know.

Think of it this way if that person is telling you that you are number one, think of him as “Number 2” and if you feel compelled flash him a peace sign so he knows he is only second best to you.

Multi-Car Pile-ups

Multi-car pile-ups happen usually due to weather or visibility, after all no one would intentionally run into another car at a high-rate of speed and certainly not entire groups of people who do not know each other yet, no one wants to meet by accident in that way. Well usually not, although road rage still exists. Now if you drive a smaller car and are hit by anything other than a bicycle you are sure to be injured in a multi-car pile-up.

The most common cause of pile-ups is fog banks at night or during the day. One notorious place for pile-ups is the San Joaquin Valley, Central Valley CA, where the Tule (TWO-LEE) Fog is.

http://www.kovr13.com/01jan01/010201b.htm

Fog would settle and buses could not get to school there would be school delays and multi-car pile-ups on I-5. Happens every year and the fog it hovers about 6-8 feet off the ground if you are in a truck sometimes you can see over it, but usually not.

Here is a description by Virtualtourist.com of Tule Fog;

Description: A Central Valley particular, this condition is fairly common from December through February, when the ground is it's coldest. It is a time of the year when the rain is at it's heaviest, and after the rain is gone, and there is all this excess humidity and moisture, combined with the cold, forms this ground fog that is so thick, it's hard to make out what's in front of you. It is responsible for freeway pile-ups on highway 5, highway 99, and parts of highway 50 and 80. It is often heaviest from evening to morning, and is especially thick just south of Sacramento, in between Sac and Stockton.

Avoid tail-gating on the freeway, and do not drive with your high beams on. If you can, avoid the roads during these conditions, but if you must drive, drive slowly, with caution, you may want to roll down the window a bit, and turn off your radio, so you have better hearing conditions. Fortunately it has a tendency to burn off by noon, and is not a nightly feature in the winter. Also, if flying into Sacramento, you may want to avoid early and late flights in the winter season, because of this weather condition.

One pile up which may have been the worst in US History was 300 cars, yep 300. Here is some good advice we have seen on driving in the fog;

http://faculty.deanza.fhda.edu/donahuemary...Reader$270

Certain areas and geographical regions tend to be fog areas, a couple of years ago in Western Maryland there was a huge pile up. In the Central Valley CA there are certain land features and temperatures, which cause this. VA, DC, CA are all bad fog areas. There are so many areas and we know where they are. There is work being done to prevent these accidents and fog technologies such as radar, lidar and sonar systems for cars are is being tested by BMW, Mercedes, Volvo, Honda, GM and Ford. Here are some ideas which came from the Tule Fog in CA;

http://www.itsa.org/ITSNEWS.NSF/0/2a68e777...ee?OpenDocument

Realize that cars do not drive by themselves but in the future smart technology and smart Freeways may provide the answer as in the latest science fiction movies. How practical and costly are these systems to the price of a car? Quite a bit, but a radar based system may provide more safety for auto drivers. We are bullish on this technology at the T-5 Group and we realize as we see more and more innovations come into the modern automobile.

Today the Road Fog is serious, but tomorrow we will have won the battle thru technology, smart sensors and the net-centric car of the future will keeping families and truck drivers safe from harm.

Reducing Auto Injuries by Half

What if we could bring down the number of 40,000 annual highway deaths in the United States? What if we could cut that number by a third in the next five years and a half in the next ten years? Would it be worth the Herculean effort required? Can we afford the increased cost of our automobiles and trucks if we did? What would it cost? With the United States Automakers reporting losses of enormous amounts, unions striking and SEC investigations could the industry, which employs millions take another obligation of this magnitude?

"The Answer is Yes, we can due to economies of scale."

What if we had better driver training and more responsibility of the drivers in their SUVs? What if the average American was in less of a hurry all the time, could we slow down the rate of deaths each month? On a given three day weekend we lose more lives to driving accidents which could have been prevented than the entire number of soldiers in the Iraq War. It is true.

What if we built into our cars and trucks better systems to keep track of the cars around us? What if our cars were communicating with smart roads? What if cars had all wheel drive or stability controls systems? What if our cars came with collision avoidance systems? What if all these technologies which currently exist now, where on every new car, without raising the price too much? How many lives would we save then? 10,000? 20,000? 30,000? If not how many?

Stop Sign Poles

The other day I was driving and I noticed that someone had candy striped a stop sign in reflective tape; boy did it stand out. In fact, I know why someone did that, as it was not a place you might expect a stop sign and probably a death had occurred there or some serious accidents. I was not from the area and I had to get on the brakes a little to make the stop due to the way the road was designed. Why do I bring this up?

Well, simple; what if we did this on all stop sign poles? Your headlights would hit them and reflect back. You would notice them sooner and there would less chance of people running the stop signs either on purpose or out of lack of attentiveness.

The cost to do this is very low and the chance to save lives and injury is very good? Did you know that most of the auto accident deaths occur at intersections? What if we tried this as a test in a couple of states and then in a year let's take a look at how many lives are saved.

This could be big. If we could cut the auto deaths by 5-10% from something so simple, what an incredible gift it would be. That would be 2,000 to 4,000 more Americans still alive and think of all the accidents and injuries it could prevent. Let's look for simple ideas to prevent auto deaths.

Truck Black Boxes and Retrieval Information

Like aircraft many newer vehicles both cars and trucks now have black boxes, which record various conditions of the vehicles, such as speed, brake application, acceleration and engine speeds. This information can be used in case of an accident or in estimating when certain parts on the car or truck may fail and thus such information is of supreme value. But what if all vehicles collected the data the same way? Many company fleets have these - save on insurance.

What if all vehicles had similar software and it did not matter if you owned a BMW, Ford or Honda; it would all be the same? Well that would sure help things wouldn't it? In fact a police officer at the scene could simply go up to the car and take a reading of what happened right before the accident you see? It would be hard to blame the truck driver then.

The data could be retrieved via USB port from each car in the accident and then put into the on-board computer in the police car, it could instantly make a computerized report saving the taxpayer the Policemen's 3 hours of paperwork at $25.00 per hour. It would also mean more time could be spent on the job rather than behind a desk or a Denny's doing paper work you see?

It would also be more accurate data than talking to many different witnesses and getting all sorts of debris in convoluted stories and half-truths. Such a synchronizing of all Automaker black boxes makes sense and is really only a tiny basic step in the next generation of net-centric automobiles and trucks. One the T-5 Group believes should be considered.

Holographic Traffic Cops?

Have you ever seen a traffic cop standing in the center of the street when the power goes out or after a big game directing traffic to keep the flow moving? Have you ever considered how dangerous this really is? Have you ever stopped to think that someone not paying attention or talking on their cell phone could at anytime mow over the traffic cop? Hey now be nice, as you probably deserved that last ticket, so don't go there. You are evil I cannot believe you just thought that?

In any case my point is with the up and coming future advances in Holographic Technologies, which are getting closer to becoming reality we may soon be able to design a Holographic Police man to stand in the intersection so you can run him over all you want - no harm, no foul.

I propose we put holographic projectors in the police cars to display the 3D or 4D in Virtual Reality, just like what Microsoft is planning with the next generation of our 360 X-Box Video Games in our living rooms. The system will run off the police cars extra alternator for juice and will not need the power grid, so if the power is out after a severe thunderstorm, Hurricane or Earthquake, the police car can drive up point it, turn it on and restore the flow of traffic without risking his life. This will insure an end to the chaos and smooth traffic flows and prevent injuries. As a taxpayer the last thing we want it to pay for medical bills from a flattened policeman, instead the policeman will stand on the corner observing traffic and doing his routine, which will be projected into the intersection.

GAO Reports and Reality

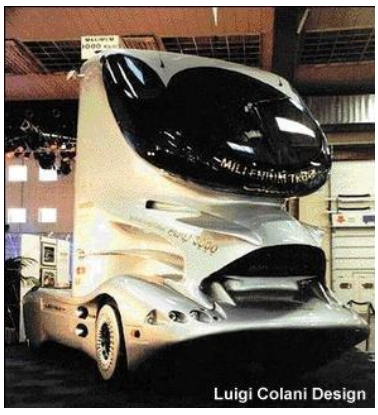
Truck accidents slightly down

So often we see misleading headlines such as; Truck Accidents Up in 2005 or some such thing. But not only are these articles misleading and the data skewed, it is borderline criminal and completely bogus information. In fact 56% of the time the car or Four-Wheeler is totally at fault, not the 18-Wheeler Professional Truck Driver.

Indeed if you read the fine print of these Department of Transportation studies you will see that 75% of the time the main reason for the accident - major cause was the cars fault and that only 25% of the time it was the trucks fault. Additionally 19% of the time the truck was somewhat at fault, meaning the commercial truck driver could have avoided the accident with better care.

Now then let us also consider that in a robust economy there are more trucks on the road than ever before and with all the windfall tax receipts from fuel the Department of Transportation is doing a lot more construction and thus that added congestion puts trucks on the road for more hours than usual.

For our media to purport that trucks are not safe is simply a falsehood. Automobile drivers need to stop being in such a hurry and drive more responsibly in the "no zone," pay more attention to their driving than all their cool new electronic toys and stop feeling so safe because they think they are in a big bad 7,000 pound SUV. Trucks often way in at over ten times that much or more, so let's get real on these negative truck articles. The media needs to come clean on these issues.



Truck Toll Ways

Toll Roads in Pennsylvania have often been blamed for the states problematic economy. It is true that when you impede traffic you slow the flows of civilization. This is similar to an over all tax on society, as everything you buy or sell comes by truck. Many Think Tanks have obviously discussed the issues with Pay Toll Highways and the North East and PA is no exception: Great to see the Express Lane for logistics but really why the toll?

Here is a thought on the matter? Nearly all of the Toll Ways in America have raised their rates in the past three years. But with high oil prices this is no time to further hammer on businesses, consumers and trucking companies. Even though everyone knows that Increases on America's Toll Ways, Always Takes its Toll on Americans, some of these increases are from stressed budgets, well at least this is the excuse from politicians who pass the buck and from bureaucrats who miss manage public funds.

Corporations are to be held to the highest of credibility and transparency, yet these agencies impede traffic and cost small businesses, citizens millions in the process. How So? Well first as cars idle to wait in line to pay toll, sometimes in large traffic jams for instance NJ turnpike to NYC, or NY to MASS Turnpike, or Oakland Bay Bridge into San Francisco. This causes excessive pollution and clogged arteries (Infrastructure Type). The health issues of pollution are well known to add costs to our health care system in the United States. Not to mention increases in lung diseases and cancer too.

The EPA does not control this pollution and instead attacks businesses to reduce. In many cities and states there are idling laws for truckers who could cause pollution such as IL, Ontario Canada, CA, MA and other places. Some say these laws are good and help curb pollution, even the DOT prohibits the idling at many rest stops, the same DOT which allows traffic to snarl up and causes pollution.

http://www.sootoday.com/content/editorial/archived_editorials.asp?EN=2248

Highway Bump Tests Needed

If you have done much traveling in the nation by truck or other such surface transportation you have no doubt driven on roads, which were in a state of disrepair. Recently the United States Congress and Senate voted on a huge bill Multi-Hundred Billion transportation spending bill, much of which is going to the repair and/or resurfacing and repaving of these roads, highways and interstates.

When retired folks buy motor homes to see America, they often put a hundred thousand of dollars into a vehicle and put hundreds of thousands of miles on that vehicle. These vehicles after traveling around our great nation are rattled apart and become as much in a state of disrepair as the New York Toll Roads which they may transverse. One member of the T-5 Group stated;

> *"It is criminal for our government to stand in front of us and purport they are managing our great infrastructure with any seriousness, while we watch our roads fall apart. It is good to see the highway bill with such huge dollars behind this promise, but is it enough? Perhaps we need to put more modern technology into our vehicles so they may travel over these roads, rather than rely on the government to properly maintain them; a task they are failing at. Even with the huge bill, can we actually trust them to get it right? One has to wonder."*

One proposal or concept was an industry self-policing policy which will reward those motor home, SUV and truck manufactures who put their vehicles thru bump tests of their vehicles; testing the suspension, interior furniture and appliances after driving over thousands of miles of bumps. In a typical motor home, things rattle lose. The outside trim needs constant scrutiny. The muffler system, tie rods, suspension, etc. all need constant pre-flight checking before the each trip; electrical wiring rubs up against body parts and often causes fire, shorts or prevents things both inside the motor home and outside in the vehicles electrical systems. Cars and Trucks all have the same issues and although more durable, still not good enough for America's deteriorating roads.

Since we cannot trust our government to maintain the roads or stop extorting money on toll ways from the citizens and trucking companies, we must look to industry to build stronger vehicles, which can run on the roads in their current state.

We test vehicles for crash tests, fuel economy; why not a bump test? Having literally destroyed two well-built motor homes, which were at the top of their category in durability, it is obvious to me that we need a better way to build motor homes and vehicles and a much better strategy to properly maintain our roads.

Electronic Highway
Interactive Safety Devices

Smart Roads and Smart Vehicles

In the future, the very near future the roads we drive on will communicate with our cars. And our cars will communicate with all the other cars on the road too (less than 10-years). Everything in our cars will communicate together in a net-centric way. These systems will make our highways safe and prevent tragic traffic accidents.

Of course there are always critics to such forward advances in technology and recently on an Online Think Tank Forum one such critic blasted a new technology innovative concept for our modern automobiles designed to save lives. This critic blasted the new concept, which would be used on bridges to alert in the case of black ice and he stated:

"Well, there you go again. Always spending the taxpayer's money on your dream and a prayer of such techno gadgets? Why should we outfit all the bridges in the country with these new fangled techno toys? Why should we give all the highway patrol new devices to correspond with these bridges in their cars? Remember the FBI gave laptops to their workforce and they lost 1500 with important data on them I am sure? We cannot trust our taxpayer's dollars to your hair-brained ideas.

I will take my safety into my own hands and pay attention when I drive; others should too. Every time we make improvements to the roadway they put up barriers and crap and it slows down my commute. If someone takes a corner too fast and crashes, good, they are no longer on the road, and this reduces idiots who cannot drive as well making them Darwin Award winners. Less dumb drivers means better safety to and fewer cars on the road, less dumb people, safer driving and more responsible humans."

It seems no matter what new innovation someone comes up with there will be critics at every turn attacking the idea or concept. We must make our roads safer and we should use technology to do it. We should make our cars safer and we must use our best technologies in that endeavor as well. The T-5 Group is undeterred by such comments and has spent considerable time coming up with solutions to challenges in our transportation infrastructure and vehicles.

Highway Safety Barriers that Call 911

The technology is now here to put Concrete Barriers on Freeways with 911 Sensor Calling to save lives. Concrete Barriers along freeways need sensors in them. When the barriers are hit the sensors relay this information to the nearest Freeway call box and indicate a strike. Then the Call Box will alert authorities and send for appropriate first responder help. We can save thousands of lives per year with these devices in place. Bridges on highways, toll ways and freeways should also have these sensors build in whenever they are built by adding the nodes or motes into the concrete before hardening. SmartRoads have come a long way and as we need to continually upgrade our road and highway infrastructures as we repair and replace.

If an Earthquake takes out a bridge it will immediately relay such information to the first responders and alert motorists with a warning light. Perhaps lower a barrier to prevent anyone from getting hurt on that structure? These devices will alert the nearest first responder dispatch unit to come and rescue the motorists which are in need of medical assistance.

Streetlights turn into Barricades

Following the tragic accident in Santa Monica, CA during a blocked off street fair in the downtown area this issue resurfaced. A concept had been discussed where street poles would shape shift and change like many of those miniature plastic robot toys. Much has thought has gone into these toys and the video games and cartoons they were modeled after. Such brainpower should not be wasted and today we see many research institutes are working on shape shifting technologies as new materials emerge.

They are applying these studies in the fields of Manufactured Memory of Materials, Shape Memory Alloy (SMA), Shape Shifting Technologies, Non-Homonymic manipulation, Self Reconfiguration Robotics, Tactile Sensors and Haptics to solve many of problems which plague mankind and providing safety and security solutions to our populations. We can prevent future problems like the runaway car and street deaths in Santa Monica. Nine people were killed and 50 were injured.

http://www.nbcsandiego.com/news/2337505/detail.html

Sensors activate and barricade streets of travel of International Terrorists or high-speed chases. These features can protect patrons of large civic events and parades. These barriers can be used in sobriety check-points and a multitude of other important endeavors from Utility repair crew safety to Earthquake debris avoidance.

Streetlights would drop down like a railroad crossing across a portion of the road. The outward branch containing the light would fold in half and the light lens would switch from bright white to yellow and flash as a warning. The folded branch holding the light would rest on the road at the fold point and the light would then be on the end near the corner of the upright and now-cross member.

In the event the light pole is near a manhole cover or near an area in which a utility company might park a man-lift truck the light pole would come down and form a barrier box around that area. Many utility workers are killed each year when their boom trucks are hit and tipped or while working in manholes on ground infrastructure. All this can be eliminated completely.

It is our contention that during road construction, repairs, accident first response, emergencies or civic events; we can provide additional safety and security with little additional expense. Cities have streetlights and since the cost to put in street lights is already a given, these cities can upgrade to shape shifting designs to solve other issues.

In addition our studies show that the additional costs associated with boom trucks to change out light bulbs and minor street light repairs can also be reduced and thus the initial capital outlay for the slightly higher costs will make up for themselves over the first four to five years of their useful life.

We have drawings, concepts and designs and are willing to share these with those entrusted to city governments, national security, highway safety, foreign construction re-building, economic development, modernizing architecture, utility infrastructure, corporate asset and facility security or US Embassy Upgrades and Fortification. The T-5 Group is ready to serve.

Sensor Trippers for Canyon Slides

Each year many motorists die on two-lane canyon roads. Many of these accidents are caused by people who are intoxicated or fatigued, some from mechanical error and some from people in a hurry who cross over the double yellow lines into oncoming traffic. A percentage of these head-on collisions from those straddling the double yellow (considered a “Malibu Felony” in their California traffic court there) or in the wrong lane come from people avoiding debris, which has fallen into the road way due to erosion, heavy storms or small avalanches from sound waves or seismic activities. Many canyon roads are prone to this type of issue due to steep cliffs above; most of these areas have signs warning motorists of the dangers. You have seen these signs; ***“Caution Falling Rocks”*** with picture of rocks falling from a cliff onto a car.

Not too reassuring to say the least, often we laugh and say; “oh great” like what am I suppose to do if a giant boulder decides to let lose? But most accidents on canyon roads do not happen from a rock actually falling on the car, that is more like lightning striking you. Most accidents occur as motorists try to avoid the debris, which has already fallen onto the roadway.

Having traveled around the nation for the last five years, I have always enjoyed the scenic highways, the ones with the dots along them in your $5.00 Wal-Mart road atlas. As a motorcycle enthusiast I have always chosen the roads less traveled and occasionally enjoy opening the throttle and enjoying the canyon turns.

We need a warning system which has sensors, similar to motion detectors when rocks have fallen onto the roadway ahead or around the next corner in those cautionary areas. One way to do this is to use motion sensors, which send out a wireless signal to small reflector repeaters around the corners to warn those approaching that in fact today there is debris on the road and you will need to watch out around the next corner.

This will give the truck drivers, passenger cars or riders time to slow down and respond. Currently there are many technologies used to alert drivers of deer crossing the road ahead or icy roadways. A diamond shape sign which is already in place to warn of a sharp corner ahead or falling rocks area can be outfitted with a blinking amber light in the event of debris on the road ahead using these wireless sensors and reflective repeaters. The costs are nominal and the rewards of saving lives are great indeed.

Bridges and Vibrational Warning Systems

About the scariest place for a motorist or truck driver to be during high winds or an Earthquake is on a bridge. In fact during the last San Francisco area quake we saw cars falling from the bridge into the San Francisco Bay, some people were quite excited to see this until they started to think; Hey those are real people, oh my God? But of course God was nowhere to be found on that day. Could man have saved those people? Indeed the T-5 Group believes that with simple warning systems the motorists on those bridges may have been saved.

Other say maybe so, maybe not, as we cannot predict Earthquakes quite yet, but we could have prevented those just coming onto the bridge that a seismic event was beginning to occur. How so you ask? Well, with warning lights, which do not run off of power, but rather the actual vibrations of the Earth, which would be immediately exacerbated as the Earthquakes very first movements begin to occur.

How could we build a warning light, which would warn of an Earthquake in progress or soon to be in progress with out using electricity? Well it is possible with vibrational energy using electromagnetic induction technologies to charge a capacitor instead of the lights working off a battery or power source. Currently there are some nifty micro-flashlights being used which you can buy which use a similar technique and are available thanks to the Everlite Flashlight technology research lab. These smaller flashlights work by shaking them for about thirty seconds and shine for about 6 minutes and they shine quite bright since they use a very bright LED light. Here is a link to this home use flashlight:

http://demo.physics.uiuc.edu/LectDemo/scripts/demo_descript.idc?DemoID=1138

We propose to slightly more sophisticated units to shine down on the cars at angles in a red color just prior to the quake and thus giving those entering the bridge time to stop and those on the bridge to put their cars on safe zone or on pieces of roadway which are directly supported by the vertical infrastructure of the bridge. Although this concept is a thought in progress, it is worthy of mention and should be studied.

Capturing Road Noise to Make Energy

Over the road trucks make noise as the tires cause friction on the roadway. Many cities have found this to be aggravating and have built huge sound walls deflecting the sound waves away from neighborhoods near such freeways, toll-ways and highways. This is one option to keep the NIMBY element happy in their perceived quality of life, as the sound waves bounce off the walls and stay out of the housing areas. Although the strategy works fairly well it is far from perfect and the noise or sound waves are a source of energy and it seems silly to waste that energy, we should be collecting it.

Some cities such as PHX, AZ are experimenting with different road way surfaces which dampen noise, they actually work real well, unfortunately other such projects with surface technology fall short and actually cause increased friction on the tires of vehicles and therefore you trade off reduced efficiency and tread life on the cars and trucks for the quiet feature. This is bad because you are using more fuel and creating more pollution increasing wear and tear on the vehicles to save noise. Then you have to ask which is more important, clean air or noise pollution.

Which the EPA is also looking into and adding to its requirements and we will soon see massive additional legislation. Cars for instance in CA new exhaust law are 95 decibels. There is no doubt that an OZZY OZBORNE will effect your hearing if you go to concerts, but freeway noise from larger vehicles such as over the road trucks is to said to be more of a nuisance for some reason. Although folks, if you go to the store and your favorite product is not on the shelf, well that too can be very aggravating and quite a nuisance, I wonder if they thought of that when adding more laws to the trucking industry?

Noise and acoustics are a science and we know how sound travels and where it is traveling too and with roads and airflows associated we do know the direction of the sound as it relates to the direction and speed of vehicles. Stealth aircraft have noise dampeners and sound rooms do too for recording Sound can also be directed as in the special microphones, which are worn by TV people that only they can hear.

Since all this technology exists, it is now possible to attain much of the sound leaving the tires of a truck. There are ways to incorporate structural integrity and support structures of the under frames of tractor-trailers and tractors to capture or dampen sound. By dampening sound from escaping and/or collecting that sound which remains we can use this sound to power up small devices, which can save lives and add to the efficiency of the vehicle. For instance, running network sensors, keeping 48 volt batteries charges to the needed levels, all of which means less horsepower is needed to run the vehicle and charge batteries. Why waste energy? No sense in allowing all that sound to escape, it is free, all that needs to happen to use it is to collect it.

Such devises can be mini-nano-tech type devises which can run small compressors which can keep tires properly inflated, temperature control mechanisms on the trailers for food safety or be used for trailer braking mechanism back-ups, etc. And once it is installed it is free energy from wasted energy. The reason this is important is that it is free and we are seeing obtrusive and costly regulations to soon be enforced by the EPA. This will do nothing more than give credence to states like CA to use it as a source of fees and fines by adding to such legislation, to prove progressiveness even though they are the most unfriendly state to trucks and rail in the nation.

Rail Cars also make noise and have the potential to run their refrigerated Box cars and other systems with this extra noise and squealing sound. It's free, it exists, the question is can we build micro devises for this? Some might say that train noise helps safety due to people knowing when a train is coming thus the reason they have outrageously loud air horns and steam engines of days past had whistles used from the generation of the steam. But the noise from the track is of value and it can be for the most part harvested in a large enough quantity to make electricity in a number of ways.

Technologies for Iced Conditions

Innovations in Auto Glass

Having the opportunity to run a franchise company in the auto sector has been quite an interesting job indeed. During my time as the CEO of The Truck Wash Guys and The Car Wash Guys we ran a small team of researchers who gathered industry information from wherever we could find it. One of the most interesting new inventions we found was in auto glass.

Let's discuss some new innovations in Auto Safety, which are currently in the news. One interesting invention we found, as we have studied Ultra-Sonic Mini-Blind Cleaning as an add-on market for our Window Washing Division was the **HUD; Heads Up Displays** which can be projected onto the windshield of a vehicle and the other interesting technology are the de-ice units using focused frequencies that break up the ice as you drive.

When ice forms on your windshield you cannot see anything and therefore you are 50 times more likely to hit something. Greatly improving your visibility during such inclement weather increases the safety factor back to an acceptable level. Now then lets discuss the issues of this newest technology, which has to do with getting rid of ice as you drive your car or truck without scraping.

We suggest that these technologies be integrated into the future SmartVehicles or SmarTruck Systems with net-centric sensors and a de-icing unit using high frequency bursts. A temperature system for controlling cabin comfort has a sensor on the windshield and then disperses the other bursts of the frequency de-ice system and depending on the frequency used to free the ice shouldn't interfere with electronics.

http://www.icesurfacedev.com/

Auto glass is one of the fastest moving areas of technologies in the auto and truck sector. There is talk of displaying information on the glass for the driver so they do not have to look down and take their eyes off the road, especially important during poor weather conditions. There are also now available a system which is a pop-up piece of glass, which will allow driver to see in fog.

There is whispering window technologies, which will send vibrations into the glass to warn you of dangers ahead. There are now devices, which will break up the ice on the window. There are defroster elements in the glass as well as radio antennas. We have double pained glass for sound, bulletproof glass for enemies and safety glass in case of accidents.

Now then with frequency power used to break up ice on windshields there comes a big advantage and this same technology can be used on tires to heat them up and remove ice. Very good and think of the tire safety on school buses and critical vehicles? Thee technologies have the potential to save many lives during significant storms or during winter days where snow and ice take visibility down to unsafe levels.

Not long ago a systems engineer for an automotive company, which specializes in Smart-Car Systems in modern automobiles and trucks tells the T-5 Group;

"Another method for de-icing could be similar to windshield washer fluid dispersion. A selector switch located in the vehicle cockpit for windshield washer fluid or de-icing fluid. The fluid could be the same that the airline industry uses - of course, environmentally safe. This would eliminate the necessity for windshield design changes and problematic electrical issues associated with high current heating."

He is also correct because it would be simple that way with less chance of Murphy-ism; hard to disagree. The high-frequency thing also has issues with the power it might use, as frequency pollution is not so good on the human bio-system, but from what the experts on this are saying, the high-frequency, would only send a couple of pulses and it is really quick unlike window washing fluid mixed with alcohol to melt ice away takes much longer.

Sometimes ice forms so quickly it can catch you off guard like a quick fog sometimes does when the out side air and cabin temperature are quite different all of a sudden of course this is also due to change in barometric pressure, but ice can also form rapidly, especially in an aircraft where the temperature changes on average of 2 degrees per thousand feet. When driving a truck these issues become much more series due to the heavy loads and longer stopping distances.

Another consideration that not a lot of folks in the industry talk about or may not be aware of is that the glass these days is quite impressive with different layers of film, self-cleaning and hydrophobic coatings. Some of the products put on windows are done at the factory level and can come off as easy as with vinegar and water, but a storm water blast, ice or even acid rain they will not (well not as easy-depends).

PPG and many other companies make titanium dioxide coatings and many window manufacturers are now making self-cleaning glass, which also holds some advantages to this market. And if the Global Warming Debate is real enough then as things get worse weather will get less predictable from past Farmer's Almanac Data and more fierce storms. The electric windows work the best in aviation, as they heat off the ice. When the liquid is shot onto the windscreen of an aircraft the slip stream of airflow sends it all the way back across the aircraft making it a problem for aircraft paints which are quite high performance, but easily damaged.

If you put a truck in a wind tunnel and cross-shot the de-ice fluid against the window and had a small flair piece on the corners of the windshields, then you could get the fluid to depart the boundary layer and slip stream of the truck, but chances are the fluid would hit some part of the truck and damage the paint.

Such a strategy might cause a small decrease in efficiency from parasite drag on the window designs, but a truck going less than 65 mph, would hardly notice since the hyperbolic curve of drag would not be top end yet. Also two NASA style air scoops could suck the fluid back into the openings and send it under the truck or in a continual loop. Still since it takes longer for fluid to get rid of the ice than frequency bursts, I guess the problem is more the sensor to anticipate the driver's needs before it is an issue and then use very little fluid so as not to be a problem.

Rather than getting too fancy as I am discussing this, as engineers we must always remember; KISS is the best method. Now then there has been issues on fighter jets where ice broke off and was sucked into the intake and then hit the fan blades and cause the engine to go out and some where the engine came apart, causing a fire and led to ejection and loss of aircraft as the pilot went for the ride of his life in the ejection seat.

So simply breaking the ice is the first issue, some believe melting the ice is better. Because when the ice loses its bond to the windshield it breaks off and thus where does it go? Who will it hurt and what will it hit? There can be damage with Antennas, back trunk lids, wings on the back trunk of cars or a problem when a large piece of ice hits a car traveling behind you.

Anyone driving a truck knows that the ice coming off on top of the trailers, often comes off in huge sheets and is quite dangerous. This is because when it starts to melt, air gets underneath and sends it flying behind the moving truck.

The Trucking Industry needs a better plan to improve visibility during such hostile weather conditions to improve safety and decrease accidents and thus the T-5 Group has been thinking here and challenges engineers in this industry sector to consider these things and solve the challenges that the drivers on the road face.

Nano Tube Winshields of the Future

Glass is a very problematic material to use in cars, mini-vans, SUVs and over the road trucks. Safety glass is a huge improvement from days gone by, but it is time that we make the next leap in glass for trucking to prevent injuries and increase safety. If you have ever been in an accident, ran up to help someone who had or seen a vehicle that had been in an accident afterwards you know the serious nature of glass and the damage it can cause to flesh and bone mortals.

Glass of course does have many good properties as well; it is transparent, hard and can be easily molded when manufactured. Of course the unfortunate properties include brittleness and jagged edges when it fails. In the future we will not have to worry about injuries caused by glass in traffic accidents, SUV rollovers, falling trees or trucking accidents. Why not you ask?

Because Carbon Nanotube sheets can be made so thin that they will be transparent and you can see through them. They will also be somewhat flexible allowing for impact without major injury. These windshields will be 50 times stronger than steel and harder than glass or iron, but they will not be brittle and will not break.

Additionally carbon nanotube windshields will be light-weight and the average car has up to 400 pounds of glass on it. For all these reasons it will be great to have these windshields and they conduct electricity too, thus frequency de-ice pulse systems can be used to increase visibility and never jeopardize the driver, truck or those around them.

Snow Winterization

When winter is in full swing there are serious issues for school buses and school bus safety. Many buses blow exhaust underneath either one or both back tires to keep warm and melt ice and snow after they stop to get traction. School Buses Must Be Prepared for Winter Driving otherwise buses get stuck in route or accidents can occur. Many times there is no sense in using buses on some days meaning if no one can get there, why have school that day at all; All the children Left Behind?

School districts are taking the threat of snow and ice seriously during winter, preparing the buses for winter driving conditions in Oregon.

http://www.koin.com/webnews/2004/20040105_buspreps.shtml

One of the most important things you can do of course is to wash these buses and to do it correctly. Many times a good pressure washing company can assist in routine maintenance cleaning of frames to make sure the road salt and such get off the buses which can cause excessive wear to things like brakes. Magnesium Chloride is a huge issue on winter roads: Each years winter will cost government agencies 2 Billion in plowing and spreading salt and chemicals on roads for safety. It will cost the environmental clean-up and corrosion damage to the trucking Industry 5 million.

What do they put on the roads?

Well here is an interesting excerpt from a Major Trucking Magazine a few years ago, worthy of interest as they discussed the various chemicals used.

Calcium Chloride - Used under 25 degrees Fahrenheit, they use it generates heat when it hits moisture and melts ice and snow, giving off a little advection fog.

Calcium Magnesium Acetate 20 degrees - Liquid deicer made of limestone and acetic, best for bridges and other areas to reduce corrosion to prevent loss of structural integrity.

Calcium Magnesium Propionate - Powder form made from farm products, cheap and only $300 per ton. Still undergoing tests due to environmental problems, which may be associated with it. Magnesium Chloride 5 degrees to negative twenty-Does not hurt concrete, 40% less chloride into environment, comes in either solid or liquid, liquid preferred.

Potassium Chloride - Used from 25 degrees to 12 degrees - similar to urea. Good deicer and fertilizer. It smells terrible later.

Sand - Has good traction; but major mess later. Environmentally okay, after all it is only sand, sand blasts trucks and screws up paint.

Sodium Chloride - 15 to negative six degrees-deices, often mixed with sand and salt applications. They call it road salt or you have heard the term rock salt. Urea is used in -25 degrees to 11 degrees- Looks like small white pellets, used usually as a mixture to save costs with other deicers. Note the freezing temperature is often a factor of altitude and wind chill.

What is the trucking Industry doing about this problem?

Manufacturers such as **Freightliner** are using robots to put on special adhesive to prevent corrosion between parts. More stainless steels are being used and other alloys with nickel content. New primers and coatings are being used available from **PPG** as well as new glass and ceramic coatings that the T-5 Group recommends that the Trucking Industry look into such as the **NASA** formula used and sold by **Adsil**.

Resins and sealers are used by some to seal components and body parts. Anti-static discharge points are put in strategic parts on trucks. **Peterbilt** Trucks come with underbody splash shields now. **Mack** has galvanized cabs and undercoating on fuel tanks.

Transport Topics in another related article in 2004 quoted fleet managers as saying increased washing frequency was by for the best preventative maintenance and was the main advice of fleet owners and managers to prevent corrosion. Many times part of the strategy of a deicer application is to allow the trucks to spread it around and mix it correctly.

So the application means just dumping it on the ground and letting the trucks mix it. And the buses and trucks are not alone in this problem, as passenger cars also take the hit. It is a huge problem for the Trucking Industry as corrosion kills the life of equipment and severely impacts the resell values of the used trucks.

Automatic Stability Control Systems for Trucks

Many current automobile models of SUVs, which maybe prone to rollover due to their top-heavy center of gravity now come with stability control systems. New laws have been passed to make these mandatory on 10-passenger or greater vans. In the future all SUVs will be required to have stability control systems. By using the most advanced of these systems, which work in conjunction with anti-lock brake systems and undercarriage suspension systems; if the vehicle starts to slide, lean or tip over on a curve or uneven pavement the system will slow one wheel or speed up another or tighten the suspension on one side.

Obviously in high-performance sports cars you would want this for excellent handling. Yet when you think of such a concept you would immediately consider it for your family's mini-van or your own SUV, as it could save your life or the lives of your loved ones. Thus you can see why such features are desired by consumers and why we are starting to see more and more of these systems as standard features rather than extra option add-ons.

Indeed the European Auto Makers enjoy the increased sales on their top of the line vehicles, but so too have American Auto Makers enjoyed knowing that consumers will pay extra for this and stability control means fewer accidents thus, decreasing their chances of class action lawsuits for finished products liability.. And we all remember the Ford Explorer rollover lawsuits and the Firestone Tire issues a few years back.

The T-5 Group proposes that we integrate Automatic Stability Control Sensor Systems for Trucks and use a net-centric approach to solving the rollover problems, as we are seeing about 4,000 to 6,000 tractor trailer rigs on their sides each year as reported by the NTSB, National Transportation Safety Board. Luckily we already see this is in the works with major truck manufacturers and this should be applauded.

Road Coatings for
Global Warming & Urban Heat

Urban heat is causing severe weather issues, as those regions with lots of concrete tend to be 5-10 degrees hotter than areas of rural areas. Thus the air flows above the city tend to become hotter, violent and more agitated causing super cells or aggravated storm clouds, as the warmer air flows towards the colder air we get intense thunder and lightning storms. Such storms cause super cells producing Tornadoes, flooding and intense Thunder and Lightening.

Whether or not you sign onto the doom and gloom of Global Warming is irrelevant to the concept of coating roads to prevent them heating up and raising ambient temperatures. Because we can measure the heat in the urban areas and those numbers do not lie - it is indeed much hotter.

By trapping the heat coming off the roads thru special ceramic or glass type coatings we will prevent these issues of heat into the atmosphere and keep the ground cool so as air flows over it, the airflows will remain unchanged by the temperature. The coating must be inexpensive as coating a city like Los Angeles; all its roads, building tops and parking lots will be no simple feat. There is over 460 square miles in the Southern California area which houses some 16 million people.

Cities where airflows move across at low levels and then into the Midwest or large flat areas are the most serious. Once the air is heat up large clouds form and blow across the plains. Large cities like Denver, San Antonio, Dallas, Oklahoma City, St. Louis, Houston, Austin, Kansas City, Atlanta, Phoenix, Las Vegas; to name just a few could significantly change the ever increasing intensity of these summer storms.

> *"Whichever coating is determined to be the most suited must not come apart and if it does must remain inert in the environment without hurting the eco-system."*

The coating must be freeze resistant to improve automobile safety and also reduce noise from automobiles and trucks, while also absorbing the heat of the sun during high temperature days and solar flares. If we can do this, we can significantly reduce our drastic weather. The money we save from preventing flooding and crop failures will more than pay for the cost to coat our concrete civilization. Perhaps there are options with new Graphene, Carbon Nano-Tubes or ceramic coatings that we should look into. Helping the weather means a much safer Trucking Industry, which equates to better efficiency and higher profits.

Truck Parking and Hours of Service Debates

Many folks are concerned that truck drivers spend too many hours straight driving across the country and that in doing so jeopardize the public safety on our Nation's highways. Indeed there have been some accidents however much of the concern is completely overblown. The United States Navy has done lots of tests on sleep deprivation, concentration levels and mistakes from fatigue and the studies show that there are issues and they are real. Still we note at the T-5 Group that much of this Hours of Service debate is mass media incited hysteria wagging the dog.

One medical doctor from the Online Think Tank, Dr. Nathalie Fiset understands the reality of the problem and there for asks the tough question from a reality perspective and purely medical;

> "A major question is security: truckers drive for long hours and fall asleep or have preventable accidents. How can this be avoided in the future trucking?"

Re; Falling Asleep at the wheel - There are devices available, which sense the driver's head nodding off that are now coming onto the market. And the T-5 Group believes if these units can be incorporated into the truck itself or the seat belt system and at a relatively inexpensive price point then the chances of their widespread use will be good.

Other new rulings and regulations seem to address these real problems from a different tactic and that is that the regulators want to do away with paper log books and go all digital, using transponders and electronic updated computer systems to track the trucks. Therefore preventing Long-Haul Truckers using dual log book strategies to by-pass the rules.

The newer electronic log books, which are hooked into dispatchers and some government state agencies at the weigh scales would end the "Hours of Service Debates" of course the law of unintended consequences also comes into play. Not enough rest stops for all the trucks on the road. If there is no place to park, all the truck stops are full and no spaces at the rest stops, the driver really has no choice but to keep on going.

Another serious issue is with the rules of "No Engine Running" all-night in areas that are bitterly cold or outrageously hot. The heaters or air-conditioning units need energy to run, so the driver feels the best way to handle this is to keep on going; if he stops he could freeze to death or have a heat stroke.

Limiting Hours of Service gives an advantage to the Unionized Trucking companies, as it curtails long-haul independents and their ability to make tracks and run long hours. Of course the more the regulations squeeze the little guy the more the independent feels compelled to push the envelope on safety. The T-5 Group's primary goal in introducing technology to the Industry in this book is safety and efficiency, not the sacrificing of one for the other, rather to achieve both.

"No one should have to die to deliver freight and our
Nation's Highways should not be considered a war zone!

Currently there are several new technologies, which might solve this problem for a low-cost. Which one will emerge in the market to be the dominant player is not yet known. It will be important for which ever technology is adopted by the Trucking Industry that there is some standardization and that the best technology wins. This driver fatigue system could easily be a multi-Billion Dollar Industry considering the number of cars and Trucks on the road. Perhaps big enough for the Carlisle Group or TRW, if we look at the "airbag" innovation it makes sense.

One interesting invention that the T-5 Group ran across to solve this problem was a simple device that the Driver could wear. The question is would he or she actually wear it? If the driver starts to tilt their head the buzzer goes off and wakes them up. Not a bad solution, yet it might give the person a heart attack when it does go off. These devices are not on the market as of yet, but probably will be soon. It is a relatively low tech solution to a very serious problem;

The Welkin Nap-Zapper or Self-Defense Unti-Drowsy Alarm perhaps could save lives and be sold at truck stops like Pilot, Flying J, Petro and TA. Although the T-5 Group does not specifically endorse products, it appears these little units might be worthy of mention until better technology can be integrated into the Future Trucks. Below are some additional links discovered in our research that maybe of interest as well;

- http://www.sciencedaily.com/releases/1999/07/990727072510.htm
- http://www.edmunds.com/ownership/safety/articles/100176/article.html
- http://www.abc.net.au/science/news/stories/s307679.htm
- http://www.bittware.com/products/services/success/assistware.cfm

The real answer of course is not to get behind the wheel if you are tired, fatigued or drowsy, as this puts yourself and everyone around you in unnecessary jeopardy. A more comprehensive plan needs to be in place rather than incessant band-aids of this real challenge. We need more truck highway adjacent or rest stop parking in the United States and Canada. Until that happens we will continue to see unfortunate accidents, which drive up insurance costs in the industry and kill motorists and our drivers.

Rail VS. Trucking

Let's face it high diesel prices take a toll on our economy and when this occurs there is a significant maneuvering of distribution assets to maintain efficiencies. As fuel prices increase we watch large companies like FedEx and other trucking companies increase to make up for this.

With Diesel up we can see more “piggy back” (truck trailers on top of flat or tub rail cars) to lower costs of over the road trucks. Additionally with a shortage of drivers more rail seems to be a smart play for some large carriers. The dynamics of the transportation mix is an ebb and flow constantly jockeying for additional percentages one way or the other. I think you will find all this fascinating. The flow of Fuel is a big consideration in Rail Efficiencies;

As oil prices hit $70 plus dollars per barrel we will saw a larger shift towards rail transportation, yet in many areas there is a back load and max’ed out schedule and thus we cannot take as much by rail as we would like. This means each item shipped will be at a higher price.

Higher prices will indeed also slow demand for products and thus less products will be produced to fulfill less demand and therefore fewer products will need to get to their final destination, causing truck load tonnage rates to fall. But as far as transportation goes, the most efficient method will prevail and it looks to be as if rail transportation is proving itself as a worthy competitor on price to the Trucking industry.

In 2005 we saw new innovations in railroad robotics. We saw disputes erupt with Rail Road Unions over locomotives, which do not need conductors. We have seen telematic type information and communication, which flows between over the road trucks.

The dispatchers run the trains via satellite and net-centric control switch systems. We have seen new mechanisms that dispatchers can use to track shipments within meters of their location, even completely shut down trains if they are hijacked. The rail road is looking for increased efficiency.

Some day the T-5 Group believes that over-the-road trucks will drive themselves following smart highways from Point-to-point, but don't worry that is more than a decade away. Of course the military is doing this now so once perfected the transfer technologies will be no less than 5 to 10 years out.

Luckily the Trucking Industry and the Railroad often work together seamlessly to help the logistical flow of transportation and distribution in the nation. Even if there is also a somewhat cutthroat rivalry at times, as each industry works to refine its efficiencies, some times competing and other times working together in a symbiotic way to achieve their mutual goals.

The Rail Road obviously has a huge advantage for cross country shipping of freight or from ports to major distribution centers, nevertheless they will always need trucks to take it that last mile. Thus the more the railroads ship the more product must make that final leg of its journey by truck. As the railroads hit full capacity that extra capacity will always deliver robust quarterly profits to the trucking industry.

Logistic Strategies to Handle Traffic

JIT Just in Time

Just in Time Distribution was a buzzword to solve the world's transportation and distribution problems and let's look at how it is working now? In theory it makes sense to have Just in Time and with Fed Ex and other super streamlined systems it works fairly well when everything is working. Currently those companies who wish to guarantee next day service simply put their manufacturing facilities next to a Fed Ex regional hub or in Memphis itself or perhaps at one of UPS many mini-hubs or in Louisville, KY.

But wait what happens when there are severe weather issues and you need your part yesterday and the flights cannot be made and your P1 (priority 1 freight) ends up on a P2 or P3 timetable? So much for ***The World on Time*** and this just-in-time theory of the world. Of course you are saying that is not the norm, usually things can be there the next day.

Yes, usually and yet as many companies attempted to streamline their distribution systems, inventory warehouses and cut costs, there were fewer centers in which to send the stuff from. Yes, the computer shows a part on the computer in Milwaukee, WI and one in Orlando, FL. But they are having celebration riots in Miami due to the death of Castro and they are iced in Wisconsin. Meanwhile you need the part in San Antonio, but there is a Hurricane coming ashore in Galveston again and the roads are jammed as people leave Houston for any destination other than. And before you say this is far-fetched; ***Welcome to The World of Logistics!***

Meanwhile once the traffic and crowds are gone, they learn that in Miami distribution center that the RFID tag reader made a mistake it is not there. So you wait for the ice to clear from Milwaukee and it will be on the plane Friday on its way. Oh, but the place is closed on Saturday and you wait, as they promise they can install it on Monday. Monday comes and it is the wrong part. But the good news is we found the part we need in Los Angeles and one in Tokyo too? Piece of cake; Tuesday rolls past and it is Wednesday and they are busy, but can get you out first thing on Thursday.

On Thursday the part is in, but then they discover another problem and order that part by 4 PM and it will be shipped out from Raleigh Durham NC. Everything works great with the Just in Time theory this time and you have your part by Friday and they actually almost finished fixing it all by Friday night, not quite you can have your New Rig back on Monday. Moral of the story; Just in Time may not all it is cracked up to be in the real world. Does the story sound familiar?

The T-5 Group is here to lambaste JIT Theory or the intense service providers who work each day to make it happen and study the computer models to make sure it does so in the most efficient way. After all logistics never have been easy, it has always been a little chaotic. Systematizing and streamlining for efficiency is a noble endeavor, but no matter what the mission must be accomplished; ***failure is not an option*** and there is still more work to be done.

Chapter III

Defending Our Nation

Do you ever wonder why the International Terrorists attack transportation assets? What is their weird affixation with stuff the moves? Do they believe that a moving target is harder to hit and need a challenge to augment their Radical bizarre occult-ish fantasies to explode into a million organic pieces, while murdering innocent people? Do they feel that somehow they will get on TV easier if they get a bus or train or something that flies around?

We all know that the flow of transportation is a key to civilization and it would appear the disruption of such is indeed a way of getting back at the system or attacking the differences in culture, it is as if a symbol. But in the United States it is not that easy, we have such a mobile society, disruptions are temporary and immediately re-routed you see?

If one wished to hurt a society or civilization, then attacking the system of transportation is a two-birds for one stone move. But they forget we have so many forms of transportation. One has to ask why they do not attack our information flows, as an attack in the flow of information or money would be the same. But again, as if inline with the thinking of Arthur C. Clark we have more than triple redundancy there as well; Internet, TV, Radio, newspapers, telephones?

The International Terrorists would have a tough time indeed, trying to disrupt all those communication lines? Now we have almost defeated the International Terrorists and there is little they can do to disrupt our way of life, well unless we allow them to by way of Fear Factor to change it. Of course that scenario would be as much our own fault as their criminal activity.

Indeed their attempts to overcome us have not worked very well. Their plan was flawed, had they wanted to win they would have had to take a more developed plan within a longer time frame, as in subsequent generations and gradual step up changes over many years; for instance a multi-generational long-term approach.

The International Terrorist made a mistake in cutting off peoples heads and attacking the London Tube and that has been a turning point in World Public Opinion, the International Terrorists are now alone and will die broke. If you look at the created reality of the over all situation has changed by this act in London. And the news is playing it completely different than those who perpetrated the act expected. Things are being mixed up a little and there is a lack of unity in the ranks it appears of the International Terrorists.

For now, yes we must protect our ***Transportation Assets***, but we have almost completely beaten the International Terrorists now. To do this we must be vigilant, strategic and use all the technology and talent to protect the industry from being attacked or used as a weapon; but what more can we do? The T-5 Group came up with a few interesting concepts.

XM Radio Needs Roadway
Tunnel Satellite Service Relays

Recently I drove thru the Boston Tunnel after traveling up the East Coast. I noticed after going thru several tunnels along the way that the XM Radio cut out. Of course I was not surprised as it is hard to get a signal while underground from a satellite. Yet each time I entered a tunnel, I happened to be listening to a really great song on the **80's on 8 Station**. The Baltimore Tunnel was not an issue, there was no traffic and I sailed thru; no big deal. In New York the tunnel took a little while to travel thru due to the traffic, but still a few extra minutes and then the radio was as good as gold again.

The real issue was in Boston and the traffic was fierce. I spent nearly 20 minutes in the Big Dig, without the radio and had my CD collection in the back and could not get up to get it. This led me to believe there must be a better way. XM Radio has a slight time delay so you can go under highway over passes without cutting into your music or news on any of the over 200 channels for about 5-10 seconds until it is gone. However, when going thru long tunnels or in canyons you often miss the signal, as you do not have a direct line of sight to the satellite.

XM Radio ought to make a deal with the government agencies, which operate these tunnels to put relays on the entrances to make sure the signals are available inside the tunnels, to keep people happy and prevent road rage. If you consider the onerous behavior of some of these Bostonians here, you would surely agree.

Nowhere in the country are the drivers as discourteous as in Boston, Mass. No wonder they parked the car in Harvard yard. I got flipped off by a guy out his sunroof, who honked his horn with his elbow while talking on his car phone. Obviously this gentleman was having a bad hair day and also was a little perturbed that his XM Radio was not working either?

Having the relay makes sense, but also having a system which pops into the those frequencies from the government agency discussing possible issues with International Terrorists or what each driver should be looking out for might be an excellent idea.

Nationwide Truck Transponders

It would be nice for the Department of Transportation, Large Trucking Companies, and infrastructure planners to have more data on the flow of transportation in this great nation. We need a Nationwide Truck Traffic Transponder Satellite System, which would track every over-the-road truck and we need to model this super system after the current FAA air traffic control system. The benefits to such a system will be immense and also prevent traffic congestion thru GPS re-routing and warning of traffic bottlenecks. We can carefully determine those areas which need road or highway modification to take the extra number of truck.

Of course the T-5 Group understands the reluctance of the trucking industry to wish to adopt, condone or support such an initiative, due to costs of equipment and the "Big Brother" syndrome and yet these systems could had huge benefits in efficiencies to the industry and help carriers increase profits. Since everything we buy was brought in part or at least some of the way by truck. Everything you see which was built; every building, block wall, and concrete parking lot and all the materials used came by truck too. The flow of transportation in the United States is one of our greatest assets indeed and the more we know about it the more value it brings.

By carefully looking at the over all pictures and the flows of transportation using such a system we can prevent stolen trucks, International Terrorism using trucks as a weapon and streamline this important flow of our civilization with the data collected. This means more efficiency, better highway planning and smoother traffic flows.

American Trucking Association Mobile Watch

The American Trucking Association has been instrumental in organization the Trucking Industry and setting up the Highway Watch. It is incredible and absolutely amazing the level of patriotism in the Trucking Industry and the T-5 Group immediately recognized this fact and wishes to go on record and applaud these efforts. Indeed, as we look at history we see that Highway Watch Programs work adding the much needed eyes and ears on our Nation's roadways to stop a catastrophe. If you will recall it was Truck Drivers who were vigilant one night and caught the DC Shooters at a Rest Stop. Learn more about this great program:

http://www.highwaywatch.com/

It is the contention of the T-5 Group that all trucking companies and Independent Drivers get hooked into the program and that they become aware of what to look out for, whether local or during intrastate hauls. This boosts the nation's strength and security and betters our chances of preventing a major event in our country.

Local delivery companies should also consider this or perhaps present a local Neighborhood Mobile Watch Program to their own city leaders, chamber of commerce or Police Departments. It makes perfect sense and it adds credibility to your company as well. It does not take much to set up a local Business Watch Program and the driver's will feel proud to be part of the solution in protecting the city.

Public Relations for Transportation Companies

What types of things can a **Transportation Company** do to promote goodwill in the communities and cities that they serve? It seems everyone is always complaining about traffic, cost of fuel and pollution from vehicles and therefore is it hard for a transportation company to maintain a strong image and maintain their positive perception.

I propose that Transportation companies participate in Neighborhood Mobile Watch Programs, because they seem to be perfectly suited for it. How so you ask? Well consider the business model if you will for a second or two;

http://www.lancewinslow.org/nmwp.shtml

Satellite Shut off Systems Stopping a Truck Bomb

Recently the American Trucking Association working with the Department of Homeland Security and some rather brilliant folks in the high-tech satellite field came up with a system where a GPS tracking unit which already tracks the trucks would also have a relay system to the dispatch office of fuel tanker trucks or hazardous materials trucks. This relay system would enable the dispatcher to have a quick ignition switch satellite truck shut-off technology to immediately disable a hijacked truck to prevent International Terrorists from trying to attack a building or important infrastructure using the truck as a weapon.

A brilliant concept no doubt and hats off to the engineers, American Trucking Association and the Department of Homeland Security for facilitating the incorporation of such technology to protect the American People from International Terrorism within our borders. The T-5 Group believes these technologies offer an increased level of safety to our Nation and believe this is a very smart move.

When we consider the satellite systems now like the Onstar System by General Motors, which can unlock your car from a satellite or even alert authorities and first responders if your airbag is deployed it seems that perhaps this simple system of the quick ignition switch satellite shut off could be used for other purposes as well.

For instance if your Truck is stolen and reported the Truck is simply disabled and the horn honks and the lights flash until someone reports the Truck or until authorities reach the Truck, while the hoodlums run away for fear of being arrested?

Trucking Industry One - Thieves and Terrorists Zero!

OnStar Bus Shut Off

General Motors is one of the major bus frame chassis makers, these frames are then sold to OEM bus manufacturers or build by a division of General Motors. Since GM systems are generally interchangeable and since GM Hughes still has ties and supplies the communication to many GM in-car navigation systems like the award winning OnStar System, why not put these in all buses, but with a few extra features?

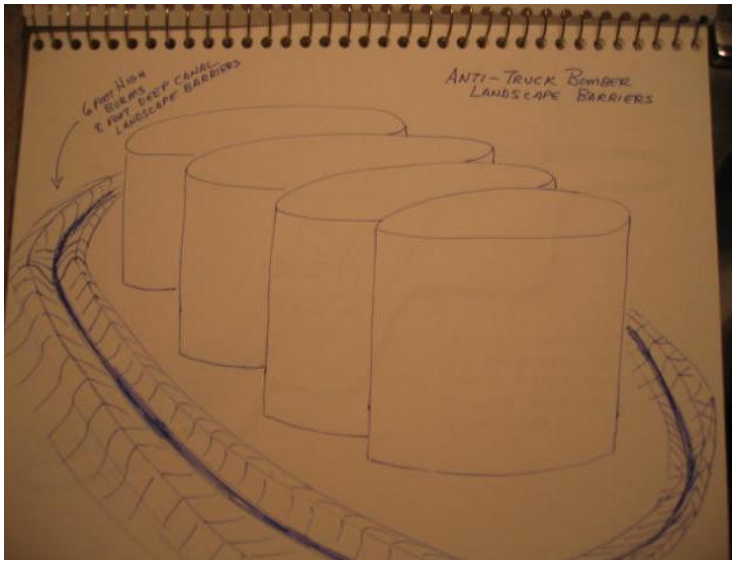
For instance I propose a feature, which would improve fuel efficiency, by communicating with the Satellite, which would have all the GIS elevation data of the roads and the GPS positioning system of where the bus was. If the bus came to a hill it would be able to use the same type of device, which opens your door to allow more fuel to the engine. If going down a hill then less. But why you ask? Well you should not have to ask if you are paying $80.00 to fill up your car. The School Districts are awfully burdened by the costs of diesel fuel at $3.19 national average per gallon. This cost affects education budgets.

With GIS information and data sets figured into the GPS Navigational system it would be easy to do this. The XML database sets can be integrated that is not a problem. Then the Onstar could tell the navigational system that the elevation is changing for a hill. The engine would change for fuel setting for a lower gear or passing gear as the driver hit was one-third up the hill.

The GIS-GPS system would tell satellite where it was and the satellite would tell the car that you were at higher altitude and to lean out the mixture of gas and air. This would be a fuel-efficient way to increase fuel mileage and performance and it is not only a smart idea, but also easy to engineer.

Additionally I would request that a Bus Shut off be installed too, which would turn off the EGT allowing no fuel to flow and the bus would shut down in the case of a bus hijacker or International Terrorist which might take control of the bus. All these systems are future technologies that Truck Manufacturers and their OEM suppliers should be considering on the road to the future.

Preventing Chlorine Truck Bomb Attacks



The Department of Homeland Security has done a very excellent job of spotting potential International Terrorist Plots after 9-11 and in doing so worked hard to prevent such targets from being exploited. Our Online Think Tank after 9-11 also has been thinking on this and we identified 20 worst case scenarios and then following the lead of DHS, figured out ways to shore up such risks. The T-5 Group which specializes in Future Truck Technologies was assigned one of these worse case scenarios to consider. Below is worst case scenario number 11;

> "International Terrorists attack and hit that Hyperion Sewer Treatment by LAX in Southern CA. If they attack it by truck and drive a truck bomb into the giant Chlorine Tanks, the on shore breeze of 15 knots would send a Chorine tank into the city killing 100,000 to 500,000 people within a few hours and shut down the airport and freeway and if they did this just prior to rush hour, by the time the gas cloud reached inland there would be grid lock."

We considered how would they go about this? Well we considered the need for assistance from the inside. Thus the attack would be easy for an employee of Hyperion once he made it through the gate he is home free to drive into the Chlorine tanks. The plant would be shut down immediately and everyone would evacuate with masks, but once the chlorine gas got out, it is too late for the surrounding populations.

This is only one of many of such plants, which are upwind from larger cities, generally they are located near water at the lower end of cities using gravity from the slope to move the waste water to the plant. Anywhere there is an onshore breeze where the treated water is sent to the ocean could in fact be a potential International Terrorist target.

We must also remember they understand the value of these plants and how they work because they do not have enough of them in their countries and thus they know the value to our population, whereas our population or a domestic terrorist would never think of this because they take them for granted. And generally the smell of them keeps most people wanting to stay away.

Our Think Tank recommended extensive background checks of every worker at any type III sewer treatment plants. We also recommended that these facilities work with the city to develop a volunteer local watch patrol:

http://www.lancewinslow.org/ntw.shtml

Additionally we recommended more video surveillance and review of emergency training for shut down. Further we suggest landscape changes to include burms and ditches so no truck could get through to the tanks. Today thanks to the DHS most all of our plants have implemented many of these safety precautions and thus I say to you that just because you do not see the DHS at work, does not mean we are not being protected behind the scenes.

Hazardous Materials CDLs

Automatic Shut Off Systems for trucks will help protect the American People from someone using a Hazardous Materials Truckload as a weapon and we discussed the great technology to prevent such an attack, which shuts off the truck. Read this Press Release article: ***"Satellite Security Systems Demonstration Successfully Shut Down of Tanker Truck from Above."***

> "In November a company named; Satellite Security Systems (S3), which is a well known global provider of asset security and logistics control was able to take technology ideas and innovation and put it into action. This was done the California Highway Patrol (CHP) and InterState Oil Company in the demo. It was done completely by wireless remote shutdown mechanisms in the truck.
>
> The truck was a fully loaded moving petrochemical tanker truck. All this was done from S3's headquarters in San Diego - 530 miles from the demonstration site - satellite communications were used to disable the truck in seconds, proving S3's GlobalGuard and FleetGuard a viable solution to the challenge of controlling rogue hazardous waste vehicles that could pose a threat to homeland security.
>
> The event conducted on CHP Academy grounds in Sacramento and administered by the CHP, addresses ongoing concerns about the affordability of effective security technology, stealthiness of such a security device, and how GPS monitoring can be incorporated safely into law enforcement protocol.

> The communications backbone for the GlobalGuard system is the Motorola ReFLEX satellite communications system. The ReFLEX system is a secure, two-way messaging infrastructure that stretches across North America (US, Canada, and Mexico) and is also available throughout Europe and Asia. Compared with competing data networks, ReFLEX's capabilities provide a wide range of crucial technical and economic advantages. S3 adds the government's GPS data to keep decision makers fully aware of operational circumstances. Lastly, a 24-hour, seven-day-a-week Monitoring and Support Center (MSC) is staffed with trained professionals to respond immediately to emergency situations.
>
> Satellite Security Systems' GlobalGuard technology secures, tracks, and controls assets throughout the US, Mexico, and Canada for clients including military, government, police, and the consumer market. With GlobalGuard, users can communicate with, monitor, track, analyze and control the movement of virtually any object in transit. The integration of Motorola's two-way satellite communications, on-board CPU and an integrated Global Positioning System (GPS) make it possible for GlobalGuard users to send data back and forth from a central command unit or monitoring center while being continually alerted to new or dynamic changes." (source: Satellite Security Systems).

By using this technology a satellite could systematically shut down possible targets within the realm of possible paths at power plants, bridges, dams, airports, fuel depots, train tracks, power lines and water supply. There could be roadway cement barricades rise up to block attackers, trains stopped and relays of information to first responders and military. All Net-Centric. Every thing automated and information instantaneous. Is this possible? It appears that it maybe soon. Satellites play a huge part in our future National Security.

The answer to International Terrorism is alertness (staying heads-up), preparedness, technology and will. Of course we must also consider the importance of "Knowing the Drivers" and make sure that HazMat Drivers are Patriotic Americans and not International Terrorist infiltrators. One huge problem with the extensive background checks is that the backlog gets to be so long.

Without solving the backlog or bureaucracy issues the Trucking Industry suffers because it cannot get the drivers it needs to drive the hazardous material, which must get to its destination some how and it is not going to get there by magic without a driver for at least another decade. Biometric ID Cards make the most sense for HazMat Truck CDLs and those are forthcoming, but they just cannot get here soon enough.

Truck Scales, Border Checks and Sensors

Thanks to all the research work in modern sensor technology our borders and checkpoints are becoming much more efficient and good at catching illegal drugs, arms and human smugglers. One T-5 Group member lays it out in a quick statement;

> *"The rapidly advancing fields of Artificial Intelligent Recognition Software are also helping. Combinations of sensors, Bio-Identifiers, Frequency Technologies and human observation ought to help catch most of the bad guys. But most is not good enough and thus vigilance and perseverance in technology is vital to the safety of our Nation."*

It appears that our we have found many identifiers for Bio-Metrics to identify people. In this new age of International Terrorism with bad guys trying to get Pilot's Licenses, HazMat Driver's Licenses, get onto airlines, step onto buses and sneak over our borders we need a fool proof system. Currently we use fingerprints to identify criminals and those who hold various important positions. Some of the newest forms of security include retina scans, voice prints, palms, DNA, Implanted RFID Chips, etc.

We have devices, which can see thru trucks, pick up the scent of bio-weapons and use heat sensors or infrared to pick-up illegal human trafficking inside vehicles. We need sensors to pick up human intent. Lying devices tell us when someone is exuding thru facial sweat glands, but what about a person who is not close to the device? Inside a vehicle, in a crowd or approaching a sensitive check point. Advanced warning could be the difference between life and death.

For security of military positions we use radars, sonar, heat signatures to identify people. Body heat combined with night vision is nearly impossible to fool as helicopter mounted devices can see thru fences to catch escaping criminals. Special Forces also use such devices to detect and eliminate threats. Research now is being done to detect people by odor; the Vietcong often could detect Americans because their sweat glands exuded a different scent which gave them away. Most of the successful LRRPs were careful to eat the native foods to not give themselves away.

http://www.lcompanyranger.com/

The human plume of odor is highly detectable and we are figuring out ways to use this to identify approaching human threat.

One way that is not talked about enough is the electromagnetic signatures given off by people. Every human body has a set of biorhythms. The nerves use electrical signaling, the pulse and heart rate are also very significant and unique to human beings. Even the brain waves are detectable thru the waves. It appears that animals can sense these as human approach them. We are now able to build devices, which can detect minute changes in brain waves from afar. Such detection could help us identify someone in a crowd with evil thoughts.

Perhaps the person releases chemicals causing brain waves that trigger thoughts prior to violent behavior and this could be picked up by a sensor and put in a call to action to prevent a flare up of violence. Guards could be alerted that intruders are approaching and have high heart rates and negative intentions. They say that the seasoned veterans of war and those of the soldier of fortune mindset have a sixth sense about this. Do they? Or are they in tune to slightest anomalies in approaching brain waves? Well? There are enough real world war stories that imply that there has to be more to this.

The brain waves of humans work at frequencies of 20 Hz and higher during an agitated and hyper state of potential combat. Those who are approaching a facility will be at such a state and their bio-systems and bio-rhythms will give them away. For instance during the 9-11 incident in the parking structure one of the International Terrorists was so hyper sensitive and stressed that he cussed out and yelled at someone in the parking lot who was about to take the parking spot he wanted.

It is quite evident that such a stress on the bio-system probably went with himself and the team all the way thru the airport, onto the plane, in the flight and right into the World Trade Towers. If someone had such a state of mind, hyper bio-rhythms, they would be flagged to be further scrutinized, perhaps there is another explanation? Perhaps there is not? Such a system might have stopped the 9-11 hijackers? Do we dare consider such a system?

Could Bus Stops have such sensors within their design to alert the driver to bypass the stop and not pick up the passengers that time around? In Israel it would be a good idea and prevent radical suicide attacks. In the US it might prevent problems on our buses as well. In the case of a roadside check point the car might be flagged as it approached the crossing point to a separate and more secure area for a further look with a greater degree of caution? Could such devices help at our Mexican and Canadian Borders as well? Surely it could.

The T-5 Group believes further research in the stressful displacement in the bio-rhythms of criminals, International Terrorists, Drug Runners, Coyotes, Smugglers, insurgents and attackers could be reduced significantly using such methodology.

The device would focus energy waves at a device across the road or hallway of an airport. Any waves near the spectrums of bio-rhythms of the human body's bio-system would be recorded by their amount of disruption of the traveling wave. Waves such as personal cell phones, computer PDAs, Heart Pace Makers, car stereos, automobile radar detectors, spark plug resonance, friction sound waves from squeaky brakes would not be anywhere near the bio-rhythm waves and would be deleted from the signature of the approaching car or airline patron approaching the metal detector machine.

I propose a study of 1000 people of different ethnic persuasions to test and to put these test subjects through various stressful situations and record their biorhythm disruptions on a beam of energy. In our study we will also allow for disruptions of various hand held devices such as MP3 Players, Sony Walkmans, radios, pace makers, etc. to see if we can accurately discern the emotional displacement of the individual human at the crossing point through large databases of possible combinations within the realms of potential non-threatening biorhythms. Eventually we will prove we can preempt an attack and pull out a large percentage of potential culprits in advance of a horrific event.

Placement of Video Face Recognition Cameras

It is a known fact that advertising is made to attract our eyes. Marketers work very hard to plant visual memories in your mind. They use anomaly phrases, rhetorical questions, sexy images and ironic text. There are many reasons why this is done but the biggest reason is that it works. Our eyes are often caught and our brains captured for a moment while we digest the advertisement.

Since the advertising world has done such a good job in making us look and think; there is a slight hesitation in our gaze and direction of sight, while our mind imprints the image, logo or slogan. This of course is the world's best time to snap a shot or grab an image of a human on a surveillance camera. The T-5 Group believes that we should use such strategies in conjunction with the best technologies in face recognition artificial intelligence software at our borders and check-points.

One of the best methods of insuring that images are captured is to place them behind power advertising promotional signs. So often, surveillance cameras are put up on corners of buildings or on ceilings. We saw after the London Transit Bombings images of perpetrators used by police investigators to track down the other links of suspects and perhaps even prevent future attacks.

As we study the human eye gaze innate characteristics and the time of visual recognition we see that some images take the mind-eye visual registration a second extra. This is enough time to catch a really good image of each passer by for use in face recognition software to use for searching databases of "Watch List" humans who are most apt to be problematic to our civilization.

Often if a person of ill intentions is casing a location, doing a dry run or preparing for an evil act, they will avoid cameras when they see them. One concept is to put up cameras in plain view, which are dummy cameras or decoy cameras. When someone attempts to avoid them they will look away causing an anomaly or someone who has something to hide. Then as they look away we would be wise to hide a hidden camera in a somewhat shocking advertisement, behind a glass or plastic encased advertisement. As the person looks away he or she is hooked on for a second longer on the image. Bingo, we got the image even if they attempted to avoid every camera in the first place. This would work in Stadiums, Shopping Malls, Board Walks and Airports.

Suitcase Nukes Dirty Bombs and Porous Borders

So far we has seen one huge International Terrorist Attack of 9-11 and several secondary large attacks such as the Madrid Bombing, Bali Explosion, Philippines Ferry Sinking and the London Transit Attack. We have not seen a biological attack, yet we know the International Terrorists are thinking here as we recently linked one of the helpers of the London Train and Bus attack to a Egyptian gentleman with a PhD in Chemistry.

We also have intelligence that there are plans to attack chemical plants in the United States, which seems fairly legitimate seeing as many Oil and Gas assets such as pipelines and refineries have been previously hit around the world.

Additionally these industries including the transportation of such are closely linked; Oil Refineries and Chemical Plants go hand in hand with the Trucking Industry. We have seen International Terrorists use backpacks in their crimes against the innocent and have video footage prior to their acts carrying such bags. We also have reports of Chechnyans coming over our Southern borders carrying backpacks.

We know that the Mexican Mafia along with drug runners and former Mexican Intelligence officials have been caught in the act working together. We have also caught our own including police, border patrol, checkpoint personal and national guardsmen on our own team accepting bribes to allow shipments over our borders. MS-13 a gang has declared war on the volunteer vigilantes such as the "Minutemen" and the "Yuma Patriots" meaning using real bullets to kill them. Have we have lost control of our borders, not entirely, as virtual fences will soon be in place and new Bio-Metric Identification going in at the boarder crossings.

Still the number of possibilities of threat to our Nation are extensive, as International Terrorists are said to plan to take down more airliners, attack our food supply and deliver a virus laced small pox that will kill millions. Meanwhile dirty bombs, suitcase nukes and Electronic Pulse Weapons are to become the future tactics of our enemy. Is that all? No, not hardly, but the point being we need to protect the borders and technology is the answer.

US Port Security and Truck Cargo Trailers

The Department of Homeland security is concerned with detecting weapons of mass destruction, nuclear radiation and other such things, which may end up in shipping containers or in trucks inside the continental United States. Indeed I guess every American is concerned about this too. Most Homeland security experts and consultants agree it is impossible to check every single cargo container coming into the United States or every single truck, which drives up on the road. That is to say open it up and look inside, yet there seems to be some consensus out there that we can use high-tech sensors to collect the information we need and pick out WMD brought inside a Cargo Container.

Thus we must rely on high-tech sensors, organic dog sniffers and electronic equipment, which allows us to look inside the containers as they drive by. I propose yet another idea; I propose using nano sensors which can work in a net centric fashion and communicate with each other and turn color if they encounter radiation or any number of contaminants, which would be considered weapons of mass destruction that might be inside the container.

Further, I propose that these nano-sensors be applied to the containers and the truck at the time they are washed. By immersing these nano sensors in the soap that is used to clean the transportation equipment, boxes and cargo containers we should be able to have everything we need to ensure that weapons of mass distraction do not get into our country. If there is WMD inside over 1 part per million the container will turn color due to the soap residue on the outside or be visible at a check-point under a certain type of light.

Solar Powered Cargo Container Sensors

It is possible to build solar powered cargo containers that can store enough energy to power up and RFID active chip, which can constantly ping the satellite for tracking. If we use the same small batteries that are used in aircraft emergency locator transmitters or ELTs, with a special cut off switch, which prevents overcharging, then we should be able to track all the cargo containers in the whole world. If a cargo container does not ping the satellite then it will get red flagged and it will be checked when he gets to its next location.

The battery should store enough energy when it is in direct sunlight while on a train rail car getting a piggyback ride or driving down the highway behind a truck to Ping satellite for six to seven months even if it is riding inside of a cargo ship with other cargo containers stacked all around it where it can get no sunlight to charge the solar powered battery that runs the system.

Additionally, if all the cargo containers on the ship were networked together in a net centric configuration the cargo container at the bottom which has no sunlight may have enough power to reach one on the top that does and that container could relay the information to the satellite. Then we would never have to worry anymore about nuclear bombs inside of cargo containers, because the second a container sensed radiation it would alert the satellite.

Chapter IV

Communication Systems

The trucking industry has always enjoyed its communication tools and the drivers have also enjoyed them as well. CB or Citizen Band Radios were often a driver's only communication in the middle of the night on a long-haul. Local Companies enjoyed "trunk repeater" radio systems with the systems on the top of a local hill, infrastructure or high buildings. Satellite communication systems started out as expensive, but that is no longer the case. Trucking Companies enjoyed satellite Alpha Pagers, radios and phones as first adopters. The Industry needs its communication systems and today all they are part of the reason for its success.

Truck Transponders

Truck Transponders are a nifty device, which allow us to identify the truck it is attached to with a unique number or label. This makes them perfect for billing for toll-ways, knowing who is who and allowing them to by-pass thru a reader. This also helps weigh scales check rapidly if the truck is up-to-date and of a known company or trust-worthy source. Unfortunately not all trucks have transponders. Perhaps they should to speed up traffic flows?

If all trucks had transponders it would be easy to accurately and fairly distribute their fair share of the costs associated with maintaining the roads and highways. For instance; **Road Usage Tax and Commercial Carrier Trucking Transponders** might solve a lot of problems.

Many people wonder why they should pay taxes for roads they never drive on or for an inter-coastal ferry system, which is subsidized with tax dollars which they will never ride on; all good questions indeed. A fuel tax on each gallon of fuel makes sense because those who use the most fuel travel the most distance and thus use the road the most.

Those with more fuel-efficient cars generally lighter cars, which weigh less and are less damaging to the road. In the future people who drive hybrids or even fuel cell vehicles will be paying nothing in the way of gasoline or diesel fuel taxes because they will not be buying any. Thus the more people who buy such cars the more the remaining people will have to pay for the roads while so many with hybrids pay so little or those with fuel cells pay none at all?

Sure one could say it serves those gas guzzlers right. But there will come a time with the taxes on gasoline will be so high since so few are paying in that the system will collapse and the roads will become in a state of disrepair, assuming for a second that currently they are acceptable.

Additionally less fortunate and lower class will not be able to afford new fuel cell cars and will be paying the most, exactly what our most liberal citizens complain about. Federal Reserve Chairmen Greenspan before retirement discussed that the need for a use tax of services was appropriate to alleviate problems like this in many sectors of the economy, not just roads and transportation.

One place I see emerging, as a critical point in all of this is the large over the road trucks and their wear and tear on the highway infrastructures. Many short haul trucks are paying for roads they never drive on while others are using and not paying any extra. In many places we have toll-ways, which would account for such usage, yet in other parts of our nation we have freeways. We cannot turn them into toll-ways without jeopardizing already insane traffic bottlenecks or slowing and hurting the flow of transportation.

Luckily most over the road trucks have transponders for identification and GPS for routing information and thru the trucking company dispatch. One proposal would be that the road usage tax be re-calibrated to more mirror the actual usage of the highways.

Indeed we use the already installed Commercial Carrier Trucking Transponders. This way small trucking companies that work mostly locally are not charged the same fees that interstate trucks pay and that the monies go to where the most wear and tear is occurring and are charged to those causing the most wear and tear, as that is only fair.

Why is this even a consideration? Well because we see we just cannot trust high-powered politicians who redistribute monies in districts that do not deserve them, as we all suffer, as well as our infrastructures when this is done. Nor can we trust an archaic system, which is unfair to the taxpayer, whether it is you or I or a commercial enterprise.

Modern GPS and Trucking

It has often been said that Global Positioning Systems have changed everything. That would be a hard statement to debate in the Transportation Sector or the Trucking Industry. Routing and scheduling through the use of GPS technologies have been a Godsend for truckers and trucking companies a like. Such tools have improved efficiency to the point of close to perfection.

GPS Return on Investment Quick Considering Fuel Cost Savings

Many people do not own a GPS in their car. There are many reasons for this and a couple of reasons center around the fact that they cost quite a bit of money. In fact, with the price of fuel up many people do not have the money to buy a GPS for their car. Nevertheless this is the exact reason they should buy a GPS for their automobile. Now let's consider the cost savings in fuel for a truck? The return on investment is quite fast and rather substantial.

Consider a typical motorist each time they are looking for something in their car they drive around trying to find it while wasting fuel and we all know that fuel is very expensive right now. If they had a GPS then they would not have to drive around so much to find what they are looking for and they would save considerable fuel.

Now consider this scenario a few times in a truck looking for a location, pick-up or drop of point? In a car the motorist over the course of a month might save as much as $50. Over the course of many months they could easily save hundreds of dollars. Of course they could have bought a very good GPS system for about $399? In this case it would pay for itself in about eight months. In a truck, driving around to find a location could cost $20-30 each time. Four or five times in a month and in 3-months the GPS had paid for itself.

It is no wonder that most over the road trucks have GPS systems and many of the higher end units are over $1,000 to purchase. Global Positioning Systems also make driving safer as the driver knows which lane to be in and does not have to concentrate on reading or folding a map or reading signs and can instead concentrate on driving the truck and the traffic.

GPS - 3G Wireless

"Curve Ahead Warning System

Each year the NTSB National Transportation Safety Board logs some 7,000 over the road truck accidents relating in humans becoming dead. As a general trend those fatalities have decreased over all, year over year. Yet overturned trucks are something that continues and it is a serious issue.

Those who design infrastructure such as over passes and highway on ramps and curves pay extreme attention to detail to such hazards. A proper blinking light and pre-curve warning system will save many lives over a ten-year span. We have all seen the pictures on the sign which show a truck tipping over and say caution underneath them with a number such as “SLOW 15 MPH” and often these signs also include a flashing amber or red light to alert drivers of the serious nature of the turn ahead.

I propose that we go one step further and include a satellite warning thru a GPS and integrated Truck Transponder System to do the warning, which will signal an additional warning inside the truck itself. The system could be run via satellite or from a warning system on the curve itself, which alerts all truck's transponder system of the curve ahead - saving 2200 lives per year

GPS Data Problems

We have a serious problem brewing with GPS navigation systems. Ask anyone in a metro area who has bought a new car with one of those cool GPS upgrades for their SUV or new sports car. Oh they love the gadget, but they are under whelmed by the lack of data and streets, which are not listed. You see we have been seeing incredible suburban growth in many cities.

Places near large DMA metros are a problem out in the middle class suburbs. In many areas such as outside Chicago, Los Angeles, San Diego, Phoenix, Las Vegas, Seattle, Portland, Denver, Dallas, Houston, Austin, San Antonio, Nashville, Kansas City, Minneapolis, Columbus, Cleveland, Baltimore, Jacksonville, Tampa Bay, Miami, Orlando, Atlanta, DC Subs, etc. And in NJ, NC, NV, OH and lots of other fast growing growth pockets.

When GPS devices for cars first hit the scenes at the CES and SEMA shows in 1996, they became increasingly more popular, powerful and better data. But like VHS and Beta, Apple and IBM, competition became increasingly greater causing much consolidation in the industry along with patent fights.

Much of the technology was former Defense Contractors peddling their wares through subsidiary consumer level companies. But the market remained tight due to the costs. Meanwhile companies like DeLorme and others tried to flood the market with low priced GPS units, which made things even more competitive. And the bugs were not fully out of the system yet.

Someday all cars will drive themselves and people can watch TV, do video conferencing and use their transportation as a portable office or entertainment system while they are being driven to the location they have punched into their computer. Some things will have to occur before this is a reality of course. But eventually your dexterity skills to actually pilot a car will be worthless and un-needed.

First the satellites will need to be laser aligned and use multiple satellites to get absolute locations of ground items and vehicles. The cars will need to have additional anti collision devises made up of networked sonar and optic flow sensors.

All of which are now available and the technology is getting better and better. Many military applications today will be civilian tomorrow. Just like Radar, Microwave ovens, Nuclear Energy, Cellular Phones, Satellite Communication and Jet Aircraft in Commercial Aviation. The flow of transportation will be brought to the next generation to serve man better.

For the time being the incremental changes in these technologies has hit a slight road block even though Honda, GM, Ford, Mercedes, Daimler Chrysler and Toyota have invested billions in anti-collision and safety devices which they will add comfort and desirable options which they can sell to customers as upgrades.

Smart Car Technologies can add Thousands of Dollars to the price of a car and consumers are glad to pay for them. A factory GPS system with display can cost $6,000.00 and they sell a lot of them on the higher end cars. It is a high profit item upgrade, although there are some, which only cost $1000. And if you wish to compare these, some are very incredible with many features.

There are many companies, which sell after market computer assist items. These companies are doing quite well and the systems work great. The big issue is just because you have a super duper incredible GPS system, does not mean the street you are looking for is even on the map yet. In other words it is like using an old map.

If you are a studier of maps like I happen to be, you will see the problem with older maps. Even some companies keep printing old map data year after year without adding in new on ramps, city streets, infrastructure freeway improvements and ring-roads - it is aggravating for those from out of town. Even more aggravating looking for an address or street in a new housing tract, which you can see but the devise insists, does not exist?

Then there are problems in areas like Cape Coral, FL and Tehachapi, CA or El Paso, TX and Knoxville, TN where the roads have been scraped and ready to put in but do not connect or have nothing there yet. Of course it is very aggravating to see a road and try to go down it and find it is a dirt road that connects to nothing yet or an entire sub-division that does not exist? Is it a Mirage?

Jack Dangermond of ESRI had set up entire networks of software makers who developed data for their awesome software products for GPS and GIS needs used by government, military, utility companies, transportation companies, private companies with GPS units to sell to the public, First Responders and school districts for buses.

After the Dot Com crash those software companies were among some of the survivors, but had significantly cut costs. Thus without the proper data the GPS systems bought by the upper, upper-middle and middle class for their cars were not always good enough to support the price point for the newest technology.

This is especially upsetting since the upper, upper-middle and middle class citizens who pay the most taxes live in the suburbs for the most part. The chances of a middle class American; who bought a home during the 3 years last housing boom; not being able to find their house or street on their new GPS devise is a higher probability then them actually finding it. We interviewed one man who bought a new Nissan Sports car.

Who lives in a newer developed area in the higher end Las Vegas, Clark County Suburbs, which only had the main streets on his GPS and had huge blank spots on his device? Some GPS devices allow the user to choose a satellite vendor and data vendor and software, but many of the Factory units do not. People think they are getting something really good and then find they cannot use it to navigate, which would really piss you off considering you may have paid as much as $6,000 for the unit.

Even more dangerous is the information we learned from an EMT ambulance driver in Dallas area who told us of looking for streets for 15-20 minutes after battling through suburban gridlock to get to where they thought it might be. 3G cell phone technology may assist for those using cell phones to call in data to the dispatches. For all the training we are doing across this nation for first responders and on-going education of police, fire, Hazmat, etc. it appears that we have forgotten the problems of the system. Any time you build a system to serve humankind you must make it simple and make it work, that should be the first, the very first priority and then you can fix all the other issues.

With that said we interviewed a lady recently one evening who had a hell of a long day working for the Metro Police Department's Central Nervous System. The communications center and dispatch is to what we are referring. Although she was unaware of the problem at the center for bad data or missing data in the system, she could not say how they were able to get the information.

Luckily serving a metro area they are probably connected to the planning department's computer, which they should be. And if the police department has the new data then no problem in this case, but why have the software vendors not being able to access the data? It is a safety issue if someone with a GPS system pulls out a map and tries to read it while driving in an area they are not familiar with.

It is guaranteed that in the history of the automobile in this country more people have been in serious traffic accidents from trying to read maps, than talking on cell phones, although cell phones no doubt a contributing factor in many lesser accidents will eventually pass this figure.

Where are the streets? Well frankly I cannot understand the need to keep this a secret unless it is the layout of Area 51, Prison, Power plant, Pentagon Grounds, Military Bases, etc. If the emergency first responders divisions and contractors would share the data, there might be fewer accidents.

It is essential to have the data for these devises and everyone is better served when communication flows and information works correctly. GPS units provide that and the data should be readily available and probably it is best to have the cities using the same formats as first responders and the same data can be used for utilities, consumers, military and even census data or academia studying urban sprawl and growth rates to have infrastructures ready during expansion.

There needs to be a nationwide coordinated effort to see that such data is filtered into the private sector, because as it stand the companies have been hammered in the industry and cannot perform the services to bring this stuff to market. Communication is important for government and citizen alike, increased efficiencies in business will save the government money and provide additional tax base and funds on the income of such businesses utilizing such data.

If we want a screaming economy we ought to be thinking how we can streamline and accelerate the flow of information to increase efficiencies and allow a small portion of the gain from the expanded pie to continue the growth. In other words, we make it easier for the Florist to deliver, the school buses to pick up more kids per hour and the soccer mom to take more kids to practice and still have time left to shop all of which serves man.

The digital GPS-GIS divide is as important for our economy as the Digital Internet Divide. Kids in sports do less drugs, become more competitive, have higher work ethics and soccer moms can help keep the retail economy going. Every time you ease the flow, more things are possible. The exponential increase in American productivity is needed to offset the time lost in traffic and congestion. GIS-GPS systems can help in any emergency or simply driving around town getting things done to check off one's list for the day.

What About The Trucking Industry?

The same scenario goes for the trucking industry. How many times have you been in a truck and heading down a street which has been re-arranged and changed and then you wondered how you are going to turn around again? Big issues and this causes problems, traffic, dangerous choices and wasted time, fuel and aggravation. GPS is great when it is working right and when the vendors have their act together, if not, we all lose.

Truck Stops and WiFi and In Motion Internet Access

With most Truck Stops now being WiFi enabled truck drivers can turn in daily reports, contact dispatchers, file reports, find return loads, shipping and receiving departments and stay efficient while on the road. They can be in constant communication throughout their travels and each night while parked at the truck stop. This is a major efficiency enhancement for the Independent Truck Driver who is on the road so much he basically lives in his truck.

There are also systems available that allow trucks to have their own link directly to the satellite. In fact I had the opportunity of Beta Testing one of the first of these types of systems while working with a company, which had a strategic alliance with GM Hughes, which later became f DirectPC.

In fact we had the first fully self contained, fully WiFi Networked Mobile Corporate Office, taking advantage of the newest in WiFi technology in 1999. Our data transmission speeds had broadband capabilities and although it takes about 5-10 minutes for the system to lock on satellite you always have your communication system with you.

Our system with the MotoSat antenna and service available through DirectPC is not an in motion system, but the price is certainly nice compared with satellite phone downloads like Iridium's pricing of $134.50 per month and the ridiculous cost of $1.34 per minute. Of course GlobalStar is even more costly at $150 per month and 1.39 per minute and International calls at $1.79.

Indeed in the US now in most areas 3G wire-less allows access to the Internet with pretty good coverage and many truckers swear by it. The monthly price is not too bad and it works well with good speed. This is a low cost solution as opposed to installing a 90 Lb. antenna costing $8,000 plus installation. These are not the only potential systems there are others used primarily in the marine and ship Industry.

The cool thing about Inmarsat is that it is 20 years old and still has the 9.6 kbps data speed and sometimes you can get the 64 kbps (they say). Inmarsat A is ancient and 18,000 ships have the maritime Global distress system aboard.

GMDSS - If you look at most all commercial ships you will see the antennas on top that can run fax machines, Telephones and various data interfaces. Inmarsat B is a whole different story with it's digital technology, you can definitely get 64 KBPS all day long for broadcasting audio streams, video (a little jumpy), and voice and fax transmissions. Not sure it is viable for the trucking industry however, cost prohibitive and the size of the antennas is a little much.

Now here is the new deal Inmarsat C, two way data communications, terminals are portable and small, brief case style. Costs for terminals are only $4K approx. and everyone in the TV business has one or more. Inmarsat also has a system for voice, which needs only a little antenna of 9.3 or more inches and comes in a small dome. These were recently featured in Popular Mechanics in Nov 01.

Trac Phone antennas for boats, RVs etc are expensive at $6,500 but work well. This is also known as the SatCom system mobile. It is a briefcase laptop system and is only 5 lbs. Costs only $3,000. People call it their brief case phone. It uses a SIM card for multiple users a system if you will remember never took off in the US like the smart card phones in Europe. Remember the PCS Phones had that little slide in cards, but they were too expensive for mass production in cellular technology.

Inmarsat F77 is another innovation of 2001. ISDN and mobile packet data service capabilities. Delivering Fax, phone, voice and data. 64kbs, Absolutely and without a problem. Almost trouble free, this is nearly fully operational.

Internet based systems like this mean we can track every ship, truck, terrorist, school bus in the country real time, just like they now track all the aircraft as we saw on TV during the 9-11 act. We watched charts of the US with every single aircraft flying. Imagine the system capabilities for efficiency, safety, storm and weather watching, and safety of our people.

For the trucking industry there are many options, especially for those larger or huge trucking companies with intense economies of scale, as they can get a custom designed system to track everything and be in constant contact the entire trip. Here are some research places to start;

- http://www.inmarsat.com
- http://www.globalstar.com
- http://www.iridium.com
- http://www.orbcomm.com
- http://www.msat.tmi.ca
- http://www.motosat.com
- http://www.kvh.com
- http://www.optistreams.com
- http://www.msua.org

Our T-5 Group has been scouring over 20 Communication Magazines for the last few years to pick up bits and pieces of the puzzle and I personally visited all kinds of people around the US for this input.

TracNet is another potential option and is purely Internet Based satellite service and has download speeds of 400kbps, but since it is not directly two way it's upload speed is 14.4 Mbps on a cell phone or at 9600 through the satellite, bummer, but it works no matter where you are in the US. Truck drivers like this one a lot. It also works about 100 miles from the coastline in a boat and is good on yachts. Many high-end motor homes have this system too.

TrackNet uses the 802.11b wireless standard WiFi; this is at 11Mbps, same as an Ethernet network. The cool thing about this system is you can be outside on the grass in a park doing you work as long as you have the server in your car with the Trac net antenna set up. Of course you need some space for all this but the size of this technology is getting smaller and the price is coming down too.

You have to love the diehards from GM Hughes Spin off. What's the catch? Well it has a 39-inch antenna so it is not exactly transportable or brief-casable - DataStorm it is called. Our Mobile Command Center's antenna is 42 inches high and 39 inches across in an ellipse shape.

We believe the next wave of technology is where it is at however and predict this to be in place where WiFi at every truck stop. Some cities are now going to city wide WiFi and others are looking into WiMax Technologies although those seem to have a bit of a hurdle with FCC and the Venture Capitalists and Investment Bankers funding the start-up promoting them.

Real-Time Virtual Dash Boards

Indeed we have been talking about all the great communication systems available and yet we have neglected perhaps to discuss some of the excellent applications that are now possible. For instance what about Virtual Real-Time dashboards; the dispatcher can see what the driver sees on the dashboard?

The driver does not need to alert the dispatcher he needs a fuel stop or that he has a flat-tire or is stuck on the side of the road or even that he is going 10 mph average stuck in traffic. The dispatcher already knows all that and has re-adjusted the route accordingly and the estimated time of arrival. All in real-time and thus no more guessing or estimating for the client waiting on delivery. At this level of communication, the Just in Time modeling is much more feasible in that it immediately shows any weakness or challenges allowing additional increased and incremental efficiencies.

Work Place Communication in Trucking with Dispatchers

Workplace communication is not just important in office work. In many industries the workplace is larger than just the office. Consider if you will a trucking company that is nationwide with trucks and dispatchers serving the entire North American continent.

There are such companies and there are large corporations, which deliver their own product who also run nationwide; consider Wal-Mart which operates in Mexico, the United States and Canada. Its trucks and dispatchers must deliver all the products and goods to their stores on-time so that the rest of the population can find the product that they are looking for on the shelves.

Now consider 190,000 SKUs in a super Wal-Mart and how all those products have to get to market. You can understand the importance of workplace communication with trucking and with dispatchers? You see, workplace communication in the trucking industry has come a long way. Today, dispatchers can actually see a virtual dashboard with all the instruments of the truck and dashboard on of their computer. The dispatcher has GPS to know where all the trucks are and can see the engine speed, oil pressure, fuel gauge, speedometer and even some of these new systems show the tire pressure in each tire of the 18 Wheeler's tires.

All this helps with workplace communication between the trucker and the dispatcher. If trucking companies can do all this and more at long-distance then imagine what you can do with a little practice on your company's workplace environment to improve communication? The Technology is making all this possible and changing the foundation of the trucking industry.

3G +, 4G and Promises of 5G Cell Phone

In the Trucking industry we keep hearing promises of the next new technology, which will revolutionize the current, unfortunately we have heard many more promises than realities when it comes to wireless cell phone technology. When the major move came with 3G Wireless we found no service areas, patchy service or blank space along major sections of highway.

Sure most of the major freeways had service along most of the route, but not all. Worse some 2-lane highways had nothing anywhere close. Some companies used both the old system, ROAM and the new 3G system in order to try to attempt to get all areas. Many companies we sold a bill of goods and switched only to have found nothing worked well.

Feeling burned, it took a while to regain the trust and then the next new thing came with all the public relations, cute sales gal coming to visit and mass media advertising along with the trade journal articles, white paper (brochure-advertisements) and still everyone wondered; is it real this time? Shame on me the first time, next time shame on them.

Jim Mele, Editor of Fleet Owner said it best in one of his editorials;

> "EV-DO, EDGE, GPRS, 1XRTT, UMTS, 3G, 4G, CDMA, GSM, iDEN - it's called wireless communications, but sometimes it seems more like a Tower of Babel than a cell tower. Not only is the wireless world in love with acronyms, but it's also blessed and cursed with rapid and relentless development of new technology. It's an exciting environment for those in that industry, but for the rest of us it's a bewildering mix of potential and promises."

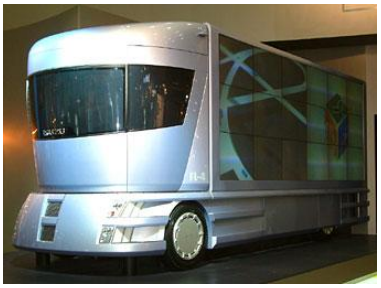
Indeed that about sums it up however, we can see the progression now and the technology is improving, many in the communication industry believe that as things grow the technology will become more robust, have better coverage, maintain low price-points and remain reliable. The T-5 Group is bullish on the future of cell phone technology, although at the same time we realize that some of the fast-paced roll-outs left a lot to be desired and in the interim did not deliver on their promises to the trucking industry.

Chapter V

Truck Design and Materials

The trucking industry will change drastically in the next 20 years and outpace previous decades of slower incremental change. Much of this change will come from the need to increase efficiency, reduce pollution and take advantages of economies of scale. Much of this change will come from space-age materials which are now being developed. Materials such as Carbon Nano-Tubes and Graphene will cut the weight of a truck by 10-times and that means less fuel, more room for cargo and radically new designs.

Aerodynamic Designs



Trucking Aerodynamics

Want to save more fuel America? Well then start with the over the road 18-wheeler tractor-trailer rigs. That is right, you see, trucks often get only 4-6 miles per gallon because much of the fuel is consumed over 55 miles per hour as the co-efficient of drag chart goes hyperbolic. They are burning up incredible amounts of fuel overcoming the wind resistance or drag. This is why you many of the newer trucks on the road are much more sleek and aerodynamic looking.

As our T-5 Grouped studied all the radical departures in designs for trucks, some boasting a 50% greater efficiency in drag reduction it became pretty apparent that if we could take those designs and implement them into the modern day truck and coupled them to an aerodynamically sound trailer design then we might be able to add to that 50% efficiency increase to really make a huge difference.

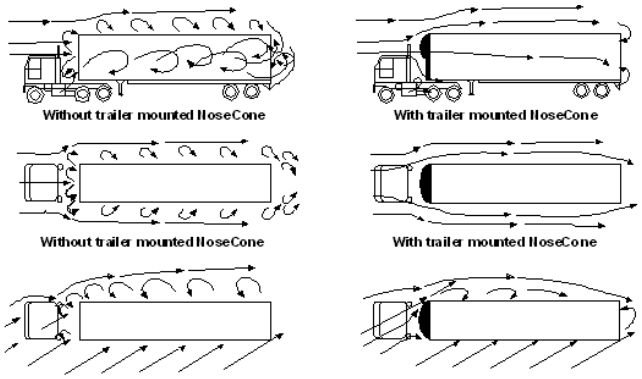
I propose that we design different trailer bodies for all these radically new aerodynamic trucks, which include a squared off cone rear-end. Shaped like a pyramid on its side facing behind the truck trailer. Learn more about truck aerodynamics to continue this conversation;

http://www.nasaexplores.com/show2_articlea.php?id=02-009

By reducing drag drastically we should be able to get 2-4 miles per gallon more off every truck on the road. Accumulatively that is a huge savings of 16.8% of our total diesel usage in our nation. This will also drastically lower prices due to lessening of the volume of demand on the total supply. (caveat - provided no supply manipulations are thrust onto the market by producers of Middle Eastern Foreign Oil).

How will this cone shaped invention or innovation I have in mind work? Well simple. The base of the cone sticking back will attach to the rear of the trailers edges. When the truck goes to back up the top and bottom will swivel on the sides to the right and left sides and then slide back on sliders along the sides of the truck and out of the way for loading or local city driving.

For long hauls the cone comes out for fuel efficiency and this also keeps cars back further and a safer following distance before the hard bumper of the trailers. The cones will be made of light-weight material and due to the economies of scale to produce one for every truck, the price will be under $3,000 and that can be saved in the first 12,000 to 16,000 miles in fuel at the current $3.00 per gallon costs. And remember many of these tractor trailer rigs will have 500,000 to 1 million miles on them before they are sold as used and then bought by Mexican Trucking companies as hand-me-downs.



Acoustic Transducer Streamlined Trailers

Trucking companies are at a cross roads, fuel costs are $3.00 per gallon for diesel in many places. This puts a huge stress on the transportation sector and that stress can be felt in increased costs on every product or service delivered by truck. As most truck drivers like to point out; if you bought it, then it came by truck. In other words everything will cost more as those costs are passed onto the all of us.

Truck trailers move a lot of air, which takes a lot of energy. That energy costs fuel and those additional costs are an over all tax on society since everything we see, everywhere we go was delivered by a truck. Much of the disruption of air occurs behind the trailer and aerodynamic models show that by eliminating this drag we can increase the efficiency. There have been many NASA Wind Tunnel type computer models showing this and several companies which have built rounded rear aerodynamic cones to taper off the boxy dimensions of those tractor trailers. The box shape hurts aerodynamic flows and causes drag.

Perhaps by using the friction coming from the surface of the truck as the air moves by creating static electricity we can to use this to send pulse energy through an acoustic transducer sheme. The acoustic transducer will be able send energy behind the truck to align the air molecules to thicken the air allowing the rest of the air to flair our in a more streamline way. This will allow the relative wind from the truck to pass behind the truck smoothly increasing efficiency at 60 mph by 35%, which should reduce fuel consumption by at least 20-25%.

Aerodynamics and Truck Advertising

Luigi Colani is considered the ultimate truck designer and is famous around the world for his designs and brilliant marketing and flair for style. Above is a sample of one of his many designs, very impressive indeed, and so are the low-coefficients of drag.

Trucking costs have skyrocketed due to fuel price increases and those costs have been passed onto the companies, which pay the shippers to ship their products to market. Those companies will pass these costs on to consumers in the form of higher product costs. Now before you say; yah, obviously or so what? Let me explain that this affects you in a big way, because everything you buy gets there by truck.

One of the biggest things a trucking company or shipping company can do to improve their fuel costs is to have aerodynamically streamlined trucks. I propose having dual shell designs for the tops of truck trailers, which are like a wave, which are slightly offset. The structural integrity will be maintained with the inner shell or normal skin on top of the flat trailer, but the outer skin will be a super lightweight material which will be designed for the best aerodynamic coefficient of drag for cruise speed, thus allowing the truck to move thru the airflows in the most natural way.

To pay for the tops of all the trucked to be outfitted with these; I further propose the laws of economies of scale to keep the costs down along with advertising companies to sell ads for the tops of trucks. Anyone in a multi-story building will see them or even someone sitting in traffic or driving over an over pass.

Motor Coach Truck Combos

One very interesting combination of industries is the taking of a Truck and making it into a Recreational Vehicle or Motor Home. In fact it is getting quite common these days and there are several manufacturers who specialize in this market. Selling to generally corporate marketing department, auto racing companies and real men who want a real truck chassis underneath their motor coach, can you blame them? A real truck means a stronger motor home, big powerful motor and truck strength quality components. You have probably seen such trucks on the road.

[www.CowboyCadillac.com]

Number of RVs on the Road - Fuel Costs

Over the past 2 years we have noticed a huge drop in Recreational Vehicles on the road. Why you ask? Well it is quite simple really with gasoline and diesel prices near or over $2.00 to $3.00 per gallon in the United States. Recently in Virginia we talked to one RV sales person who works at an RV lot on one of the major freeways. He told us he use to see one or two RVs per minute and he said now you are lucky if you see one every 10-minutes.

In Springfield, Missouri a Wal-Mart Security guard noted that usually over night there use to be over 10-15 motor homes in the parking lot and then they would leave in the morning, now barely one or two he said. Why? Well he guessed it too; **"The price of gas I reckon"** is what he said.

Indeed, it is the price of fuel and it is also showing in the fuel sales for the RV Rewards program at Flying J noted one Flying J manager who came out to pump our propane since they were short of staff that evening in when we were out West in Wyoming. He noted the many of the super nice motor homes still come in, but there are even fewer of them these days.

Motor Coach 2006 KW Hawk Motorhome

Becoming a part-time Truck Driver in your retirement and cruise the country in luxury and style is not such a tough life. Of course that is to say when you are choosing your own routes and the back of your truck is a state-of-the art motor home. Having the power of a Diesel Truck and the light-weight features of a motor home on the chassis means that you have all the power in the world and more than you could ever need.

In fact, with all that power you can cruise down the highway never breaking a sweat at about 1,000 to 1,500 RPMs and enjoy the robust fuel economy of a truck engine idling down the road. There are so many versions to choose from, I have very much enjoyed the Kibbi Corporations Renegade Series and also fancy the 2006 Hawk KW recreational vehicles are quite nice.

The question is do you buy a regular motor home or do you want a Truck Motor Home with power and dominance, reliability and strength? Well, that is a decision you must make on your own. I have certainly enjoyed the power, strength and reliability of a Truck Motor Home or Tota-Home as the Industry calls them. It is also fun to blow away all those other Motor Homes on the Road and besides who wants to be a Bus Driver in their retirement.

Kibbi Truck Motor Coaches

Motor Homes to tour America in have been a big hit in the United States. Some of the most exotic looking Motor Homes are those with a Truck front end and chassis with a Motor Home back-end. Generally they call these renditions to the motor home genre; Tota-Homes. The Volvo Powered Tota-Home by Kibbi, often referred to as the famous Renegade Brand, is well known with automobile racing, music singers and corporate traveling exhibit marketing teams. I have about 500,000 miles on two Tota Homes traveling the country, for business and pleasure both. I must say I have nothing but praise for the Kibbi Corporation in Indiana and their Renegade Brand.

http://www.kibbi.com/Features.aspx?CatID=2

There are of course many different options available and deciding which version to pick is probably the hardest thing I do, every couple of years when I upgrade. The Volvo Powered Tota-Home is very cool and sleek and it makes the perfect combination.

Volvo Trucks are often revered by truck drivers and comfortable to drive, plenty of power and good reliability. If you are considering a motor home, which is on a truck chassis, then perhaps you should talk to truck drivers and a few Renegade Kibbi Corp Tota-Home owners and see if it makes sense?

Hybrid RV

Would you buy a hybrid recreational vehicle to help our planet? Do you currently own an RV? What if there were Hydrogen Fuel Stations around, would you then? What if they made a Hybrid Diesel-Electric would you partake? Would you pay extra for one? Does it make sense to you? How committed are you to our environment these days?

Well, we asked some RV folks at Starbucks today traveling down the highway and stopping in for a latte and then off they went. About half the people we talked to said if they were going to buy another motor home they would consider it. What about you?

As a futurist I always see things prior to their arrival and I see Hybrid RVs in the near future. I am not the only one who is discussing this issue, others see it too and there is demand ready and waiting. How can this be accomplished? Well some Recreational Vehicles are built on Truck Chassis and some on Bus Chassis and there are already both Hybrid Trucks and Hybrid Buses, so it will be within a few years we will see Hybrid RVs, you watch. If the price stays reasonable then many of the environmentalist baby boomers might be in line for something of this nature or other folks who want to save on fuel? Here is a discussion on this issue and some interesting commentary;

http://ideas.4brad.com/node/266

Solar RV systems

To adequately set up a motor coach with solar power will run you about $8,000 and this will include the panels on the roof, super batteries, installation and a control module. The control module is the most inexpensive component, only about $150.00 and it will keep you from over cooking your batteries and turn off the collection from the solar panels when the batteries are 100% charged up. It will also prevent potential fire hazard too.

You will need a number of panels and you need to consider how much power you will need, including air-conditioners, lighting, microwaves, personal computers, dishwasher, washer and dryer or whatever additional electrical units you have. I do not recommend getting rid of your portable generator if you already have one, as you never know when you will need it. I have an Onan Quiet Diesel 7500 and I cannot ever imagine getting rid of it, even with the solar power.

When I say dump the generator, I really mean dump the fuel expense to run it and go pure, that energy from the Sun makes sense to use and with fuel prices this high the return on investment can be achieved very quickly for the full-time RV'er. Convert that wasted empty space on top of your RV and help yourself to some energy from the Sun.

Motosat

If you own an RV and like to take long trips for months on end in your motor home and tour North America, then may I recommend the ultimate in Internet two-satellite systems. You see MotoSat has an Internet Broadband antenna, which can connect you any time and anywhere to the Internet via satellite.

How well does it work?

Well as one of the first beta testers I can tell you that I have personally used it in all 48 continental states and Nova Scotia and most of the Canadian Provinces.

Why is DataStorm the system to have? Well their new D3 system has even out done the D2 system and allows for simplistic operations and easy automatic location of the satellite by merely pressing a single button. Additionally it can find the satellite from nearly any angle or incline that your motor home or RV is parked at.

If you want to stay in touch and travel then the first you need to get is a Satellite Broadband for Your RV. Now that gives you total online freedom from anywhere. My high speed Satellite Broadband is 10 Mb/sec download and about 250-300 upload. My satellite Internet was one of the first in the nation for Motor Homes, I saw a story in Popular Science and went and bought one, $8,000 and I had serial number # 30 and I did a lot of Beta Testing for the Hugh's contractor. The folks before me included Wild Fire Government and Civilian, Military, FEMA and a couple of die-hard RV'ers. Yes the cost is only $125.00 per month, unlimited bandwidth.

Why do I like this system? Simple really it gives me the freedom to go where I want and when I want and retrieve my emails or use the Internet to stay in touch with others. It allows me to set my own schedule or no schedule at all and best of all it allows me to stay on the road as long as I please to tour this great nation of ours.

Sonar Back Up System

If you own a very large motor home then you know how dangerous it can be on the road especially in the big city with cars that will not let you over. Additionally there are always vehicles, which will drive in your blind spots and make it difficult for you to change lanes, not to mention stop and go traffic too.

When backing up or making wide sweeping turns you have to be careful that there is nothing in your way and there is nothing that will be in your way as you make the turn or continue to back up. This is why an anti-collision radar or sonar system for your motor home or recreational vehicle makes a lot of sense. Indeed, they are getting very high-ten these days.

In studying these different sonar devices I recommend Eaton's VORAD System. This system is very similar to the sonar systems for backing up but it uses radar. It also uses radar with a cruise control interface so that you can follow behind the car in front of you and if you get too close it lets off the gas to a safe following speed this allows you to match the speed of the traffic around you.

If necessary in heavy fog it might also save your life as you can set it to engage or activate your engine brakes too. As the traffic speeds up the system will re-activate your cruise control. It also has visual alerts when a car is driving in your blind spot and a warning sound if you put on the turn signal when there is a car alongside of you.

The radar surveys the road ahead for up to 500 feet and works through rain and fog to help avoid accidents. It is a pretty killer high-tech system and something you may be wishing to consider. With heavy traffic there is no sense in risking an accident with an uninsured motorist with a huge ugly 6000 lb car.

Mobile Command Centers

Mobile Office Trucks

Have you ever thought of putting your entire office on wheels? Did you know that Mobile Command Centers are not just for on-site location movie sets, police, first responders or military anymore? Did you know you can convert a NASCAR Truck and Trailer into a Corporate Office on wheels? It's true and I decided to go for it.

Many who have seen our Corporate Offices on wheels, The Blitz Mobile; Mobile Command Center are impressed. We are unconvinced anyone should be impressed, but sure like its ease of use. The Blitz Mobiles from our company of course have their disadvantages for instance trying to find a Golf Course parking slot and mobile corporate offices are somewhat Virgin Territory, meaning everything is different from a normal office building and you have to get use to that.

Another draw back we discovered right away was that they do not hold an aircraft large enough to carry an adequate useful load to carry many passengers. Our set up is similar to the NASCAR Display trailers, which is fairly typical of such set-ups.

Are you interested in putting your company on wheels and touring the country? There is a lot to see indeed. If so, well I suppose you can find similar units thru such companies as Featherlight, Kibbi Tote-a-Homes, Marathon Coach and Prevost. Indeed, anyone who does lots of traveling for business knows that living in hotels does slow one down while lugging around laptops and suitcases at the Speed of Thought.

Our company's Blitz Mobiles do not stop and yes people have asked where do you park them when not in use? Well, our answer is this;

> "Not sure what the purpose would be to parking a portable billboard when there are millions of North American Humans stuck in traffic with nothing bright and shiny to look at?"

We can say this; there is no better way to see this great nation than being full time on the road. And for those of us who do business in multiple states and like the good weather, well we simply move to where the sun is shining and keep track of all the operations, via modern electronics and personal visits. Think on this, as more and more companies are warming up to the idea

Lighter Materials

One of the reasons that trucks are so expensive is the cost of materials. Consider the increased cost of steal, aluminum or stainless. We have closed down most of the mines in our nation now. Let's talk a little bit about the **Flow of Raw Materials** for a moment to help get a better perspective on this subject.

Our T-5 Group realized after considering the importance of the availability of materials that some future predictions of the trucking industry and the trucks themselves would have serious challenges in attaining the quantities of materials needed to fulfill such destinies. So here are some background thoughts before we get into the new materials that will truly revolutionize the industry in 5-10 years.

Flow of Raw Materials

There are many reasons why we should be harvesting our own raw materials that already exist in this country, rather than importing them, whenever it is feasible or possible. When there are reasons, which prevent us from doing the collecting of those natural resources within our own country, then and only then should we look towards our trading partners to supply us such raw materials and resources. When we can mine such raw materials within our borders and transport them short distances to the processing facilities, manufacturing factories, refineries, energy power plants and shipping ports or railroads for exporting at an expeditious and cost effective manner we lower completed product costs and gain ground on efficiency models.

In our country we have seen the loss of most of our mining in the last 50 years. Some was due to Federal Clean Water Act in 1972, which was to prevent the pollution from things like strip mining. Many other mines, drilling rigs and plants were closed due to the cost. Some of this is understandable and was partially due to the World market price for the minerals or natural resource.

Much of the mining was shut down due to regulations, labor costs, labor unions, OSHA rules, etc. Some examples of the problems of cost in mining have been overwhelming. When reviewing the recent closing of the Gold Mine in Butte, MT we find that the mine was closed due to the increasing costs of energy to crush the rocks to get the gold out.

Their costs in energy went from $280,000 per month to 1.6 million per month. Sure there were other issues although imagine getting that electricity bill and trying to manage your expenses? Unpredictable energy costs are necessary for mining and other heavy industry, price spikes on top of over regulations is a death nail.

Collecting the Gold under the conditions required in most of North America is no longer feasible, unless it can be collected along with other precious metals and the remaining material can be further sifted for iron ore, copper or another metal. There are several places on Earth where multiple metals appear within a very close proximity.

Mining often, like many industrial endeavors can cause air pollution. When mining the excess which is not used is piled up and often causes leaching into the ground when it rains, those other minerals released are more concentrated than much of the normal downstream waters.

Cost of transportation is also important in mining. Most mines still in business today are in very close proximity to major rail lines, even with all the regulations and rules that exist some mining still exists in the United States. The Borax mine in Dagget, CA was moved from the Harmony Borax Works mine in Death Valley, the second hottest place on Earth with temps up to 134 degrees, In the 1880's, the famous 20 mule team borax trains hauled their loads a grueling 165 miles to the railroad in Mojave.

This is an illustration of why the transportation factor is critical in the efficiency of mining to keep costs down for the factories, which use the raw material or natural resources. If you look at the above ground mines in North America, those with rail service right to the site can compete if the economies of scale and market prices remain stable.

There are many other factors to consider also, for instance if your other countries do not have the same rules for environmental controls they can often sell those raw materials to other countries who in turn can sell their finished products, such a specialty alloys, steel, etc. at lower prices than your companies can produce them. Which would appear to be dumping; selling their products for less it costs them to produce them.

Many countries prop up such industries with huge tax incentives or subsidizing those industries and/or companies. There are many reasons for this, sometimes it is merely to insure that those companies are in business to sell products to the Country's government for infrastructure projects. Other times it is to appease labor and provide jobs.

Sometimes it is in retaliation for a perceived or actual trade war from another trading partner country, which is propping up one of it's other industries. The dynamics of World Trade on; industry, peace, quality of life, money flow, raw materials and natural resources; are quite extensive, as you might have guessed.

If you look at the above ground Coalmines in; Gillette, WY; you can see a perfect example of how mining works when everything is just right. Hundreds and hundreds of complete train loads leaving weekly for coal fired energy plants across the country. The economies of scale in such mines are incredible, fun to watch and very serious, every single second is accounted for, it is now a pure science in efficiency.

Mining is dangerous business and safety is essential and comes at a high cost in productivity. Above ground machinery and robotics have made many mining efforts in the United States profitable and much safer. Also at issue as we have discussed are the environmental issues.

The key issue in mining is the competition between third world countries trashing the environment and our environmental regulations in place here. Today in the United States, we have new innovations to protect the environment without slowing the process. These new methods are costly on original capitalization of a project, but usually once started are amortized over a significant period. Many colleges are putting out environmental engineers specializing in mining and yet still we need a reality based set of regulations in place.

In this country we have Salt Mines, Uranium Mines, Zinc, Lead, Molybdenum, Iron Ore, Copper, Silver, Gold, Aluminum, etc. Some of what we ought to be mining is old computers, refuse and disposed of automobiles and the Aluminum on old airliners parked in the desert.

The United States can compete, if we will drop the attitude and the delays caused by frivolous lawsuits, bad law making and bogus regulations which are said to help people when in actuality they serve no free man. If you read the Ayn Rand books, you can get a sense of this. Different places in the world have all the same minerals we have here.

All in all we need to change our attitude on issues of mining, there are some brilliant entrepreneurs out there, state of the art equipment, smart industry consultants who can and will get the job done without polluting, without hurting the environment and still turn a considerable profit.

Who wins? We do, because the world prices of raw materials and resources dictate the cost and the efficiency of having it here in country before we start to make something out of these resources and materials is good for America. We should allow these brilliant problem solvers in the name of profits help us figure out how to do it right, presently we are over regulating and not listening to these new technologies and the thinking of those in the know.

Will We Learn Anything From Our Past?

This is a formidable question and one that is not easily answered. The unfortunate answer is probably not. Instead we import raw materials, increasing costs of the finished product and much of the steel we get from Japan is not of the same quality of that which we can produce in the United States where our Iron Ore mines are sometimes well over 80%. Additionally these

materials are very close to the manufacturing facilities not half way around the world. The transportation cost are a huge factor. One of the reasons our T-5 Group asked the question; "Will we learn from our past" is because the next new space age material in-line to be of supreme value is Carbon Nano-Tubes. And already people are screaming about the environmental risks and asking how on Earth can you make something so small and control it in the manufacturing process. These same folks are screaming for laws to be made before the manufacturing processes ever get off the drawing board.

The problem is that by holding back such a technology in light-weight materials that can revolutionize nearly all industries in the United States especially the transportation manufacturing sector and transportation industry by over burdensome regulation before you can even say for sure how it will be made, we may as well hand yet another raw material industry over to foreign competition and admitting to a future economic and continued trade deficit for no reason. The T-5 Group is concerned, as lawyers, regulators and consumer groups are already lining up to prevent the marathon runners from starting.

If this hurdle can be overcome and we can get Carbon Nano-Tube Construction going immediately, we can save fuel, break our addiction to Middle Eastern foreign oil, improve safety in the tucking industry and add efficiencies that have never been experienced before on this scale.

Truck Trailer and Cargo Containers Made of Carbon Nano-Tubes

Currently we use electronic monitoring devices to see inside of truck trailers and cargo containers, not all of them, as we do not have the resources, but suspicious ones. We use these scanning systems to looking into border crossing trucks and questionable shipping containers.

This works pretty well. However with the future of new materials we will be able to view the inside of containers and trucks using a device which sends and electrical pulse towards Truck Trailers and Cargo Containers, which have been made out of Carbon Nano Sheets, the material will remain opaque until which time a certain frequency is introduced; then transparent.

These carbon nano tube constructed sheets will be 50 times the strength of steel and as thin as a few sheets of paper. I propose we make these carbon nano tube sheets with visible manufactured memory technologies, which gives us a product, which will become literally invisible or transparent upon introduction of a certain frequency. Additionally, I propose the decals to also be made out of the same material or Graphene (one atom thick sheets of extremely strong material).

A police car driving down the road, a weigh station or border crossing will have these frequency systems set to look inside the back upon entering the inspection stations or while driving if they felt it necessary. All truck trailers and cargo containers thru attrition and by 2020 would be required to be made out of such material if they crossed our nation's borders.

Although this technology is not completely available yet, it is well within the potential attributes of such materials and within the realm of possibilities, therefore I suggest we start thinking on it, as it will be here in 5-10 years and be able to be bulk produced.

Magnetic Nano Tube Assembly

A new technology developed by Nano Scientists will enable the assembly of long nanotube chains to form in a specially designed solution. Using the magnetic charges that will be put together quickly in chains of 1-million nanoparticles at a time. This of course will allow assembly or disassembly in a controlled way to improve perfection and thus strength, while allowing for recycling later.

This means we could make a Truck, Cargo Container, Aircraft Wing or Ship out of the carbon nano-tubes and then when we were done with its useful life, instead of sending it to the junk yard we send it to a magnetically charged resonation tank or vat to disassemble it at the molecular level and then tell it thru magnetic instructions what shape it is to reconfigure itself.

But also realize that a wing or ship made of carbon nanotubes will not rust or easily come apart and it is 50 to 250 times the strength of steel depending on the width, meaning it will have extended life spans. No corrosion, weathering or rust. Will it last forever?

No it will not last forever, nothing lasts forever, but it will last longer than you, that is to say a human life span. Forget talking about your grandfather's wrist watch, as your great grandkids will be flying your flying car and their grandkids maybe using it for their surface transportation on the Mars Colony and their grandkids will have a nano-tube assembled space ship. Think I am crazy? Nope, you just need to expand your horizons and think about it.

Future of Truck Tires

"One major problem with trucks are the tires!"

Indeed this was one of the opening statements from one member of our Online Think Tank. It is hard to deny that tires are not a serious consideration in the trucking industry. Certainly they are a huge factor. Dr. Nathalie Fiset explains the problem of blow-out truck tires causing flying debris on the highway;

> *"Hence, so often you have to steer on the highway to avoid a tire truck that had exploded because they are made of recycled material. The other problem is the pollution these cause. If you can create a truck tire that would not leave dangerous debris on the road and would be 100% biodegradable, you would be my hero!"*

Indeed and since everyone wants to be a hero our T-5 Group took this as a challenge. Much of our conversation originally centered how to make tires better and what material to use to make them stronger. It was conceived that making tires out of carbon nano-tubes was feasible and they would not ever be totally ruined, as they could be repaired through frequency manipulation and the carbon nano-tubes would re-align.

In fact it was thought that, they would do that automatically upon being pierced, but by what? What could make it through Carbon Nano-Tubes? A bullet perhaps or Spikes driving out the wrong way from a paid parking lot? Maybe that might be impossible too.

But if it did happen the carbon nano-tubes would re-configure most likely. Oh well there goes the re-tread industry and no more old tires filling up junk yards or becoming perfect breeding grounds for mosquitoes or catching on fire and burning for all eternity. Unfortunately, there is a big problem to all this? And that is the tires would then be stronger than the roads themselves.

Therefore all the roads would need a few layers of carbon nano-tubes to protect them from the super strong tires. On T-5 Group member noted that the roads could be negatively charged and take the CO2 out of the air and grab the carbon and use through ion-attraction add it to the roadway as additional surface. **A road that re-paves itself** and as funny as this sounds the theory does hold up and it is possible by applying just a few simple tricks of chemistry and physics.

Recycling Rubber Tires

Believe it or not used tires can be made into roofing tiles and it turns out they have many advantages over other roofing materials. **Tires into roofing**; old tires made into roof tiles is be is being done. There is a plant that is recycling 40,000 tires a day for roof tiles, so far it is the largest. They cut the tread into little squares and then coat them with a bunch of large granular sized sand pebbles and you stack them on the roof as tiles and they are suppose to work great.

More factories are opening and a few are coming online right now. There are many groups systematically looking at all we throw away and using these materials which meet certain criteria to make things out of, especially in the building of structures. **GreenMan Technologies** has 8 Processing Facilities in USA. Below are some more websites, which are worthy and where you can learn more information about the used tire tiles for roofing.

- http://www.GreenBuildingDesign.com
- http://www.tirestyres.com/trade/aa016951.html
- http://www.rubber.com/rubber/trade/aa016951.html
- https://www.recyclingtoday.com/news/news.asp?ID=2724&SubCatID=18&CatID=6

Rubber used tires are piling up in the nations dumps and along our borders with Mexico. They create hazards because rainwater is caught inside and remains stagnant and havens for Mosquitoes to lay their eggs. The piles of tires often catch on fire and are almost impossible to put out, while the smoke coming off of the melting rubber contains some of the most toxic substances known to mankind.

The Future of Truck Washes

Over the past 6-years I have done research on the Truck Washing Industry and surveyed Fixed Site Truck Washes throughout the country. In the last three years we believe we have been to nearly all the Truck Washes in the USA, we did not have the rig washed at all of them but well over 100 truck washes did receive our patronage.

These pictures above of a truck Wash Bay are of a RYKO unit which is no longer operational. There are other configurations for truck washes such as the Belanger Company units that work on a much different principle with few moving parts and seem to be the Industries first answer to the rigorous abuse truck washing gets each day at truck washes, equipment yards and municipalities across the nation. We have looked into many manufacturers across the nation including the very popular InterClean Concepts Units.

Mobile washing units like the one pictured above come to a truck fleets property and clean the vehicles where they sit and collect the waste wash water affluent by using such principles as blocking storm drains and vacuuming the water off the ground.

Above you can see some of the strategies and methods used mobile truck washers. The first pictures is work being done at a Pilot Truck Stop in Lake Havasu, AZ and the second is a portable clarifier system consisting of polypropelene boxes to separate out affluent and recycle some of the water which is then sent thru filters and water conditioning systems.

In considering many of the Trucking Industries latest truck washing technologies and advances we found solid engineering in the latest Bus Wash Machine by Belanger, a major manufacturer of Wash Equipment.

http://www.belangerinc.com/products_ind.htm

The bus wash machine was 54 feet long and can wash a bus in approximately 9 minutes. We were impressed with this concept and interested in its possible uses. Currently over the road trucks are boxy in shape although in the future they will not be and thus there might be some more re-engineering needed at Belanger especially considering ***Luigi Colani's*** **Futuristic Truck Designs** which reduce coefficients of drag by 50% or more. With body lines on that level the Belanger Unit would be challenged in it current configuration.

Another interesting concept was the Vader Brush Wash System which was set upon an industrial cart or rail and was a vertical rotating brush, which was manufactured Canadian Company. When using this unit we found we could adequately clean a tour bus in about 15 minutes. While a full hand wash with soft bristle brushes took about 15-22 minutes depending on the dirtiness of the bus and type. A semi-truck in about 18 minutes depending on the cab type.

In the future to wash the volume of trucks that need to be washed we will see many different strategies used and they most likely will not be a lot of hand washing, which is too labor intensive and the availability of labor not easy to attain and still keep the price point low to compete with machines that do washing.

The machines will also have to be better at getting the trucks clean and will need to do it fully automatically or with extremely little labor. This will require strategies such as optical flow sensors, sonar or electronic eyes (used in some high-tech robotic carwashes). However in 10-years we will see many trucks coated with self-cleaning paints, that will not need washing very often, as the dirt will repel itself from the paint or be collected and the as soon as water hits it, run right off, similar to self-cleaning window coatings.

With the impending advent of carbon nano-tube construction painted surfaces can be hit with an energy beam and the dirt will be pulled off the surface thru ionic attraction. But also realize that by this time we will see very few fossil fuel motors that have sticky exhaust, so the intervals between washing will have been doubled or even tripled even if the truck, trailer or bus has special coatings or carbon nano-tube construction.

The Truck Washing Industry is not the only Trucking Industry sub-sector that will be hit by rapid changes due to technology, but it will be one that is significantly changed within the next 5-10 years in the future. More information about the Truck Washing Industry and equipment below in this short industry report:

http://www.truckwashguy.com/ExpoAnalysis.pdf

Robotic Warehouses and Future Designs

Not long in the future a truck driver will be instructed as to what loading bay to back up to at a robotic warehouse. Once he is docked the door will automatically open and robotic forklifts will open the Truck Trailer Door and load the truck. Each piece of cargo or palette will be weighed and added to the total. Each piece of cargo will be recorded as having left the warehouse by reading the RFID Tags on the containers. All this information will be uploaded in real-time during the process in case it is interrupted. Although all the robotic systems will have power back-ups to complete their current task much like some surge protectors store energy just in case.

The robotic loaders will then lower the door on the trailer or truck and lock it with an RFID Tagged plastic fastener and a digital picture will be taken and stored in case there's a problem or the seal is broken in route. The door to the warehouse will then be closed and the truck driver will be signaled that he can depart and deliver his load.

Does all this sound to science fiction for you? It really shouldn't because this is the direction that the engineers and researchers are working towards and you can expect all this within 10 years. Additionally in 10 to 15 years after that the trucks will all drive themselves and the entire logistical supply chain will run robotically and autonomously. Even with the labor unions and regulations, which might hold up these advancements in technology surely this will come to pass within 30 to 40 years either way, as it is inevitable and **Resistance is Futile**.

In fact artificially intelligent CEOs will run companies and the corporation's digital nervous system will predict its needs and plan in advance 20 chess moves ahead to prevent scarcity of products and this is more than just-in-time logistics on steroids, as the system will be self healing, re-routing and hyper-sensitive to anomalies which might jeopardize its mission to serve mankind's societies, civilizations and shareholder's of the corporation it works for. This does not mean there will not be challenges such as "Murphy's Law" just that its goal is to be efficient.

Now then let's talk about some of the capabilities right now in the present. What concepts, innovations or inventions are coming at us right now, hard and fast and implementable in a short time period? Well how about this thought;

Energy Saving LED RFID Tag Readers

Running on Vibrational Energy

Can we build the newest robotic warehouses for the Gillette, Wal-Mart and the Department of Defense to be ultra energy efficient? Can we turn off all the lights and save on the energy? Can we turn off all the peripherals and save that energy too? If there is a natural disaster and the power goes off can the warehouse run on minimal back-up energy and do so for weeks?

As we saw with Hurricane Katrina and Rita the power went out, but delivery of goods to Wal-Mart went on. What if the warehouses where all the products were had its power out also, then what? Can we prevent such a potential eventuality?

It is proposed that we use the rumble of the conveyor belts and robotic fork lifts to power up the LED RFID Tag readers using electromagnetic induction technology to charge a capacitor instead of the lights in the warehouse working off the power grid, a battery or the back-up power in an emergency.

It is propose we use the robotic warehouse machines, motors and their vibrational rumble to run robotic sensors and RFID readers. If the RFID LED Tag readers get too dim from not enough robotic activity, then they would revert back to the battery or back-up power. Perhaps this is a good way to save back up generator fuel so it lasts longer and conserve energy when the power is working fine?

Unfortunately currently passive RFID tags do not have the read only range and have trouble being read thru many materials which are used as support structures for racks and storage or to hold up the building itself.

This becomes a significant problem when it is coupled by shipping materials, boxes and pallets which make reading of RFID tags difficult to read thru. Then the stacked products may also have significant density. For these reasons those who attempt to automate warehouses are putting RFID reader repeaters on structural support posts holding the building up.

A 100,000 square foot building may call for up to 12 repeaters within the poles or hanging on the posts, sometimes in the walls themselves always careful to use special materials to not effect the range of the radio waves. It is proposed to that tethered mini-blimps within the automated warehouses be used.

RFID Repeaters would be on these mini blimp UAVs inside warehouses to prevent transmission problems, lost data or bad reads. There is no sense having a warehouse that is fully automated if you cannot for the life of you figure out what the inventory in that warehouse actually is.

The tethers will be attached to tracks in the ceilings and these tethers will have motors on them and small winches which will allow the altitude of the mini-blimp to move up and down to make sure there is always a good read. The blimp will download the information to the main IT Network and that data will be updated real-time.

In completely automated warehouses you would have mini-blimps above on tracks and forklift robotics rail based units on the bottom. No people, no lighting and kept very simple. In the event that the warehouse had dry goods, furniture and other such products there would be no need for climate control either.

No people, no employee pilferage, no workmen's compensation costs and as the evolution process continued no mistakes causing loss of goods. Since there is no risk of falling, the rails could be set in levels like automated parking structures and therefore the height of the facility or warehouse is irrelevant, it could be 10 stories by nine football fields thus maximizing space, all completely robotic and autonomous.

Our mini-blimp proposal lends itself better to single story warehouses, yet can also be applied to multi-story warehouse systems. In the case of a multi-story system; the mini-blimps would float between level and tethered to the underside of the rails which the robotic forklifts would be riding on top of.

Currently the American Auto Industry has the robotic vendor network and they know how to make this happen. The Japanese are way ahead of the Germans and the Americans in these efficiencies, which come with robotic automated warehouses. RFID is getting closer to solve their issues with the costs of individual tags decreasing thru economies of scale. By using the entrepreneurial spirit and the cost controls and efficiencies that all businesses seek we can move the modern automated warehouses into the future.

Material Handling, Loading Dock and Distribution Warehouse Lighting

Loudly watching the intense activity at a modern trucking terminal and distribution center with all the material handling equipment moving in one direction one has to wonder how they do it all without any accidents. Whether you are involved in modern day American material handling or using Canada handling material pneumatic equipment to briskly move freight on stacked pallets, you know that the vibrational energy all around.

The noise, bumps and vibration of conveyor belts, forklifts and material handling equipment is everywhere. I propose we use this information and this vibrational energy for powering up the Loading Dock and Distribution Warehouse Lighting, which at a typical facility could be as much as $50,000 to $300,000 or more in energy costs per year.

By placing large sandwich sheets with a taunt film on the vibrational side and small copper lined tubes, hundreds of them running perpendicular to the sheets, with magnets inside bouncing back and forth. These magnets will charge a capacitor and be hooked up to an LED lighting system using fiber optics or reflectors, each one hooked up to a .2 to .5 watt light.

With hundreds of thousands of lights hooked up in a composite format it will light up the entire warehouse or the same strategy can be used to light up a Freeway, Highway or Toll-way and since the lights can shine down on the road in the direction of traffic it would be like daylight without the light pollution associated with street lights in large cities. Let's not waste the noise or sound wave energy needlessly, let's use it to make light!

Robotic Wal-Mart Shelf Stockers Coming Soon

Since all Wal-Mart stores are set up like a giant warehouse it makes sense that soon there will be robotic Wal-Mart stockers loading shelves. Don't worry your young children are safe inside the cage of the steel or plastic webbing shopping cart. And even if not the robotic shelf loader will indeed sense human presence by way of infrared and body heat, motion detectors and optical flow sensors.

Why is Wal-Mart going to be the first to use robotic shelf stockers? Well with unemployment so low in many parts of the country it makes sense. Also Wal-Mart has the cash to fund the Research and Development and they are an obvious user with a much-needed application for such robotic systems.

What will these robots look like anyway? Well they may at first resemble a Star Wars R2D2 although eventually look more humanoid like a C3PO Advanced model as to not offend humans. Will this mean fewer jobs for people? Well there are plenty of jobs in many places and Wal-Mart has trouble in larger cities trying to staff some locations. With unemployment at under 5% and if it gets any less, they will have no choice but to further integrate the future robotic stockers in a store near you.

Smarter Garage, Smart Warehouses and Smart Truck Terminals

The Smart Home Garage of the future will have many things for instance; as you walk towards the garage door it will open like the grocery store doors. If you take out the keys, your car the door of your car will open. As you get in the car it will start automatically and when sit down the hydrogen maker box will disconnect from your hydrogen cell car's gas tank.

This is the same hydrogen box, which has been making fuel all day and taking it out of the air, instead of you having to pay for it. The garage door light will be set based on the ambient light outside and in the garage and will adjust accordingly, as needed. You seat will adjust in your car, as well as the seat belt to your favorite comfort position.

As you back out of the garage the garage door will close automatically using a sonar sensor. As the garage closes it will then turn into a giant mirror so you can see behind you as you back out. Then as you leave the driveway the garage door will turn back to match the color of the House.

How long until all this technology is available?

Well all this technology is available right now.

It will only take a few entrepreneurs to put it all together and it will be available to the public probably within five to 10 years. They will probably need a little Venture Capital Funding and some shrewd deal making talents to establish strategic partners.

What else will the Smart garage of the future have? Lots of things and some we may not have even considered. I bet that when you sit in your car it will ask you where you are going and when you state where you're going and it will pull up a GPS and the garage will be hooked to the Internet to check for weather, detours, construction, traffic and road conditions, which will all be WiFi to your car and put into the GPS as you back out.

Yes, your car and garage will be net-centric'ed together. If you drink too much you will just say drive me home and it will put you in your garage detox unit. The future will be great and it is almost here.

What Does This Have to Do With The Trucking Industry?

What Does This Have to Do With Trucking Terminals

What Does This Have to Do With Warehouses?

The answers to these questions are quite simple really. What does a truck do when it leaves the terminal? It is the same as leaving a Smart Garage at home. The driver will walk out to the truck which has been running for 4-5 minutes and the driver will get in, the seat will adjust, seat belt will move across the body and buckle, the mirrors will adjust and the GPS unit will show the position and a complete read-out will be on the screen. All the driver has to do is pay attention, watch for traffic and have a safe trip.

Now then let's refresh here and think back to the Smart Home Garage of the Future and think to ourselves how all this will work. The home user will enjoy the systems, but they do not really need them, as they return just a little quality of life for a lot of cost. But a trucking company that can save 15 minutes of a drivers time at the terminal or a loading area, that means efficiency, labor cost savings and that means higher profits. So let's look again at the home system and smart garages of the future one more time and why these are going to be soon available.

You see, with the emergence of robotics, artificial intelligence, virtual reality, materials sciences, net-centric systems and alternative energies the average lifestyle of the middle class will change substantially in the next coming two decades. These technologies will shape the way we live and affect everything from our automobiles to our homes.

Perhaps you might have seen Discovery Channel shows and presentations on; “The Home of the Future” fully equipped with artificially intelligent android robots to do your dishes, your laundry, mow the lawn, cook your dinner and wash your car. But have you considered a net centric garage interfacing with your house and your car as well? Perhaps you might, as that will be not too far off in the future. In fact it is a logical next step. You are in the kitchen getting ready for work and your car is getting ready too, as it checks the route for traffic problems, construction, re-routing alternatives.

Indeed your garage may warm itself slightly and start your car as soon as you open the door from your house to your garage. It may then communicate with your car to adjust the seat while it prepares to open the garage door for you. When you return home your car will communicate with your net-centric garage and your home to get everything ready as you drive up. Can you see it yet? Can you envision this future? It is not much of a leap considering other technologies.

Chapter VI

Fuel and Propulsion

[Another Radical Design by Luigi Colani - Future Aerodynamic Fuel Truck]

When discussing the Future of Trucks and the Trucking industry it is important to realize that Fuel and Propulsion are the key to the success of a truck model. In the United States trucks run on **Diesel and Bio-Diesel Blends**, but in the future we might see the propulsion system where the motor is electric and running off a fuel cell. This would solve all the issues and concerns about pollution, which appears to be a pre-occupation of our national direction and goal to eliminate it.

Easier said than done, as many people have no idea how much fuel we use or the incredible logistic chain we have to get it to market. **The Flow of Fuel** is one of the most important considerations for the transportation in our Nation and without adequate flow, we are all parked and America Stops. Before we get into future propulsion devices or **"Growing Our Own Fuel"** let's talk about the flow and understand the issues concerning how it all works. Then we can answer the question; *What fuel options are available or will be available in the future?*

"America is Motivated By the Fuel Which Drives Us Around"

The Flow of Fuel

Without the **flow of fuel** our very mobile society comes to a complete stand still. When the supplies get low and the free-markets dictate higher prices; every one of us feels the pain in some way. We are effected no mater where we live, what we do, where we go, what we drive, where we live or who we are. This is because the economics of supply and demand of our fuel affect every flow that we know, that is every flow that sustains our civilization.

The price of fuel in the transportation that delivers to us the things we need and desire is added on to the prices of those items. Every item that we purchase, buy, beg, borrow, steal or trade for is delivered by a truck, train, plane, van, ship or other form of transportation and many times a combination of those. Every single one of those forms of transportation requires some type of fuel. And in the future when some types of transportation do not require such fuels, it will still affect you also in some way thru obsolescence or scarcity due to diminishing supply for a slowing demand.

This could affect you in a very positive way or could be in a negative way, due to future transportation options becoming obsolete and therefore less competition in the transportation sector. This again is all Due to; supply and demand of the fuel that such transportation no longer needs to run on. When a product in the future can be delivered without fuel, then the deliver vehicle used in the transportation mix will go up in demand.

This is because; when the price of fuel for competing transportation goes up, more usage will be placed on it to meet such demand. We see today a fierce unspoken competition between trucks and trains. It is well known in those industries and with those who ship the products, components, parts, natural resources, produce and even the fuel itself, after all the fuel competes for the cheapest mode of delivery as well. Whether it is delivered via a pipeline, rail car, tanker truck, ship, barge, makes no difference, it still must compete in the market for efficiency, cost.

In the case of the military, you can add in all the squadrons of flying gas stations too. The price of fuel when low can be the savior to an industry which is hammered by over seas competition or is trying to find a little more room to cut costs to appease unions who desire greater health care benefits, safer working conditions, less working hours, more paid vacation time, bonuses, higher pay, etc. The money has to come from somewhere and the price of fuel and the supply will often determine the viability of a large corporation and affect its quarterly profits, share-holder's equity and pecking order in the market place.

Those companies, which use a lot of fuel are very much affected fuel price trends, companies such as; Airlines, Trucking Companies, Railroads, Manufacturing Companies, and Service Companies of every shape and size. When these companies pay more for fuel those prices are figured into the price to the customer. When such companies have long term contracts to a customer and the price moves upward to quickly then these companies have to eat that cost.

This causes huge operational losses and/or poor quarterly earnings, which effects their market valuations due to hammering by the gambling casino stock markets when they report these losses. This in turn leads to massive lay offs, which is not a good thing. If you have ever been laid off, you may wish to look at your company's supply chain and distribution models and the fuel usage of the vehicles they use and see if that was not a contributing factor or a factor with those your company sold to who were cutting costs, such as the consumer or businesses you're your company sold to.

Even companies you might not even think of are very much affected by fuel. Consider if you will Telecommunication, Cable, Garbage, Utility and even Pharmaceutical companies have vast fleets of vehicles.

Grocery stores have huge distribution centers and some of the largest fleets in the nation. Safeway, now Safeway-Vons stores had at one time the second largest fleet in the nation hauling its own product. Safeway had 3600 trucks and Vons had over 2500. Making a total of 6100 trucks or units and that was over ten years ago. Fuel very much effects food, as the farmer uses fuel and someone had to take the product to the distribution centers before the store run.

The reason we bring this up is to demonstrate that the flow of fuel affects every thing we do in life; our jobs, families, school, work and safety; not to mention our food, shelter and clothing. If you will think for a second everything you eat, every piece of plywood in your house and piece of clothing you wear was transported to you and folks that took fuel; then you know that the cost of that fuel is figured into the price of your new sweater, nails and roofing material over your head and the Starbucks coffee you drank and the McDonalds Hamburger you ate.

Generally when the average person on the street thinks of fuel, they think of gasoline in their car and the prices at the pump and how much it takes to put the hand of the dial on "F." One Oil Man we recently interviewed from Texas, with wells in Oklahoma, Texas and natural gas wells in Louisiana was blown away after driving around in LA. He said;

> *"I cannot believe the amount of cars in Los Angeles and Southern California. I did not realize that we had that much oil to make into gasoline for all those people to drive around like that!"*

Think about it for a second; he is in the oil business. There are many types of fuels besides the gasoline we put in our cars and use to cruise around. It is only the first thing that comes to mind for the average consumer when they think of fuel; *"Gasoline" for my car*. The amount of Diesel Fuel for trucks, is a huge amount of fuel. Think how many trucks there are on the road? All the independent truck drivers with those fancy rigs getting just about 5 mile per gallon depending on terrain, speed and wind.

Then of course the huge fleets of the grocery chains and giant companies like Wal-Mart. You have Publix, Albertson's, HEB, Kroger and Piggly Wiggly, which all with enormous fleets of their own and then you have the large contract carriers like Swift, JB Hunt, Werner, Covenant, US Express, Dick Simon, etc. and the LTL Carriers– Less then Load Companies with gargantuan fleets.

And what about companies like; Fed Ex Ground buying up Viking, American Freightways and others to form the third largest LTL; the mega merger of Roadway and Yellow Freight - these fleets have continued to buy fuel to get the products to market, deliver the materials and components to keep the Nation's economies turning. All this is made possible because the fuel is readily available at price threshold that is livable. Without it America stops. There is a saying in the trucking industry with those that accuse the truckers from getting on the freeways and holding up traffic;

"If you take the trucks off the road the shelves in the stores will be empty in four days,"

This makes truck drivers and the trucking industry feel good about themselves, so it serves a purpose. The truth is the shelves would be totally empty in 5.5 days and people would start to starve within a week and half. In Three weeks and there would be anarchy in the streets, yes even the middle class suburbs. At that point you might just wish to have a friend who drives a truck, because the new world order would be that of "Road Warrior."

Fed Ex and Ups are approaching 35,000 vehicles each. How much fuel is that? It is so much they can afford to look at alternative sources and fund R and D projects to reduce their costs in fuel. UPS recently decided to put in Hydrogen stations at every terminal for their double and triple truck units. Fred Smith, Chairman of the Fed Ex Companies said that if a company could deliver a vehicle that would use 50% less fuel and 90% less emissions he would order 19,000 of them. He lied they are now ordering 35,000.

The company grew a little between the offer and the accomplishment. Just incase this does not impress you, we will be glad to be impressed for you. The free market is finding ways to deal with the issues in the flow of fuel. It does not take long on a busy corner in a busy city to see that one in three vehicles is a business or a government vehicle. A school bus, cable installer pick-up, limousine, post office LLV (new jeep), dog groomer, meter reader, taxi, car wash guy, telephone company van, garbage truck, shuttle bus, pizza delivery car, package delivery van, rent-a-car, police car, armored car or a hot dog cart in tow.

This is before we even discuss the fact that in many households there are as many registered vehicles as members of their family, including the family dog or cats. America's love of the automobile comes with issues of fuel and this is why the supply and the flow of the fuel should be among some of our top priorities.

A couple of years back in Arizona an old pipeline owned by Kinder Morgan sprung a leak and left the city of Phoenix in a problem situation. No fuel for cars. The problem went from serious to critical in less than two days. We saw first hand that service businesses stopped, people could not get to work, school, doctors office, etc. It certainly got the attention of every man, woman and child within in that period. The problem lasted a week.

Trains, trucks loaded with fuel tried to keep up the supply, but they started from behind the curve and could not possibly keep up. Many gasoline stations had already run out of fuel and people were running out of gas, while looking for a gas station still open. The sides of the freeways were full of parked cars - yes you guessed it with scribbled signs written on note book paper, pieces of car board and backs of hand bills set between the windshields and wiper blades;

Still think the flow of fuel is funny?

The other heavy users of fuel are not as often thought of, but let's look at them for a second. While we are talking about surface transportation, let's talk about trains. The railroad has always been a big part and played an even larger part in the flow of fuel even before the locomotives used fuel. Even back when the trains were steam driven from coal. The Flow of Fuel is very important and no one can argue that, better than Rockefeller. As you know he was a master of the flow, all the way down to controlling his cost and his competitor's costs on the rail lines.

By forcing restrictions on the distribution systems it was hard to compete and many an Oilman sold their companies to the "streamline by the numbers former accountant with the impeccable books." Before you continue this discussion please go read the life **Story of Rockefeller and Standard Oil Company** and then you may continue.

Now let's continue, today the railroad is a big user of fuel and the railroad is responsible for a large chunk of the movement of fuel as well as the natural resources in our country. The railroad delivers fuel to terminals for trucking companies, without the railroads it would be difficult to supply the trucks with the needed fuel. Pipelines only go to so many places.

The railroads move chemicals out of the refineries, compete with them and their vendors to deliver the fuel and deliver to the trucking terminals, which are not near pipelines, while the railroad competes with the trucking companies to deliver products to the market or manufacturing companies.

Then in the last decade or so you have seen an increasing amount of piggy back trailers from trucks on the flat bed railcars moving across the country due to high fuel costs, insurance costs, interstate trucking regulations, trucking unions, driver hour restrictions, road construction destroying equipment or slowing the traffic flow and shortage of qualified drivers. As all these methods compete in the market and for fuel, they also compliment each other providing our great nation with much redundancy, which at times seems wasteful, but in this newest era of the treat of International Terrorism, makes it nearly impossible to stop the turning wheels of industry, energy and commerce.

The entire system moves on the flow of fuel. The railroad companies can buy large amounts of fuel and store it and move it cheaper and have an inherent edge on the trucking industry and where as the railroad is more efficient than the trucking industry, the tracks do not go everywhere. Also the loads need to be larger to make it worthwhile. So even if the railroads are more efficient the shipments must be broken down to get to their final destinations.

Thus you will always need both forms of transportation, which are the only two of the largest users of fuel. Another large user of fuel is the airline industry. Fuel costs are higher than even the cost of the aircraft. Airline tickets and airlines live and die on their ability to number one fill up planes and number two, manage their fuel costs. Discount Airlines have been able to keep flights full in order to order to cover costs and keep prices low, but are hurt in quarterly earnings every time fuel prices increase. When fuel prices stay high, you often see massive downward spirals and negative sector rotations in Airline Stocks. Again it is all about the flow of fuel.

It is of interest when we hear talk of our National Debt and how important that is. The flow of fuel is several times more important than that, because with proper flow and economies of scale, every thing works better and every one wins. Consumers have lower prices and more choices; governments have greater tax revenues due to more commerce and more jobs paying into the system; industry has higher profits and more money to expand; the stock market moves upward providing greater benefits for those who bet on a strong America and therefore greater investment in new companies which provide innovation and research and development to improve the flow of every thing we know.

Speaking of the benefits of the flow of fuel to government in the tax revenues, just think of all the fuel the government uses at all levels? Incredible amounts at every level; so incredible that they along with private enterprise spend millions of dollars trying to figure out more efficient methods. The military uses so much fuel it has its own reserves and oil fields and contracted out refineries. It has about enough supply for the entire country for 60-90 days depending on our conservation levels in a crisis situation.

Fighting a war takes a tremendous amount of fuel. The modern Aircraft carriers use nuclear power, like the submarines, but the rest of the world's greatest arsenal uses fuel of various types. And they are always testing different fuels to increase performance in different situations. These reserves have been used when OPEC plays hardball creating fuel prices above our ability to operate our industries and businesses and keep America employed and the wheels of commerce turning. Opening up the floodgate of supply, lowers the prices and puts the cartel in check.

Many businesses become un-viable when fuel prices go too high and uncertainty of the flow of fuel or market price fluctuations cause businesses not to re-invest. Often people will say that certain wars are only about oil. Obviously this is not the only reason, but even if it were, judging by our need for the proper supply and flow of fuel and the fact that if America stops, America starves, it would appear such a war over resources is justified no matter how you slice it, that is if another nation or group of nations is holding you out for ransom, isn't that an act of war.

Wars have been fought over land, slavery, gold, arms, drugs, trade, religion, territory, practice, race, currency, food, water, resources and fuel. Killing of your own species seems like the wrong way to go about such a situation. Although constant wars over resources can certainly not be considered the proper way to run a world filled with neighbors, friends and trading partners many a nation-state has been accused of goosing another in trade disputes leading to political impasse and fighting.

It is interesting the OPEC Nations and the cartel, which affects the quality of our daily lives, personal success, the number of people who can enter our middle class, and all of our businesses and industries including your job. In our country we have rules about monopolies that we enforce on every large super heavy weight business in every industry. Above we asked that all those continuing this discussion read the book on Rockefeller.

If you have already read that book then you understand the remaining points and why we bring up the importance of flow and we are discussing it and comparing it to OPEC. Rockefeller was beholden to the market place and the supply and demand issues of the day. If his price got too far out of line, then others would jump into the game. OPEC constantly manipulates our supply, much worse than the anti-trust issues of yester year.

If it is okay today for OPEC to play these games then certainly Rockefeller did nothing wrong, as a matter of fact, I have never heard of such an important concept such as Anti-Trust, which has so little reality based thinking and has undergone so few changes in the past 200 years with all the ridiculous patch work within is regulations it throws out the entire idea of capitalism and competition. The laws are vague, utterly preposterous and reward the weak.

The notion that bigness is automatically evil, dangerous to the welfare of free men or bad for the society as a whole makes no sense in a free market economy. The theory that Monopolies, which started small and grew big due to the consumer choosing them over the competition is a testament of a strong free market system with tough competition forcing the best athlete forward for the gold metal and is merely survival of the fittest. A free-market earned monopoly is not evil, but the way OPEC operates should be of interest to the Trucking Industry. John D Rockefeller was a great man and delivered fuel to the people and enabled us to move the ball forward as we modernized our civilization. J. Paul Getty once said;

"I believe that the able industrial leader who creates wealth and employment is more worthy of historical notice than politicians or soldiers."

Now then, Hydrogen is a wonderful future choice and option to offset the supply issues, but only through incremental change. Many say ethanol is the answer. Maybe but lets not forget that it takes water to grow corn and many of the areas where corn grows well have gone through some rather harsh drought times lately. If we subsidize farmers to grow corn, use up all the water and then the price of the ethanol is close to that of gasoline then why not use the same money to lower the taxes placed on gasoline now? It is the same money and we get some of the water back and still have something to eat, make plastics out of and export. There needs to be some clear headed thinking about these issues and all too often it is political and not reality based. It is going to require some non-linear thinking and deep thought.

No, one can hardly be against ethanol really; **"Growing Your Own Fuel"** sure sounds like a great plan, it solves problems and makes sense, but we also need to realize that cost is a factor and anything we do in the market must compete. We need water to grow, we need a competitive product without subsidies and there are still hurdles with ethanol due to its corrosive nature for pipelines. We must also realize that ethanol works best in higher ambient temperatures, which is not where it is generally used or produced, so we lose a percentage of its actual value and the amount of power it produces in the engines.

Because the oil in the ground and the natural gas is sitting there and it is free and because we already have the infrastructure in place and clicking away as it works to pay of its return on investment, it will be very difficult to compete with it for price no matter what other options are available. It only needs to be extracted refined and transported. These other technologies also need to be refined and transported. And if the refining process puts pollution and green house gases in the atmosphere, then where have we really saved. It has to work all the way around in the environmental circle and still be produced for the same price point or less otherwise it is defeating the purpose it intended and therefore it is not reality based.

A very skeptical eye needs to be watching these movements and if it makes sense, move it forward incrementally. Today there is no noticeable shortage of oil or natural gas on this planet and enough to keep us going until a paradigm shift takes place in the may we motivate and propel our vehicles. We have certainly come along way since the old stories of the Permian Basin originals. If you have studied some of the incredible stories and histories of the Texas Wild Cat-ers, then you can see what an incredible distance we have really come in keeping up with the World's thirst for oil and the refined products such as Jet Fuel, Diesel and Gasoline and ancillary chemicals left over during the refining process. The flow of fuel is a key to the Health of the Nation.

Technology and Fuel Costs

Rising Fuel prices and EPA sulfur laws will shake up the transportation industry as it works to cut costs. But where will the industry cut costs? Well they could cut out the drivers? They are the second largest cost next to fuel? But that is still some 25 years out, as trucks cannot drive by themselves yet. Railroads will also need to cut costs with tonnage rate downward trends. Perhaps they will look to more powerful engines, which use less fuel.

We have the technology to use air-cushioned rail cars with high speeds and little power needed due to reduced friction and that will require little fuel. Hydrogen celled Trains? Yes easy with air-cushioned technologies, but who is going to pay for it? If we destroy our transportation sector through immediate retrofitting then how will the industries leaders pay for all the costs?

Automated trains, they are coming and yes automated aircraft too, the new jet airliners nearly fly themselves in 0/0 visibility. We have conductor-less locomotives, but they really have not been implemented much due to unions in an uproar, but this is eventually coming 5-10 years. Aircraft are already flying themselves; UAVs - Unmanned Aerial Vehicles, over course we had drones in the 70s. Give it 10-15 years and we may see passenger aircraft flying themselves, no way for Al Qaeda to hijack it then.

Our T-5 Group has seen very few articles in trade journals about these things and only one or two in financial papers, economic papers, magazines, and essays. The articles we see are still in magazines such as Aviation Week and Space Technology, Popular Mechanics, Scientific American, yet all these are too specific to a given subject with authors who are industry experts in only one or two fields.

Tomorrow is sooner than you think and Hydrogen Cell Cars, Trucks? Only 5-10 years out and 15 until they are common place; they have many advantages besides fuel costs; they are easier to keep clean due to the dirt is more dusty than sticky, requiring less soap, good for the environment and fewer moving parts, less maintenance and several other advantages of noteworthiness.

Engine Technologies and Future Motors

Pollution Standards for trucks are changing and truck engine makers are working on this and have been for many years. Some are making quite a bit of headway. Soon all over the road 18-wheelers will run more efficiently and cleaner. Let's talk about one of those companies now; Daimler Chrysler with their Caterpillar partnership.

Here is an excerpt of an article from back in 2002, as companies aligned themselves with partnerships in order to comply with the Clinton-EPA low-sulfur rules by 2006;

> "DaimlerChysler-Catepillar joint venture is a major step in coming up with a non-sulfur high performance engine. This may mean that Freightliner and Sterling are the only trucks with engines to perform with the new fuel requirements in cold weather states and mountainous terrain. Also it could possible be the only diesel engine allowed in a few years under CA emissions law as part of the AQMDs recent phasing out of non-clean burning engines on truck weighing over 14K GVW. With Volvo no longer allowing choice of engines on their future trucks to save on the stocking of parts this will be interesting indeed. Can you say turf war? As new truck sales decline and lay offs already occurred at Freightliner, Kenworth, Peterbilt, Volvo and International."

Of course we know in hindsight that the Sulfur Rules were extended, but the technology is now available. Any time there are new regulations on fuel mileage efficiency, environmental controls or safety regulations the free market adapts in real time. Sometimes this causes chaos and thus opportunity for one competitor over another. I think this is one example of that, as we shall see many more such examples in the transportation industry as the Global Warming media trends continue and cause changes in governmental regulations, rules and policies.

Hybrid Car Market

We have all heard a lot about hybrid cars lately and with prices between two dollars and three dollars per gallon we are reading many articles in the newspapers, magazines and industry trade journals too, but where are all these hybrids we have been promised? There were only 12 hybrid models on the market in 2005 - 2006. It appears that there are now some 52 models in the works and slated for 2012 as our research indicates. There is significant demand, but still the price point is off over $15,000 over reality for the average new car buyer.

More and more Americans are considering buying a hybrid car, in fact when surveyed 33% of all Americans say they would consider buying a highbred for their next car. Since the average person buys a car every three to four years that means if there were more high breads available to buy that we would see a whole lot more on the road, but production is not keeping up.

The problem is; is that very few of the cars being built today are hybrids and part of the reason is that they cost more to build. In fact the percentage of hybrids to regular models was less than 1% of the 17 million cars built in 2005 and 2006. Why are people interested in buying hybrid cars? Well when asked nearly all of them said their number one reason was to improve fuel economy. And only a few really were considering their number one reason was the fact that it would help the environment.

Although in these surveys many of the consumers gave other reasons on top of the number one reason to save fuel such as; help break America's addiction to foreign oil, receiving tax credits, saving the environment, preventing Global Warming and wanting to have new technology. Nevertheless, as more hybrid cars are being built more will be sold and this has enticed the US automakers to jump into the game.

In 2005 and 2006 there are waiting lists at the dealerships for both Toyota and Honda hybrid cars; this is due to the strong demand and obviously the high gasoline prices at the pump. The consumers answer to high gasoline prices is to buy a hybrid car and the Bush Administration has set forth an initiative which extended the hybrid automobile tax credits. The $3400 tax credit if you were on one of those waiting lists made many folks very happy. Diesel cars also got the tax credit and the reason is because these vehicles run on 30 percent less fuel than gasoline vehicles.

It is important to know what the auto industry is doing and where things are leaning, because so often consumer and citizen perception tends to get the politicians ears and they are the ones setting policy. The environmental polices Washington DC which are set in motion will seriously impact the Trucking Industry and Transportation Sector. So often it does not matter if the pollution issues are real or not as there will be a created reality trend or movement and once those rules are in place all bets are off and that is what must be dealt with.

Since cars and trucks share the highways of our nation and their travel is under guidance of the same agencies both at the Federal and State levels, it is crucial that Trucking Industry analysts look at what is going on and where things are leading.

Hybrid Trucks

In 2004 in over 88,000 Hybrids were sold to consumers and waiting lists were climbing. Honda, Toyota and Ford could not build them fast enough. Also with China and India entering the global game for demand for oil we will see the price per barrel to continue to remain high even if OPEC decides to stay with us. By 2010 China will be selling high-mileage SUVs in America and they are setting up dealer networks right now.

What About Hybrid Trucks?

The Japanese are now showcasing their technologies in medium sized trucks. In fact Hino Motors, which makes the very popular box type delivery trucks you see around town is now making an diesel electric version which is now available in the US. They have been available in Japan since 2003. The unit is called the Hino 165 Hybrid; pictured here:

http://fleetowner.com/hino.gif

No, they have not sold very many of them, as they have not made very many, but they are selling well. The price is still a little steep at $116,000 per truck which is just over two times the cost of their regular units, but Hino a spokesman said in ***Transport Topics*** that the fuel savings over a three year period would cover the additional costs and the Public Relations for companies and the tax incentives in states like MA, CA and NY would more than entice buyers to switch over. The fuel saving is a solid 14 to 27% over the conventional models like the Isuzu and other competing trucks like the one pictured here;

Hino of North America took a big gamble and was convinced that buyers would put up the extra money for the new hybrids and many government agencies are already trying to order them. Their strategy is working and there are even waiting lists at some fleet dealership locations are now forming. This is only the start and we can expect larger classes of trucks to come next.

What about way-out outrageous fantasy technologies? Well here is a thought on that:

T-2 Turbo Tornado Wind Truck with Frontal Horizontal Vortex Pull Propulsion

Is it possible to create a vortex airflow in front of an Truck to get it to move down the highway? The vortex airflow would suck the Truck along down the road like a Tornado. Of course the Truck would have to be made of lightweight materials, especially considering it would be towing a heavy load too and it would take quite a bit of engineering to make it happen, but if everything came together, would it be possible?

Most people who have heard about this scheme do not believe it will work. Yet it seems to be feasible if it were done properly. The question is how much energy does it take to create a frontal horizontal vortex pull propulsion system for a large truck? And how much would cost to make.

Since no one has ever designed anything like this, no one knows for sure, but theoretically it would be possible and you might call be finished prototype; A Wind Truck. The truck we use for the prototype should be a racing truck which is fairly light weight to start out with.

Now then what can we use to create the vortex?

Well, it is recommend using a laser to start the vortex spinning and a half moon trailing edge on an airfoil out front of the vehicle, moving the air around it by blocking the relative wind from blowing away the vortex or mini-tornado and simultaneously flowing air to outside to increase the outer edges of the vortex wind. The entire mechanism would be set on arms extending past the front of the Truck. Next the front of the vehicle would shaped like a concave front.

The Tornado Horizontal flow would suck the truck along and there would be slots in the leading edge allowing the relative airflows as the truck to move forward and keep it going once it got started? Just a thought on the Wind-Truck Concept and why not, if you can dream it, surely we can build it.

Time to get back to reality and let's talk about:

Kenworth's Hybrid Truck

Kenworth now has a Hybrid Electric Class 6 Truck (Kenworth T-270) that operates in Hybrid mode below 30 miles per hour combining diesel and electricity and then it simply operates like a normal diesel truck once above 30 miles per hour. The system requires nothing from the driver it automatically switches as needed. The best part about this truck is that the fuel economy efficiency savings is just over 30%. Saving 30% on your fuel bill makes the extra cost very much worth it for operators and this unit will be in full on production sometime in 2008 and this is a great leap forward.

Since the Hybrid Truck uses electricity in combination under 30 mph the more stop and go traffic the better mileage it gets; perfect for a deliver truck in the city. The battery is charged during braking using "regenerative braking" strategies and the electricity helps during acceleration and makes the performance also quite good.

Full Press Release: http://www.kenworth.com/6100_pre_mor.asp?file=2105

Mitsubishi also has a Hybrid Unit as well as several other manufacturers of those classes of trucks. We also see Eaton Corporation with Southwest Labs working with FedEx for their delivery vans with Hybrids. UPS is also hot on the trail with their own hybrid unit roll-out plan and we are seeing many companies moving towards hybrids, because some of these models are available now and this helps the companies offset high operational fuel costs and stretch out the additional costs of the vehicle over many years.

Peterbilt's Hybrid Model 335

Peterbilt (Model 335) has introduced their Hybrid Medium Duty Truck and it's main market is for Utility Companies and Cities, which are leading by example. Peterbilt's customers have requested a Hybrid Unit for PR and cost savings. The Model 335 has a 6.7 Liter PX-6 PACCAR Diesel hybrid motor, which uses Eaton Corporation Technologies. It boasts a 28 to 40% fuel savings using hydraulic Hybrid assist which means that it also works great for work trucks which use a PTO - Power Take Off unit to power up boom or other equipment.

Peterbilt also makes a Model 320 which has a Hydraulic Launch Assist system and it is a Class 8 Truck. The Model 320 collects a portion of the heat from the brakes in hydraulic fluid, which is used later to help assist in acceleration, when the most amount of fuel is typically used. The scheme works very well actually and is an example of great innovation and superb engineering agrees the T-5 Group.

Electrical System Re-Designs

Hydraulic assist for Hybrids make a lot of sense and Peterbilt has certainly got some smart folks their and Kenworth is also on the leading edge with their use of Electronic - Hybrid Technology strategy. Re-designing the modern Truck electrical system also makes sense for saving fuel. Changing over to a 42-volt electrical system will allow electricity to run many of the components that normally put large loads on the motor and burn more fuel. This is considered a mild-form of hybridization as defined by the Department of Energy:

> "Mild hybridization typically refers to the incorporation of a 42-volt electrical system on a vehicle. The 42-volt electric system increases electrical power thus allowing the use of electrically powered systems such as electric power steering, electric brakes, and electromechanical value actuation."

Preventing Pollution Thru Oil and Lubrication

One of the best ways to increase fuel economy and also reduce pollution is to use special lubricants. In the auto industry many manufacturers to meet EPA emissions requirements are moving to specialty oils and also using it as a profit center. Then there are also requirements for new grades of oil to be sold in order to insure that cars pollute as little as possible.

Clean Air is Extremely Important

Most people do not realize how much air moves thru the air-cleaner of a Diesel Truck Motor, it is tremendous amount of air that needs to be cleaned to insure proper burn and performance. If the dirt gets through and mixes with the engine oil on the cylinder walls, you can already see the problem. Groves can form, piston rings worn, and permanent ware - 8 ounces of dirt can ruin an engine. Clean air is as important clean oil.

The air first goes through a pre-cleaner; this could be a screen in the air intake system. The air then heads for the filter and it pushes its way through the passages and the dirt being heavier falls away. The dirt, which is trapped, helps trap other dirt. This is why a clean air filter is not as useful as an air filter, which is a little dirty. Most truck filters have a 99 plus % rating for catching the dust. 99.6% is not uncommon. It is estimated that over 70% of all air filters are thrown out too early. Proper air cleaner strategies increase engine efficiency, meaning less pollution, more power and better fuel economy. For Diesel Truck Oil and Lube Companies and locations:

"If you are telling your customer that they need air filter each time you maybe making money in up sell, but your are doing them a disservice."

Awareness of this issue is a smart step to increase fuel economy whether the motor is running Bio-Diesel, Straight Diesel or Hybrid Diesel notes the T-5 Group. In fact some filters on Peterbilts can go 125,000 miles before air filter change.

Will Hybrids and Fuel Cell Trucks Destroy the Oil and Lube Industry?

This same question is now being asked in the Auto Industry and there have been several in depth articles in National Oil and Lube News:

www.NOLN.com

Hybrids On The March

"Oil and Lube Business On The Defense!"

In 2002 the total sum of all hybrids sold in the US was less than 30,000. In 2003 Toyota sold less than 100,000 total hybrids. By 2004 the number was approaching 250,000 and the numbers are accelerating as we speak as more and more models enter the market from nearly all major manufacturers now. So, should the oil change industry worry that soon these hybrids will start cutting into sales? Well, currently the cars being sold still have motors, a little smaller, but they still have motors.

Many oil change companies have a standard price for all cars and therefore they actually use less fresh oil, so they make more money and remember with hybrids they have additional systems too. So, oil change companies are in luck because the hybrids have DC motors in them too and they require 0W-30 to lubricate and keep cool. Meaning the Oil Change Industry is safe still, for now!

If you are in the lubrication industry then you know that the enemy is heat and well in a DC Motor heat is very much the enemy just like in regular engines. Most of these DC Motors require a top brand synthetic like Mobil One. Amsoil is also hot on the scene with their new Hybrid Auto Oil formulas that they are peddling now.

What About Fuel Cells - No Engines?

Today you will not see a lot of fuel cells on the road they cost 6-10 times as much and there are few if any places to fill them up. Recently General Motors introduced them into Washington DC where there will be a fill up station and free cars for politicians to try them out. But still even McCormick from GM admitted in a speech in Phoenix to his former University spectators

"We are looking at 2010 for GM to really ramp up the Fuel Cell Technology"

Believe it or not there are things for Oil and Lube companies to service on fuel cells. As far as Domestic Hybrids, well General Motors is not the only company moving forward with Fuel Cells, as Ford has some new models also on tap as carbon nano-tube become available to insure that the Hydrogen Fuel Tanks do not leak.

Right now we know that ford has built Voyager and Ford Ranger all electric but mostly for show and a few government agencies on matching fund grants and tons of CNG vehicles and conversion kits out there.

We watched in 2004 it became an incredible year for Hybrid Cars, as they could not keep them on the showroom floors and owners usually got a $5,000 appreciation almost immediately after buying them and some even sold them for a profit the next day on eBay; the bidding started at 5K over sticker price. Domestic Auto Manufacturers offer hybrid options on the GM Silverado Pick-up and Sierra Pick-up and Ford on their little SUV mini-Escape.

GM is offers an option on the 2007 Malibu, Yukon, Tahoe, but clearly there is no way they can produce enough of those to meet demand. In 2005 and 2006 consumers were able to get a Saturn Vue or Chevy Equinox in hybrid. Honda had several units out, but they are tough to get. All those cool Electric Cars did not pan out very well due to prototype status, cost to maintain and high electric bills, but many have been out now some 15 years.

Electric Cars have been around for ever, Fuel Cell is not that new of a concept, it is really some 100 years ago, many people do not even realize this. We are seeing many cars now with electric power steering which add .05-2% efficiency in gas mileage in cars like the Honda S2000 and Saturn Vue and we will be seeing those 42 volt accessory cars soon which claim to add as many as 5-6 mpg, which is very significant and the large trucks seem to be able to do the same with some types of driving. Not bad at all.

What does all this mean for the oil and lube business? Well, it looks like things are changing slower than faster, although with all the Global Warming Scare perhaps that might speed up the innovations and research and development?

We shall see, but all in all it looks as if the industry of Quick Lube will be changing, just a lot slower than those "Futurists" would have you believe. It surely is past the point of science fiction, since the technology exists and the cars are available for those with big bucks and clout to find them or are ultra environmentalists, but generally they would not be popping into a quick lube service company anyway, chances are they would be higher end customers and send the nanny to the dealership for service or have a mobile service come to them on their time.

We do predict radical changes in the industry, but every one is good to go as is for about 5-7 years. Wal-Mart buyers have met with GM to see what the needs will be in the future and are considering once the new cars catch on, building Hydrogen fuel stations along with Shell who figures the conversions of the gas stations to be at about $400,000 per each.

> "There is tons of opportunity in change and chaos. There will be opportunities for the oil and lube industry in these changes to meet demand as the demand and desire becomes more self-evident in a half a decade or so."

On the truck side of the equation there are some serious issues to consider and one is the challenge to meet the demand of having trained technicians for all these new vehicles. Technicians will need to get certified on the new equipment and yet most shops really cannot afford to send the technicians to more specialty schools. Not the cost, the problem is they need them in the shop working on customer's equipment and the shortage of qualified truck mechanics is intense and getting worse. It will continue to be a challenge and get worse as time goes on.

It appears the labor shortage crisis is all around in the Trucking Industry and the shortage of drivers is only the half of it.

Robotic Diagnostics and AI Manuals

Due to the shortage of qualified, certified and trained Truck Mechanics and Technicians and the growing complexity of the equipment itself, thus the number of training hours to certify a master truck mechanic, the way in which trucks are repaired and maintained will have to change. Thus we can expect in the future Holographic Manuals which overlay next to the piece of equipment being worked on and walk the mechanic through the procedures step-by-step.

We can also expect Artificial Intelligent Assistants to talk the mechanic through his work and interpret the operation and procedures for the task at hand. Right now Carnegie Mellon is working on such systems to do just that. Indeed when this technology finally gets here it will not be a moment too soon.

Of course the T-5 Group is also considering other High-Tech Futures in order to deal with the labor shortage of technicians such as easier diagnostics through the use of special materials. Such as this idea below:

Valve Covers of Nano Tubes

There are endless applications for carbon nano tubes due to their strength and abilities to conduct electricity. In fact due to their lightweight, strength, transparency and ability to hold a charge the uses are truly endless. One excellent use for transparent carbon nano tubes would be to make Truck Engine Valve Covers out of them for easy inspection to insure that the valves are being well lubricated with oil, are working correctly and check fuel injectors and such.

If transparent valve covers were used there would be engines showing longer life and better lubrication equates to less friction, which means better fuel mileage. Since valve covers are already on every Truck, it would be easy to replace all those valve covers with carbon nano tube covers to increase longevity of the motor, insure proper lubrication and increase performance and fuel economy. This also means less pollution in our air..

In the future carbon nano tube construction will be easy and valve covers can be properly molded to fit any Truck Motor you choose. Additionally those who did not want transparency in their valve covers could opt for opaque ones, which when hit with a certain frequency from the mechanic at the dealership would turn transparent for them to have a look see without charging you to take them off and re-install simply to check and see if everything is okay. Transparent carbon nano tubes for valve covers will be common place by 2020, bet me!

Fuel Cell Trucks

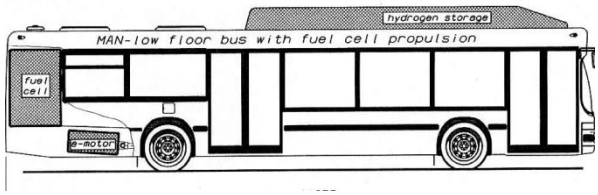
Well having discussing the flow of fuel, pollution control technologies and strategies, recent innovations in truck propulsion and cost savings - now lets talk about the Future of Fuel Cells in Trucking Industry. Decreasing America's dependence on Middle Eastern Foreign Oil makes our nation safer and stronger. We should applaud all the free-market players promoting advances in Hybrids and advanced technologies and a round of applause of course goes to companies such as Fed Ex and UPS along with Eaton, Kenworth, Peterbilt and GM.

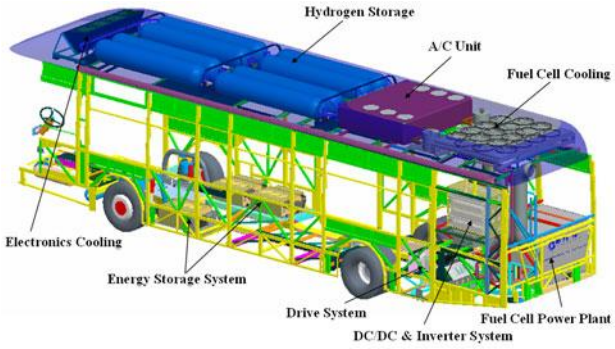
Fuel Cell technology works and is being used right now and yet there is still more research that needs to be done. In studying the efforts of SunLine Bus in Palm Desert, CA we can see how far Fuel Cell Technology has come. SunLine has regular bus service using these Hydrogren Cell Buses and has been running them for a number of years. They work very well and the citizens like the idea of riding around in a bus, which does not pollute. Proof of concept is completed and it only takes will to see Fuel Cells come to fruition in the Trucking Industry as well. The data shows some spectacular accomplishments in uptime and maintenance making it a viable option.

SunLine Bus is on the leading edge in implementing these technologies and testing them in the real world and they have being working on this project for a decade. With each upgrade and rendition they are improving performance and reliability. Typically a fuel cell bus can go about 80 miles per hour which is much more than they ever really need to go.

SunLine is up-grading battery packs to run Li-ion battery packs to replace the PbA battery packs. They are also upgrading with more pressure from 3,600 to 5,000 psi in the Hydrogen Storage Tanks. Their fuel cells are being replaced with a new innovative design - the 75 kW Ballard Fuel Cell System which also comes with an extended warranty of 12,000 hours of use or 5 years. The units have a range of about 300 to 350 miles which is more than adequate.

http://www.sunline.org/home/index.asp?page=120





Why is the Fuel Cell on top of the bus?

Fuel Cells need a flat area and the top of the bus serves this purpose without the need to totally re-design the bus from the ground up. Additionally cooling is critical and there is more air-flow on top. For trucks this is somewhat problematic due to a top-heavy situation, so some re-design is needed. The buses in this case also need re-enforcement of their structure for the extra weight on top obviously.

Getting the Hydrogen to the Bus Terminal or a Trucking Terminal is also an issue and this requires some advanced planning and consideration, as well as cost in new infrastructure.

Getting the Hydrogen Fuel and Delivering it to the Station:

http://www.tfl.gov.uk/assets/downloads/fuel-cell-bus-diagram.pdf

Now then in researching additional challenges associated with fuel cells the T-5 Group noted an issue with the way that Fuel Cells work. In the heat conversion process there seems to be a problem with the amount of heat they generate. If the World is truly concerned with Global Warming then all those hydrogen cells will heat things up. In Urban areas this will exacerbate an already difficult situation with Urban Heat issues causing increased storm and weather intensities.

Consider the incredible challenge to minimize heat escaping on 10s of millions of Hydrogen Cell Vehicles on America's highways and in urban metro areas causing urban heat and the global warming concerns, as the number of Hydrogen Vehicles across the country increase over the next four decades. All being true adds to the dilemma of "The Hydrogen Economy" (recommended reading list). It is also the case that in most of mankind's dilemmas we find the laws of unintended consequences.

The fact that hydrogen cells puts out 400 to 1200 degrees of heat or more, which is a problem if all the vehicles are powered by hydrogen cell because of the greater heat footprint. There for more work must be done to limit this heat down close to the ambient temperatures perhaps less, so they help cool things in the cities, which are already 5 - 10 degrees hotter due to all the concrete. This means more work and research is still needed.

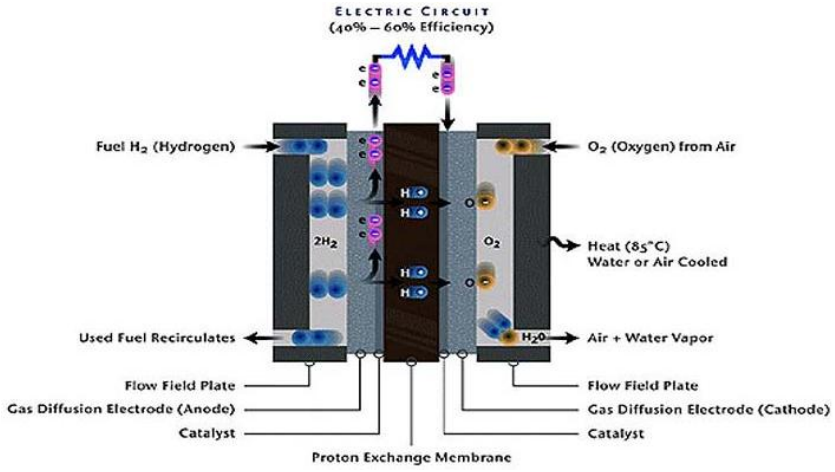
This is not the only problem with Hydrogen Cells, merely one that few people are discussing. Perhaps no one wishes to make light of this problem because the Global Warming alarmists are indeed the same people promoting Hydrogen Cell Technologies. With new materials and ceramic coatings, it is feasible to limit the heat escaping to that of less that a regular car.

Still you must remember that the cylinder head temperatures of reciprocating engines are far less than that of the hydrogen cell conversion process temperatures. Solving the Nation's problems with regards to pollution is a wise thing to do, yet if we merely trade one problem for another we have essentially solved nothing.

Hydrogen is also difficult to store and cooling of compressed hydrogen takes energy too. Hydrogen collection with current technologies is not really free, as it costs money to collect and separate out. If the hydrogen sits in your fuel tank for three days it could leak as much as 50% and then you would have less fuel because the hydrogen all escaped from seeping out of your fuel tank.

Storage of hydrogen will not be so easy either because it must be kept very cold. These are just some of the issues that research scientists are working through right now and will eventually get it all figured out, but consider it a longer term goal for about 10-20 years or so. Now there have been significant recent advances and materials such as Carbon Nano-Tubes may be the answer to prevent leakage.

Certainly having a Hydrogen Collector machine in your garage to take Hydrogen from the air to use to power your house, car and your Artificially Intelligent robotic garden lawn mower of the future sounds interesting and you can collect your own energy - Free! Of course easier said than done, but yes technologically and scientifically speaking it is indeed possible.



Fuel Cell Point-to-Point Trucking Terminal Strategies

It would be nice if we could get all the cars on the road and all the trucks to run on fuel cells, but to do so you must have the infrastructure in place. And before that happens it has to make sense economically for companies and entrepreneurs to spend Billions of dollars putting it in place. When I speak of infrastructure, I mean gas stations, supply chains and all the rest.

It certainly would not make sense for a large multi-national corporation to go out and put in such huge infrastructures right now, as there would only be may be one or two cars per town to stop in for their hydrogen fuel. Even building one modern gas station these days costs upwards of $750,000 and that is before the cost of the real estate or property underneath, which could easily add 2-3 million in a Suburb or Urban location for a convenient and busy corner 3/4-acre lot.

One way to usher in the fuel cell driven concept is for trucking terminal to put in their own fuel cell re-fueling systems in their own terminals. Bus Companies like greyhound too. If you consider companies like UPS, Yellow Roadway, Swift Transportation, J.B. Hunt, FedEx, Wal-Mart Distribution and others is makes perfect sense, as they drive to and from their own terminals in a point-to-point route, until the last drop off and then back to that local terminal.

Also such systems could be installed at police stations, United States Post Offices and county government locations. It makes sense for Bus Transit Districts, trash collectors and Taxi Cab companies and local transportation companies too.

There are already some companies working on these point-to-point strategies. There are some bus companies out West in the California Desert by Palm Springs doing this and also UPS is installing some systems in Kentucky to do the same. This will provide the backbone of the infrastructure first with jobbers and companies selling inert gasses to supply the stations of the future. The infrastructure needs to be in place before GM and Ford start pumping out 5 million cars per year with fuel cells in them at their robotic factories across the nation.

For the Trucking Industry to see wide spread use of fuel cells we need all the Truck Stops to carry the Hydrogen Fuel, trained mechanics and technicians, limits on finish products liability lawsuits and 100s of thousands of trucks to be built with fuel cells in them. You cannot put the cart before the horse if you plan on moving the Trucking and Transportation Industry into the new age of Fuel Cells.

Bio Diesel and Bio Fuels

Indeed, America is addicted to Middle Eastern foreign oil, but we do not have to be, as we have so many options and as we increase the production of bio diesel for trucks and ethanol for cars we will be well on our way to kicking the habit. How are we doing so far? We have spent Billions, subsidized the new innovative industry and learned a lot both from research and development and implementation.

Between 2004 in 2005 bio diesel production was up from 25 million gallons to over 75 million gallons and as was expected it nearly doubled again by the end of 2006. How is this happening? It is partly due to government incentives and the grass-roots efforts of the Northern Midwest to grow their own fuel and some the can-do Entrepreneurial Capitalists behind the efforts. Let's face it farmers need fuel to; to run their tractors and if they can grow that too then that sure makes a lot of sense doesn't it?

Did you know that Willie Nelson, the country singer has his own brand of bio diesel fuel, which is used by truck drivers and sold in California, as well as the Midwest? Some truck drivers even call him Bio-Willie after the brand of Bio-Diesel Fuel. Boy you sure cannot beat the PR that he brings to the Bio-Diesel Table can you? "Way to go Willie!" The T-5 Group gives you the ultimate compliments for your efforts and perseverance.

One problem with bio diesel fuel is the fuel it is also subject due to supply price spikes and in the off growing season it can cost as much as 20 to 35 percent more or if the farmers have a bad season it could be even harder on the price. Also bio diesel must be stored in heated tanks and therefore it is subjected to price spikes in natural gas. So there is both good and bad to bio diesel fuel, but it is no doubt one option to helping America break her addiction to Middle Eastern oil.

E85 Ethanol, which is 15 percent gasoline and 85 percent ethanol will not just run in any car engine, as you need a special motor to run on that fuel. With bio diesel it is much different and you can run 100 percent bio diesel fuel in most of the modern diesel motors.

The BTU per gallon of Diesel Fuel and Bio-Diesel is very similar and biodiesel runs cleaner too almost 15% less CO2 for B20 and other blends as much as 75% less CO2, hey that is a pretty good deal is it not? B100 or rather 100% Bio-Diesel Fuel costs more per gallon than Diesel by quite a bit, but the way fuel prices are going you never know, by mid summer it might be cheaper than normal Diesel Fuels?

Bio Diesel in the South

Bio Diesel is making headlines in the South in Georgia and South Carolina. In fact a North Carolina Firm is putting a Bio Diesel Bio-Refinery in Middle Georgia. NewGen Technologies is building a 60 million dollar plant in Columbus GA. The State of Georgia already has two-bio diesel plants and both are expanding capacity rapidly as we speak.

Meanwhile at Ft. Benning GA the US Military is also a buyer of Bio Diesel Fuel. In Georgia they have many things to make Bio Diesel out of such as poultry fat, soybean oil and vegetable oil. With the huge poultry farms in and around Georgia and the huge chicken processing plants it makes sense to use poultry fat to make Bio Diesel out of.

The Department of Energy Policy Act of 2005 called for almost 4 Billion gallons of renewable fuels in 2006 and almost 8 billion gallons by 2012 and the Georgia is enjoying the industry growth and capital flowing in, as we all enjoy the benefits. As it has been said America must break their addiction to Middle Eastern Oil and this is a positive step in the right direction says the Governor of Georgia and the States Economic Development Director. The Atlanta Business Journal Reports;

> *"The company plans to use a variety of materials to produce bio-diesel, including soybean, sunflowers, palm, rapeseed and canola."*

It looks like the South and Georgia in particularly is joining the renewable energy initiative and going to make Bio Diesel profitable and add Bio Refineries to its list of strong economic industries, which make the state so economically viable. This is smart thinking and it makes sense to grow it where you need it and save on the transporting from the North Midwest to the South Eastern US. More market entrants also means more competition, innovation and this means lower prices in the Trucking Industry for fuel.

Peanut Oil Bio-Diesel

Many people do not realize bio diesel has been around since the turn of the 20th-century. It is nothing new in fact at the 1900 Paris World Exposition Rudolf Diesel, yes there is a man named Diesel, showed off his diesel engine, which ran on Peanut Oil. But other diesel engines have run off many other types of oils like; vegetable oil, French fry grease and chicken fat. Willie Nelson the famous country singer tours the country in his Bus, which runs all on bio diesel and cooking oil and has really helped the Bio-Diesel Industry in promotion and awareness.

Since diesel motors run off compression any liquid that explodes when compressed will run the diesel motor of course some fuels work a whole lot better than others. And if you drive down the road and smell like a French Fry you are liable to get pulled over by a McDonald's lover or a police officer asking you what to deal is. Apparently a motorcyclist or a convertible traveling behind you will probably pull off at the nearest fast food restaurant because you make them hungry, nevertheless running on cooking oil waste makes environmental sense and so what if you small like a giant French Fry, the price is certainly right.

But if you want to save cost in fuel and you have the proper filters you can go behind a fast food restaurant and collect the cooking oil grease out of their special dumpster. I suppose it saves them money from having to haul it away and you have free fuel. But like the peanut oil it is an option to the higher fuel prices if you can find it. Although in reality this is trivia more than anything else.

Farmers, Weather and Bio Diesel Price Surges

American Midwest Farmers have gotten into a pickle none of which is their own fault. What is it this time you ask? The Farmers in America or at least the Family Farmer are a dying breed and have been now for nearly 80 years. Well it gets worse and not just with Family Farms, but with corporate farms as well and this affects every thing from potatoes to corn for Ethanol to livestock feed and harvesting.

You see the summer heat waves have been significant and Central Valley CA farmers, Montana and Wyoming Ranchers, as well as Nebraska, Kansas and Dakota Wheat farmers have watched crops melt and some burn due to fires. Worst of all these heat waves and lack of water and dried soil is now being compared to the 1930's dust bowl, ever read; The Grapes of Wrath?

When we have crop failures due to heat, lack of water or some other catastrophe and those crops are to be used to grow our own fuel, then we automatically we have a fuel problem too. When supply is lessened near the top of the demand curve we get huge fluctuations, which might be fun for the commodity brokers in Chicago, but it is not so good for the Trucking Industry.

Oil Conservation Tip: Running Vehicles or Plant Security Robots on Cafeteria Cooking Oil

Perhaps you've heard the stories of people motoring around the country on cooking oil waste? This is not an urban myth; during the 1960's, more than a few people pulled up behind a fast food restaurant and gleefully loaded up their tanks, using some simple filtration tactics. Of course the hippies of the 60 had no choice and were living life on their own terms as minimalists.

Cooking oil waste serves as a fine substitute for diesel motor oil. Sure, it smells a little and smokes a little, but what the heck! Free fuel is a good deal even if it smells a bit traveling around. With today's ever-rising gas and oil prices, recycled vegetable oil may be just the thing to save diesel vehicle owner's significant dollars while doing the economy and natural oil reserves a favor. Carl's Jr. Restaurants runs all its utility maintenance vehicles on their cooking oil waste.

Filtration: A Necessary Step in Utilizing Recycled Cooking Oil

As a workaround to the by-product buildup, fuel operators often doubled or tripled up on various types of filters to clean the debris out of the cooking oil fuel before it entered the vehicle's engine. Extra filtration always comes in handy, particularly if rough running motors, gummed up fuel lines and excessive smoke is a concern for you. With today's ever-rising gas and oil prices, *why not put a practical solution like reused, filtered oil to work motorizing our cars, trucks, security robots and other diesel-powered machinery?*

Consider the below oil filtration system model for use in your next environmentally-friendly oil conservation effort.

The Oil Filtration Model

Ideal use in:

- institutional cafeterias
- military mess halls
- industrial complex kitchens

Potential alternate source of fuel for:

- facility maintenance vehicles
- manufacturing vehicles
- Unmanned Ground Vehicles, i.e. at colleges, hospitals, power plants, refineries

Process:

Step 1: Oil is extracted from kitchen facility by way of human labor or via a forced air hose system

Step 2: Oil is collected in holding tank

Step 3: Oil passes through a series of filtering/drainage tanks

Step 4: Oil flows into a "gasoline-filtering type" tank prior to being pumped into utility vehicles where final filtering takes place

Specifications:

- Dual tank system
- Triple-trap filtration capabilities

Overview:

The best filtration system would ideally be larger than that of the typical dumpster waste collection box that we currently see behind restaurants. A triple trap system, it should feature double tanks and most likely resemble a Storm Water clarifier. One tank would serve as the waste receptacle. Employees or robots can dump the waste directly into this holding tank. Another option: implement a hose system that allows oil waste to flow directly from kitchen to receptacle.

Once the oil waste has been collected, a set of tanks pull from below, allowing the floating waste on top to be caught. Then another tank suctions the oil from the center, allowing the heavier debris to settle to the bottom. The fuel then flows into the final filtering tank that's a smaller model of a gasoline filling station system. The recycled oil is now ready to be manually pumped into a vehicle, whether it's a pick-up, diesel powered John Deere run-around or a high tech sensor guided unmanned security vehicle. The Final filtration takes place in the vehicle itself, using its existing fuel filtration system. An add-on kit upgrade is also something to consider.

On-Board Generators

Fuel Cell Generators

There are now commercial portable generators you can buy for your home to power up your house, cabin or shop. There are small golf carts, mopeds and automobiles, which run on hydrogen cells. These make great portable generators for the Trucking Industry so drivers do not run their engines all night wasting fuel. Since the storage of hydrogen is not so simple and the availability not so simple these types of portable generators would work best in the Trucking Industry for those companies which already have Hydrogen Fuel Tanks at their depots, distribution centers or trucking terminals.

Nevertheless, if all trucks at truck stops were running Fuel Cell Generators then the truck drivers would get better sleep at night without all the rumbling engine noise and they would not be subject to all the CO2 pollution and thus could open their windows at night without choking on fumes. The T-5 Group understands the reality of such massive implementation in the Industry and thus although this may never come to pass in the next decade, we thought it of interest to bring it to your attention.

Some studies have shown that Truck Drivers have severely weakened immune systems due to the noise at truck stops which permeates and it causes their pulse rate to jump as much as 40% of normal during sleep. This has long-term health implications, as well as causing drowsiness leading to sleep depravation issues, lack of concentration and potential for accidents.

Future Theories on Propulsion

The Trucking Industry is a great place to start when talking about new propulsion techniques and technologies, because the economies of scale are so huge and the cost savings from even an incremental upgrade more than justify the expenditures in Research and Development to get us there. We have discussed Fuel, Current Industry Innovations, Fuel Cells and all sorts of potential possibilities on the horizon. But we ask; What is over the Horizon?

What propulsion technologies are out there that we have not considered yet, that are not in the works or even on the drawing boards quite yet? Our T-5 Group considered this and came up with a few potential future technologies and narrowed those down to real hone in on what might be feasible in the next 20-years.

CO2 Post Laser Exhaust

This is a method to help our over the road trucks remain more efficient and run cleaner, though modification of the current turbo diesel propulsion system. Which is not such an easy task considering how efficient the modern diesel motors already are. Indeed, the current state of the industry and efficient motors are truly incredible and a tribute to American ingenuity, one cannot deny this truth or underestimate the recent strides in progress there.

But, what if we take that exhaust coming out the smoke stacks of the trucker's rigs and run it thru a series of parallel pipes and blast that CO2 exhaust with laser light? After all it would be somewhat concentrated and compressed and isn't that how you make a CO2 laser? The laser would produce heat power, which could be converted, meaning you could have a smaller motor with much more horsepower and burn off nearly all the pollution?

> *The Industry must challenge itself to be innovative and creative, to find a solution and technology that can leap frog all the current technologies and take us into the future. One giant step for Transportation and one little step for an open mind.*

Chapter VII

Convoys and Artificial Intelligence

When we watched the DARPA Grand Challenge with driverless totally autonomous vehicles navigate steep cliffs, tunnels and treacherous desert roads full of obstacles on a course over 200 miles long and still average speeds of nearly 35 mph, it was obvious that the future is on it's way and that artificial intelligence will help us in driving our vehicles and most likely drastically improve safety.

In 2005 we started to see the first ads on Television for new cars which can avoid collisions, detect stopped traffic ahead, even tug on the shoulder harness and let off the gas, nudge the steering will, while checking the next lane for traffic in the case of a slower vehicle in your lane.

In 2006 saw the refinement had paid off in all the research from the DARPA Challenge and we will see the military seek assistance with linking up entire convoys of vehicles with no drivers in any of the vehicles in the near future.

We are hearing automotive engineers talk about programmable GPS systems which will not only show you your destination on a map, but drive you there, find a parking spot and parallel park your car, without running a red light, breaking the speed limit or flipping off other drivers along the way. Meanwhile you can read your newspaper, watch the news and take a few phone calls.

There are lots of plans and technology in the works, much of which is already available for Net-centric automobiles which not only communicate with themselves and all their systems, but also communicate with all the other cars on the road. Does this mean all traffic collisions will be eliminated forever? Indeed, that is the goal and a lofty one in current terms and realities, but in the future not really, it is inevitable.

So you ask who is doing what and how far have we come? Well the major research and development is coming from the Private Sector and add the military research to the equation and there are a whole lot of very smart people working on this stuff. And much of the technology is no longer that new, some over 5-10 years old now.

Audi and Volkswagon Following Systems

A couple of years ago while traveling I had the opportunity to have coffee with the head engineer from Audi and he explained the problem of getting the technology into American cars is that they were worried about class action lawsuits and cost so they were not going to put in the newest ECS devices and other technologies into the automobiles for the American Market yet. What is most unfortunate about this is that 42,000 people die a year in auto accidents in this country now.

> *"We can fix that, of course this new technology will become victim of class action law suits."*

In Germany on many of the Audi models they have radar assisted following devices. For every 1 kilometer per hour the car is back half that distance so at 60 KPH the car is behind the car in front of it by 30 meters. Works great and several new cars have assisted white right line following also. Also they have a system that if a car is parked in front of you in the lane, your car lets off the accelerator and slightly tightens the seatbelts like the Honda SmartCar and then the steering wheel puts pressure to go around the obstacle, as your reflexes then take over.

The new ESC also interfaces with this system but it needs to be an all-wheel drive car for it to all work. This would help in Winter Weather safety too. We have also seen the weather is changing consumer buying behavior for all wheel drive vehicles on passenger cars as well as SUVs, so people will not be bothered with putting on chains on their cars. Due to the desire by car buyers to have a “go-anywhere, do-anything” capable car.

Automakers are also seeing this it appears and are ready to satisfy the shift in preference by selling more cars that transfer engine power to all four corners - commonly called all-wheel drive, not four wheel drive although that too is way up in demand, all-wheel drive also shifts control around the car as you drive and is a SmartCar Technology.

By 2006, car buyers who wanted All- wheel drive will had their choice of some 42 models, according to Industry Analysts and the website Gurus? This a 2/3rds increase from the 2003-2004 model year. We have even heard estimates that by 2008, the number of all-wheel-drive cars on the road will double by today's count, well at least this is what Ford's Visteon Corp., unit had stated and of course they hope so since they are a supplier of all-wheel-drive technology and other SmartCar electronic systems. For automakers, the rising demand for all-wheel-drive cars means greater profits and higher costs on cars for such options. All-wheel-drive systems now cost up to $1,500 as optional equipment.

The growing interest in all-wheel drive is obvious after checking out the Detroit Auto Show prototype cars. All these cars will have superior handling and better cornering for those 10 PM to midnight canyon burner runs at Mach 2, which if you are a real car lover you fully understand. Automakers with only rear-drive models cars may find this a challenge since the consumer now has a choice of All-wheel drive as well as manufacturers who have bee spending years convincing consumers that front-wheel drive is better on bad roads. Now consumers can have it all, those confused consumers will most likely opt for the both or All scenario. All-wheel drive essentially offers the best of both worlds.

Just over 50 percent of American women and 55 percent of their male counterparts surveyed said they prefer All wheel for safety and/or performance, along with the obvious benefit of better traction. Smart Cars are making friends and influencing people and the safety benefit to all is very incredible. SmartCars and Intelligent transportation.

If we look at the history of smart car type technologies we will see that this is always how it starts. It wasn't more than a decade or two ago that we sought and anti-locking braking systems, or ABS. At first, this was the safety benefit and only an option and only available on the high-end cars.

Recently we've seen GPS navigation systems available as an option, now on most luxury cars, it comes standard and on regular cars it is an option. It wasn't too long that airbags came onto the seen at first a safety item and an option later became standard on most mid-range and high-end vehicles, now airbags are on nearly every car, at least for the driver. About 50% of the models in Europe have the ESC options with all-wheel drive and in the US about 6% do to the need to cut the costs and still sell the cars.

In 30 years fatalities in Germany are down about 70% and in the US per mile driven about 20%, which is good, but we can still do better. Remember when the big news that came out about Firestone? Well actually only 3% of fatal rollovers were from tire wear, the rest from driving conditions and pilot error. Loss of control of about 20% of these accidents could have been prevented by ESC and it will be mandatory on 8-15 passenger vans by 2006. These figures are from the Insurance Institute for Highway Safety in Arlington, VA.

In a German study Mercedes reduced the loss of control accidents by 21% by adding ESC to all their models. Interestingly enough you cannot get ESC on a Ford Explorer since that option does not exist until you get to the Expedition or Excursion SUVs. 4-Runner by Toyota has it available here in the US. There is an interesting article on this in Business Week, April 28 2003 by Christine Tierney which is true even more today than the day she put pen to paper.

When we discussed these issues with our Audi Engineer friend; he said that on the A3 through A8 Audi there was an option for $3000-4000 for the radar following devices, and in Europe you can order your car your way. As a matter of fact on an A3 the most basic model there are 350 possible combinations for bumper configurations, between types of fog lights, color, design, etc.

Also and unfortunately the German government has found a way to put infrared picture cameras which will send you a ticket in the mail for speeding, once again we did perfect the German radar in WWII and they have used their military technology for civilian use to collect fines from speeders with this new infrared devices. We are seeing more and more camera red light unmanned devices on our road ways and automatic ticket cameras in the United States now.

Luckily the radar assisted following auto-pilot does not work under 20 mph so in the city or stop and go on the Belt Way, Boston Tunnel, 405 FWY, I-5 in Seattle or I-10 in Houston it will not work. Also the hands free cell phone hooked to the radio is not an option but a must as the ticket is 80.00 Euros if you have your cell phone on while driving unless hooked-up. And for GM and all the wonderful hotshots that think they are going to own the China car market you might want to think again the Audi A6 for China market is already made there.

Surely eventually once China ramps up it is highly likely they will emerge market winners, but at this early stage they are behind the gun, in 2010 we will see the first Chinese Car Dealerships in the US. Also realize that in the larger cities, they cannot take anymore cars, the traffic is insane, better off to walk or bicycle around.

In Beijing there is a 100% in one-year growth rate for additional cars. Talk about traffic you would be better off to catch a cart, moped or walk. Although the A6 in China is bare bones and nearly without suspension to save money it is their foothold into the Chinese market. Currently being tested is a Diesel car is not connected to any drive train. It runs a steady 1800-2000 RPM and the most efficient for the least amount of pollution which charges batteries while driving or parked and runs 42 volts electrical system, which is hooked to each wheel with a motor to turn the wheels, likewise all the power steering, and other components runs on the electricity.

They also have out now an Audi A8, which puts out 330 HP and an R56 which puts out 450 HP. The interesting thing getting back to the electric-diesel hybrid is the efficiency and cleanliness. It is a really good system.

Eventually, almost all municipal vehicles could be outfitted with the new wireless sensor technology. The SmartCar meets the SmartRoads and this is a big plus for the trucking industry, as there will be fewer ignorant drivers doing completely stupid things causing accidents, increasing insurance rates and then trying to blame it on a truck driver or a trucking company, which just happens to deliver them everything they buy, every where they go.

All in all you have to be a little more impressed with what Audi is really doing than what Ford is planning on. During our conversation with the head engineer from Audi working on the A' series A4, A6, A,8 etc. from Germany, he had some interesting things say about some secret tests they were doing, all of which are now common knowledge.

It was interesting to see their view on how these devises would be installed for $3,000 US as an option once the tort laws were reduced and they would be hitting the dealerships as soon as that happened. The car follows half the distance of the speed:

50 miles per hour = 25 feet separation.

Their all wheel drive system would hook up to it and if the car was stopped in the lane and no cars in beside it, it would go to the next lane providing there was no solid line. Also integrated was the auto-pilot technology of following the line on the right. Too many lawsuits for finish products liability have slowed progress but with partial class action lawsuit reform we may see more risk taking with these new technologies.

Audi did some work in the United States in the ITS arena during not to long ago at DENSO - i.e. car navigation systems/GPS. Some of the thoughts of the programmers of these systems were that people fail to realize that if you keep a vehicle in motion it actually emits less tailpipe emissions. Constant idling, and stop and go are the worst conditions for emissions, so the savings is also to the health of the public and might even reduce health care insurance.

Now then there are other companies working on this stuff in the US too. This is absolutely wonderful technology they are working on; An interactive SmartCar. The issues are with economies of scale and price. With the Big Three cutting costs, we are not getting the technology we should in the states. The problem I see is with ABS and All-wheel drive or ESC it is hard to get full value out of all the other technologies. Every time a safety feature is added the price of the car increases and each time it increases fewer people can afford to buy one. Then there are mandatory items, such as airbags which add to the cost as well. Many of the new technologies would not be anymore expensive if they were on every car, but each time more is added sales will fall off.

I spoke with Honda about the seat belt tightening and letting off the accelerator and believe this is of value, the T-6 Group is glad to see they are working on this. Now, then as the Audi guy was telling me they are testing a car, which runs a certain speed all the time so it does not pollute at optimum. And then it charges batteries, which run all wheel drive on a system, which has all the best technologies. They are running this thing 7000 hours trying to break it. Which is their ultimate goal in engineering.

If the Audi runs a little smaller diesel engine that runs at 1800 RPMs to 2000 and is quiet like an Onan Generator it could run quiet on diesel and charge the batteries and run on the 42-volt system? Power steering, ABS, each wheel has a motor. If a motor goes out you feather the props on the motor across from it and it becomes two-wheel drive until fixed by using a small clutch. All runs net-centric. Works for me and is much better for all the HUD displays, portable business office WiFi, email, GPS, Internet Faxing, CD, DVD, movie and video systems, which will also be extras and options on future cars. They entire smartcar looks the same as the regular, but the guts are totally re done. Just building smarter, more efficient and better cars, it makes sense for the 42,000 who die each year in auto accidents.

With stop and go traffic, Diamond car pool lanes and toll booths all messing up traffic flows causing cars to go slower, thus pollute more, such strategies as Audi is working on are extremely valuable to the environment, not just the 15% fewer accidents projected each year after more automobiles have these technologies implemented.

Mercedes showed 15% with ESC (electronic stability control) alone, imagine all this technology we are speaking with now. But the price is the selling point to US Manufacturers and of course if people keep their cars 3.2 years on average but finance them for 8 years other issues ensue. Let's face it cars are getting smarter and people are getting dumber. Audi plans on using this technology on their Pasat, A4, A6 and later the A8. So the Smart US Big Three need to stay heads up. And you bet they will as the new technologies are sure to heat up the car sales competition amongst consumers; 40% of consumers are said to rank auto safety their number one or two priority in choosing their next car.

What Does All This Auto Industry Technology have to do with the Trucking Industry, Truck Convoys or AI Assisted Modern Truck Systems?

It means that trucks can drive together in long-lines without worrying about running into each other and with ESC (electronic stability control) if something does happen they will not be jack-knifed upside down on the side of the road or the new decal on the truck in front of them that they just rear-ended. It is actually amazing to follow the technology from the auto-industry into the truck industry. The truck industry often lags by 5 or more years.

The Hybrid Audi scheme is typical now and we are seeing Hybrid Trucks emerge now using these engineering theories. Hybrid Trucks which use a huge percentage less fuel and can take advantage of technology for safety will lower the over all costs of trucking companies substantially all the way around. A company that invests in these technologies will easily recover the costs and make a good return on investment in a relatively short time frame.

The biggest concern of course is reliability of more complex systems, maintenance, uptime and availability of such trucks which are not quite here yet. It should be obvious that it is all on its way now and will be here shortly.

Efficiencies in Coefficients of Drag in Convoys

With the use of the sensors the trucks in a convoy will be able to drive extremely close together and therefore save considerable fuel due to large decreases in drag. For instance driving 75 mile per hour and less than 3-feet apart and do it safely. The trucks will line up and communicate with one another. Each new truck can speed up and get in line and the guidance system and radar can be set for ultra-efficient convoy mode and it will slowly close the gap. Additionally when the system is dis-engaged it will alert the other truck systems to back off a safe distance to allow the truck in line out of the convoy.

Military Convoys and Self-Driving Trucks

The most important thing in the advancement of an Army is logistics. The cost to bring equipment, food, supplies and fuel into the battlespace is one of the largest costs of fighting a war. Streamlining the efficiency is a key to modern warfare and the army, which moves fastest and most efficiently stands a greater chance on winning the battle and the war.

In the future we will see robotic convoys moving without drivers and this future military technology will give the United States not only the advantage but greater ability to maintain our political will over our opponents, almost to the point of them not wishing to have a war in the first place. Few people complain if no soldiers die in a war that we fight.

You see it costs a lot to feed, train and house 1,000 drivers who will be driving all these vehicles into combat and it is a very dangerous job as logistical supply chains have always been the favorite target of opposing forces. If you cut off your enemies supply lines it is like cutting off the snakes body and the head will not be able to strike.

Currently our advancement in military robotics is next to none and we will soon be able to mobilize our armies anywhere in the world, with very little manpower or human assets. This will reduce the risk of death and increase our ability to move more, faster and at less cost.

"An Army Moves On Its Stomach" - General Patton

Satellite convoy

Satellite tele-robotic convoys will come first and then full autonomous convoys after that. This will usher in a new age of robotics, which will change the destiny of mankind and provide for our forward progression. Indeed another reason that such technologies are so important is that we have needs, which cannot be met by our armed forces and we have difficulty recruiting the number of people we need to defend our nation.

The tip of the sword and war fighters of today must have a multitude of back-up and logistical supply chains to wage and win a war. If we are to be the leaders of the free world, stand up for human rights and lay down the law on tyrannical dictators of yesterday's Machiavellian principles, then we will need to do more with less.

Right now the GAO and US Army are quite concerned with recruitment numbers and new sign ups. We need systems which will allow us to move the logistical chain down the road without a driver in each vehicle, thru any terrain and not necessary roads, rivers or tracks. Therefore the DARPA Challenge is very significant in our ability to maintain peace on the planet and defend against Evil. Of course the value to the Trucking Industry to move freight by similar means or borrow such technology from the military transfers to industry is a godsend.

Many systems to help accomplish the challenges that the military faces in the future are have been given the ultimate test and the DARPA Challenge and Grand Challenge prize monies are an incredible value. And not just to the military remember these technologies will not only save soldiers lives like those in Iraq, but also the 20 times larger number of innocent Americans who die on our highways each year.

Systems of navigation have been borrowed from all over the known scientific world. Systems of Artificial Intelligence, radar, lidar, sonar all combined using a net-centric approach to the vehicle's electronics. It is possible now to drive vehicles tele-robotically and steer them using satellites relay or microwave video feed. But in this contest everything must be autonomous and cannot use the satellite technologies except for way points so the vehicles stay within the contest borders; we do not want to squash any endangered; "Desert Turtles." Very important.

In the end the military may use a combination of these technologies and some which were forbidden on the this challenge, however one should consider the Satellite navigation systems which do not necessarily need an actual satellite; they could use an aircraft, UAV, balloon, cell tower triangulation, etc.

The benefits of military technologies to the future of trucking are astronomical in terms of preventing accidents on our highways, improving efficiencies in commercial logistics and saving fuel, which also makes our nation safer as we are not dependent on imported fuel. The Research and Development between industry and military goes both ways, in that they too benefit from the advances in the transportation sector.

Anti Jam GPS

In the future there will probably be more wars and when there is the enemy will probably seek to take out as many of our satellites as possible. Many secret SPY satellites in the Military will be safe now up there and the equipment in their UAVs, ground vehicles and command and control centers because they have special Anti-Jamming GPS systems with bleeding edge top of the line and state of the art counter measure technologies.

You are probably thinking to yourself who thinks of this stuff anyways? Well you know men and there toys and when the US Military wants something no matter how seemingly impossible someone will find a way. This time that someone was a little company Harris Corp that has about $3 billion in annual sales and over 12,600 employees as of yesterday and they have teamed up with another little company; The Boeing Company, maybe you have heard of them.

Harris Corp will provide to the net-centric battlespace smart munitions anti-jam technologies. This means no one gets away and no smart bombs go astray and that our enemies have only one option before meeting their maker and that is to pray.

"War is Hell and the best advice anyone can give is to not have a war, but once in a war the best advice is to win it!"

Now you are probably saying to yourself, “Hey self, that would be cool in my SUV!” Just think I would never lose an XM Radio connection or have to worry about interference on my urban assault vehicle's GPS. Indeed that would be cool and it will inevitably become standard equipment on all in-car system by 2010 through the gracious gifts of transfer technologies or hand me down research from the US of A. Never a lost signal or missed tune, you got to love it.

Wireless Networks for Convoys

Over the Road Trucks Using Wireless Networks to Caravan or in Convoys will soon be a reality. Using small Wireless Network Sensors it maybe possible to have hundreds of trucks act like giant trains, by traveling together very closely. Literally tailgating the truck in front of them by only two to three feet apart and by doing this they will cut down on the co-efficient of drag and have increased fuel efficiency.

http://gtresearchnews.gatech.edu/newsrelease/flytruck.html

Now mind you with fuel prices higher now and looking to go up again and driving a truck all over the country, it behooves the mobile command center to stay at 55-60 mph or to travel in long lines of trucks, which flow the air out of the way, cutting down the head wind. Trucks moving down the road will pull your hat right off your head. Many cars often sit in the vortex behind trucks to improve fuel consumption for 50 miles or more. Tailgating is not too safe, but if the Wireless Sensor Networks are controlling the vehicle instead of eyes glued to the back of the trucks humans, then it can be done safely. Thus we save energy and drag.

Now realize on I-10, I-5, I-40, 20, 70 etc. in the middle of the night with little traffic there is little danger. In the movie with Tom Cruise, “Minority report” you saw the cars generally cruising without any intervention from the people, no cars hit each other at all, because they were communicating with each other and their missions and destinations were pre-configured. This is not to un-similar than Net Centric Warfare, or a computer assigning tasks to a larger network to break into pieces large problems by dividing and conquering or the packs sent through the Internet when sending a email.

This technology is available and if we can reduce the coefficient of drag by 80% we can decrease fuel consumption by as much as 40%. The other friction is that of the tires on the ground, that can be fixed by use of magnetic levitation or low air-pressure methods of hydro-craft systems on specially designed highways and what will most likely be the future of rail within the next 100 years.

This idea has many implications for military convoys as well, especially with Army recruitment quotas not being met. You can see the importance of such logistics. Having done this research and trying to figure out the intervals that are safe and realizing that there is not a need for human reaction time or human error and using this data;

http://barolo.as.utexas.edu/ast301/hw2answers.pdf

It figures that four to five feet is very doable although three feet would be ideal. The air dams on larger trucks are about four feet from the box if you look closely. The best thought would be for the air dams to move closer to the trailers from the towing vehicles or bobtail at speeds in excess of 48 mph when the co-efficient of drag starts its exponential climb where energy is pitted against the gains in speed. If Look at the hyperbolic curve on charts such as for an aircraft you will see very much the same scenarios.

In racing the quarter mile any real street racer will tell you if you want to increase your quarter mile time by a tenth of a second either add 50 hp or shave off 100 lbs. Well there comes a point of diminishing returns. Trucks, which haul double and triple trailer set ups can do even better with one truck. As fuel prices rise and other costs associated there is a need to cut down on accidents to save insurance premiums and fuel costs.

By using Wireless Sensor Networks these things can easily be done. When the Garbage industry went to trucks with only one driver and one mechanical arm they were able to lower costs and remove the trash more efficiently thus the cost savings was unbelievable.

The issues of safety, use of freeways at night and congestion, driver shortages, accidents and insurance, complaints by four wheeler drivers about trucks, expensive insurance, fuel costs, our reliance on foreign oil, etc. - All these problems can be solved by wireless sensor networks without relying on a master grid which could fail, like the cascading of our power outage. It could work within the DOT framework, but independently.

The future of trucking and integration of wireless network sensors in transportation for Homeland security of freight, efficiency of fuel or the best use of our infrastructure for all purposes will be a future reality and we are talking less than two-decades.

Military Convoy for Safe Travels

There appears to be a way to control the safety of an entire convoy of logistical vehicles on a long highway, with no close air support and completely removed from satellite communication or AWACS Surveillance. Let me explain this concept.

First picture a pentagon horizontal shaped tube, which extends along a highway, which starts at the ground. The supply road of travel would be in the middle of the tube. Now then, a vehicle in the back would have a laser system, which would be facing forward in a slightly increasing perspective angle to encompass several hundred yards as it approached the first third of the front of the convoy.

The vehicles would travel within the pentagon shaped tube encased in non-penetrable set of waves while under complete control from the last and first vehicle. Inside this tube on the highway vehicles would travel autonomously using networked sensors.

The vehicle in the back would have a high-energy antenna facing forward, which would send out the waves by laser-sound, electro-magnetic combination. This would create forward facing walls paralleling the direction of the convoy. Through out the convoy would be devices mounted on vehicles every 20 vehicles, which send up waves, which would bounce off the impenetrable walls at all angles within the artificial parameter of the tube.

This encased wave induced tube would provide a safety net to protect our convoy, which would identify anything, which came close to the convoy, such as heat signatures of combatants, laser ground sensors, land mines or enemy military hardware. (Incidentally we have drawings and the math if you have military clearances and the cash).

Now then since the artificial tube has much power and a specific bandwidth which blocks the other sensing waves from penetrating they bounce off the inner artificial tube walls and hit the ground and bounce back on the walls and are picked up again by the sending device every 20 vehicles or so, which are also all networked together within the tube. These sensing devices are continuously mapping as you go and sensing anything that might be a threat, while the convoy quietly moves on down the road.

The tube would also keep electronic surveillance out like a shell. Such tube could also be displayed with no convoys as to fool the enemy into thinking that there might be a convoy where one did not exist at all as a diversionary tactic. The enemy would be able to see the disruptive wave along the highway, but no way to penetrate it to determine what was actually in the tube coming in.

It could prevent some night vision equipment, radar, etc from penetrating. The more power in the wave the more it could keep out. Due to the fact the tube would be a combination of waves it could also cause pre-detonation of ordinance passing thru it, by use of acoustic beams, thus keep the convoy safe and add another dimension of defense.

The last vehicle would also project back wards with passive radar for enemy aircraft and to the satellite or other device if available or desired.

Spray On Dirt Camouflage

Super sticky spray on dirt or mud simulation coating or wash-off-able paint is needed to protect our troops in combat. It can be used for aircraft bottoms, helicopters and humvees. Sounds like a good idea right? But how would you get the sticky dirt onto the vehicles for instance camouflage? Well there are several thoughts on this. Hudson Sprayer, Aerosol Spray cans, Pressure washer with inline injection or use the nozzles on a water truck.

Any of these ways could in fact work. Of course we must eliminate the aerosol can spray idea, that might be good for model airplanes, but it would take forever to do a vehicle. Using a Hudson sprayer or small air compressor like sprayer could also work, but once again the time constraints are not conducive.

A pressure washer with inline injection could work and would only use minimal amounts of water and could coat a Humvee in about 3-5 minutes per side, perhaps you could get it down to 2-3 minutes which would be acceptable. The spray must use about 2 gallons per minute and apply the sticky stuff. For sand camouflage simply spray on the sticky stuff and then have a fan blow dust and sand onto the vehicle.

For a mud look or greenery look the color should be matched and put on at the same time with the water. The camouflage paint should not be water soluble as if it rains the whole security from camouflage is blown. Since the solution and paint is not water soluble it needs to be able to be removed relatively easily with some other method, this way as the vehicles move from place to place the camouflage must be changed to keep the vehicle, soldiers and convoy safe.

In the new modern battlefield it is important to conceal your convoys and troop movements from your enemy at all costs. Once your enemy knows your position, they can stand in a strike force, unmanned aerial attack vehicles or a swarm of missiles. All of which could potentially kill your soldiers and equipment.

One-way to protect military convoys used to use spray on dirt camouflage. However, many dismiss this idea because it would take research and development dollars away from other programs to develop the perfect spray on dirt system for convoys. Something that was easy to use and could be done in the field and so one has to ask if it is worth the investment in research and development dollars.

Proponents of the idea agree that even if the spray on dirt concept is not needed today; it might be used tomorrow for another purpose such as coating equipment from enemy chemicals. The fact is the just never know what are going to need something like this.

Having proven technology and proof of concepts which already to use makes sense because in the future of warfare you never know what you might need and in personal concepts ready to go costs very little compared to building a new jet fighter or an army tank. And a new army tank could cost as much as $20 million for the new high-tech versions and if your enemy can see it, then they can shoot at it.

Preventing Dust From Convoys

Even the US Military fighting for freedom in the World causes particulate matter to enter the air. We cannot stop the wind from blowing, but perhaps we can limit our stirring of the dusty sand in these sensitive regions of the world?

Eliminating Dust from Military Convoys is not a bad idea and in doing so we get many benefits. One probably not thought of when fighting a war for Democracy and Freedom, Human Rights and Fairness to Women is that not only do people die which is pretty much expected but, we pollute the air too.

By controlling the dust we can prevent ambushes of our troops while simultaneously preventing pollution. How do you prevent dust from convoys giving away your position to the enemy and sending particulate matter into the air, which your own team will have to breath? Giant dust clouds can be seen for miles and insurgents sitting behind walls or in ditches have plenty of time to prepare and set up for an ambush thus the element of surprise it totally gone. A friend stated;

> "There is a company in Mexico that has created a dust mat that collects more dust than any mat in America so he is taking his claim to the Las Vegas trade show. The Dust Control Mexico Company sells high technology welcome mats and he's looking for a distributor. Not much information on this, but this might work as a material to place under military vehicles so as they drove through the desert, less dust would kick up behind them so it would be more difficult to track how long it had been before a convoy passed. There has to be something to distorting timeframes for the enemy so they would believe troops would be farther away than they were--another surprise element."

Interesting indeed, okay here is what we could do. First, use a special bottom contoured undercarriage which sends the air flow from under the vehicle and from the tires to one point, combine it with the exhaust and then send it into a venturi situation to get it moist due to coolness and then negatively ion charge it and send it back to the ground while also discharging negative ions onto the road.

Yes, I am sure if we thought about this we could cover the dust from an entire convoy so the enemy never knows you are coming is this you need? We can use this for a SmarTruck III, easy to do. It would take time to make it work and time to prove concept but we could expedite it. The entire convoy might be able to be hidden by having a vehicle in the rear very negatively ion charged, like an ion breeze, (five easy payments of only $49.95 !?!), shaped like a venturi. Collect pollution, dust and leave it there. Enemy never knows you are coming so once you get there you can leave them there on the ground too.

Perhaps a combination of a wet sponge under the vehicle with negatively ion charged water solution and the contoured undercarriage along with a negatively ion charged ceramic shell with a coating. The charge could be constantly fed into the skin of the vehicles collecting the dust, which would also camouflage the vehicles with the dust, sand or dirt picked up while driving. This means that the vehicles as they transverse new regions of terrain would constantly be changing color from the dirt?

3D and 4D Transportation Computer Modeling

Holographic Technologies are getting closer to becoming reality and soon we can see the data on our computers in 3D, 4D and 5D. We will enjoy Virtual Reality on our 360 X-Box in our living rooms. Military strategists and war fighters can play out the battle in the virtual battlespace in advance and then watch it un-fold in real time. Great, great grandchildren will be about to meet their past ancestors and watch a holographic video. We will communicate in video conferencing with the image of the other people sitting next us, but not actually there. All this is on its way and even more, as the applications are endless indeed.

One application, which has not been mentioned, yet is the potential for pilots to have projected glide paths in front of them as they fly, actually watching their aircraft (full-size) in front of them. All they will have to do is follow the projection and match their aircraft to the angles and speeds of the holographic aircraft ahead. The projection will be set for safest glide path, avoid wake turbulence and be the most fuel-efficient decent. This will make flying easier and become a great training tool for new pilots building hours and their skills.

This will insure a proper downwind to base and base to final approach, with perfect angles, no steep banks and help the pilot land at the perfect speed on the threshold. Additionally these Holographic Projections will be recorded and used for training air traffic controllers and used by flight instructors to watch to make sure the student pilot is coming along fine. The instructor will be able to reduce the scale of the aircraft to 1:24 or 1:48 scale and show student how they did. This can help in training new fighter pilots in the military as well. This can add to the simulator experience. Such technology will come in handy for the NASA SATS Program making general aviation safe as we move more private automobile traffic from our ground transportation infrastructures into the air and help with the Virtual Control Tower Simulation Training Systems to help commercial aviation.

- http://sats.larc.nasa.gov/main.html
- http://www.simlabs.arc.nasa.gov/vast/vast.html

Imagine eliminating wake turbulence accidents by helping pilots avoid wake turbulence, by using net-centric systems inside the aircraft, which will re-project the holographic aircraft in front of them. Good for collision avoidance as well. This will alleviate issues with the 3-minute rule, when it should be extended or when it is not a factor. The increased efficiency will help the traffic flow at the larger airports, moving more aircraft on their way in less time.

http://oea.larc.nasa.gov/PAIS/AVOSS.html

The Holographic Technology is almost here and it such advances in science has the potential of literally solving many safety and efficiency issues in aviation in the present period and safety in space in the next period.

We need to borrow the technology that the military uses for the Battlefield 4D holographic simulations in the Net-centric Warfare Battlespace and transfer this technology to help the DOT and DHS predict how to keep the distribution systems are moving in our Nation in real-time.

We need monitor the movement and keep flows moving under circumstances involving Choke Point breakages in the Highway and railway systems in case a bridge out, an accident occurs or god forbid we are attacked again by International Terrorists. Such a tool could help people like Secretary of Transportation of the current administration make split second decisions using a complete visualization in real time.

Imagine looking down at a holographic view of a city, state or the whole country at the same time **watching the different types of traffic flows** all interacting. Cars, trucks, trains, boats, planes and seeing first hand as traffic jams occur and being able to replay and store that image and run it over and over again modifying veriables; Traffic signals, times of travel, adding lanes, offramps? We have the technology now to eliminate traffic jams and increase the real world traffic bandwidth able to flow thru our transportation system.

This tool also when used in simulations can predict BMPs for things like blocking a lane for construction, adding a bridge or extra lane based on modeling by ERSI vendors and Battelle which is doing projects similar but not 4D in Seattle at their Pacific Northwest Laboratories.

Why this is important is we can then see how toll ways, off ramps, signals and other things impede traffic flow and the flow of goods and services to markets. How trains and boats and containers interact. How people on buses, trolleys, trains, aircraft, hydro craft, ferries, motorcycles, taxi cabs, limos and passenger cars move.

How the system works together with Air, rail, Water and road travel no matter what the type of transportation used. This is like a giant train set you never have to build, can change at will; a holographic display, which can zoom in, zoom out, replay, record sessions, back up. Move to another state, county, city streets, just like a Google Map, but in 3D and 4D.

Four dimensional in that you can see the subway system underneath - the tunnels and double-decker freeways in places like Seattle, SF or San Antonio. You can see the NY subways, Bart trains under the bay, Big Dig or the Baltimore Tunnel, you see, why we need this? And since we have the technology, we can run the system to perfection, increasing our nation's productivity, decreasing traffic jams, enhancing response time to first responders. We can run our a Net-Centric Battlefield, not delivering bombs to the enemy, but delivering products, people, packages, goods and services to the masses. Efficiency in the flow of transportation is a vital part to a healthy economy.

Someone like Snow the treasury secretary, a former Railroad man, might want to have a similar device for money flows and markets and since he is very valuable to the administration than that of merely a treasury secretary, he should be given the assignment of working with the DOT to develop systems to streamline the infrastructure, which will lower prices to consumers through efficiencies and raise profits for transportation companies which will increase flow and help us with the future inflationary period by lowering costs through efficiencies and it also saves fuel and of value to our dependence on foreign oil and the Energy Issues which are vital to the country. Can you see the potential here?

By using such a system and GPS tracking of trucking, cargo containers, ships, planes (using Lockheed's global system and the FAA system) we can predict under utilization points and times and fill them while alleviating times and areas with choke points causing a loss of productivity to our citizenry, small businesses and government agencies. This will increase quality of life giving back 1-2 hours in metro areas to all travelers.

This is a gift worthy of the taxes charged by our government for the services they provide. It is fair and easy to do. The over all cost of this project I see at about 500 million dollars and will give the US the advantage to do more with less and therefore compete with a higher standard of living while delivering goods and services to the world. This system has another benefit. Better and healthy air, since vehicles pollute less when running at optimum not idling in traffic.

Here are a few examples of what has lead me to this conclusion. By having someone in the know with years of rail and distribution experience looking over the 4D model they can easily within minutes pinpoint problems and make good and important decisions, this is one reason at rail yards the Rail Master is in a tower for a better vantage point and why Air Traffic Controllers sit with an unobstructed view over the ramp and can see BLOS.

There is an exponentially and mathematically component to this and that is that the cost savings to businesses will make them more profitable meaning more profits and more tax revenue. Moms and Dads will not be stuck in traffic and spend more time raising their kids with out latch key syndrome and that means better students, better citizens, less juvenile delinquency, drugs and less need for costly police, jails and rehabs. Every time you assist our economy on more efficient operations we all win.

Real Time Distribution Models

In the future real time distribution models may not need actual shipping containers, trains, trucks, planes, etc to ship with. In fact the distribution may seem a bit like Star Trek Transporter Rooms. How so you ask? Well currently there are many things, which can be sent by computer the printer on the other side works like a facsimile machine. In the future that fax machine scenario may include quite a bit more technology than today.

For instance you might be able to print out what you need on-site and the person sending the instructions would have the actual patent. In a box would be a periodic table of elements and combined molecules, which would assimilated in real time in the box to make what you want when you want it. All of sudden you item that you ordered would appear and be fully constructed right there with a 3D Facsimile machine. Sounds too SciFi for you? Do not be shocked when you see this in your lifetime my friend.

Of course this is a tough nut to crack for organic duplication of faxing living tissue or instant creation, but who knows someday that too should be possible. It is only a matter of [TIME] right. Isn't that the real issue time to make, grow, etc. for the organic to work too?

Oh God forbid you say? Well in the future most likely there will be know religion so you do have to worry about what God thinks about you faxing a new TV set to the local distribution center like the old Zap Mail idea, but in 3D from Federal Express. Consider all this in 2006

Dirigible Cargo Movers

Perhaps you have noticed the Dirigible Cargo Mover artist conceptions in Magazines like Popular Science or Popular Mechanics. They seem to appear about once every year or two years in very nicely done articles and this has been going on now for decades. Interestingly enough the concepts have been getting more and more feasible thanks to lighter materials, better propulsion systems and some crack engineers.

Not only is the military got their eyes on these cargo movers for their logistical needs but some transportation and distribution companies also. Namely FedEx and who can blame them? The concept makes perfect sense and a company like FedEx might be able to move lots of light-weight freight (next day letters) cargo between its distribution hubs in this fashion.

Using a combination of high-output engines, lightweight materials, air-thickening strategies and ground effect the efficiency would certainly be there for such a cargo blimp or large logistic dirigible. It goes without saying that the military could make good use of such a logistics tool.

Will Future Dirigibles revolutionize the transportation industry and become competition for the Trucking Industry? Most likely not anytime soon, but it is something to keep an eye on.

Net-Centric Systems to Guide Trucks

Perhaps you have heard about the Future of Net-Centric Automobiles? The car's systems will all work together like a Company Office and its computer system. Even better all these four-wheeled net-centric systems will have a system like the wireless Internet and they will communicate with each other and the Smart-Highways of the Future.

Of course many Modern Trucks are already on their way to doing this. The Truck's digital nervous system is already in constant contact with all its components. The Truck itself may be in constant contact with the satellite and the dispatch office. The Truck's Transponder talks with the computer system at the truck Scale, Toll-ways and at Border Checkpoints. Soon more and more roads will also contact the truck for warnings and traffic alerts.

Vehicle Alignment by Size

In the future of net-centric cars all automobiles will communicate with each other and it makes sense when on freeways going long distances that these computer systems should allow for all the cars of various sizes to flow together based on their size and weight. It will also be safer in case of an accident or software glitch or tire blow out?

If you have a whole bunch of little cars they're very light weight so they get good gas mileage driving at 70 mph bumper-to-bumper with big trucks and something goes wrong these poor people will be crushed into oblivion. How would such a system be designed to protect the occupants?

I believe that the software would be standardized and each car would be given a number that would be based on its size, number of occupants, speed capability, most efficient speed and weight. Its final destination would be entered into the computer via voice technologies by the driver.

The car would then communicate with all the other cars as to what was going on and this system would line up all the cars by size and allow them to go down the road together at various speeds. This would allow them to drive very close together and very fast and break the wind resistance to increase efficiency.

Recently the online think tank came up with a basic protocol that could work for net centric cars of the future. We need to be thinking here because the future is rapidly approaching and we need to keep it on all four wheels.

Conclusion and Concepts

The Transportation Sector is in for some technological changes in the future and the Trucking Industry in the next 20 years will look much different than it is today and it has the potential to outpace previous decades of slower incremental change. In looking at the changes going on in the Industry right now and the pendulum shift of the political climate and the created realities of Global Warming the current direction should be self-evident.

Many Futurists will tell you of how the future will be and get you all pumped up and within a few years it is quite obvious that they really did not know what they were talking about. And in the reality of change in human societies, civilizations and industries we see incremental movement and rarely outrageous disruption. Perhaps the bureaucracy, politics and government has a reason for moving so slowing; to protect us from it moving too fast.

The T-5 Group (The Truck Technology Think Tank Team) appreciates the opportunity to give you some insight into Truck Technologies of the Future. We believe that is you study the industry trends, data, social movements, political climate, challenges, scientific discoveries and current technology that you can make pretty accurate predictions.

The Online Think Tank is pleased to receive comments, questions or news items for the next edition of Truck Technologies of the Future and The Future of the Trucking Industry.

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Fuel Cell Membranes

What are Fuel Cell Membranes and Why Should I care? Well first off just incase you think things are not moving forward check this out:

http://www.donaldson.com/en/fuelcell/index.html

Donaldson is selling all the replacement and re-usable parts for Fuel Cells. Peruse this site and understand the nature of what is to come. Fuel Cells need clean air to run, therefore like a Diesel or Gasoline Engine they need air filters too. Contamination control is essential for safety of a fuel cell and also for proper efficiency. Los Alamos has been working on these and is almost at a major breakthrough.

http://www.lanl.gov/worldview/science/features/fuelcell.html

and if you are serious about the future market share you will want the Donaldson video available on their website too. Remember there are several things going on inside of a Fuel Cell to make exchange the energy. Chemical Reactions, which have a filtration process and heat exchanges, ion exchanges and exhaust components, all of which have monitoring needs and issues. Contaminants are not a real good idea in this sort of thing. And of course this is where the pedal hits the pavement and where the men are separated from the boys, there are training needs, customer needs and opportunity in the Chaos to come.

Vehicles, which do not derive power from an internal combustion engine, will not require oil-changing services? Does this mean the oil change industry is dead? For some yes absolutely, they will perish and new innovative companies will take their place, such is the struggle of free markets and competition, for the rest there will be service items to take care of with fuel cells too. So then what can we expect to see in the next 12 years? A big change? Yes, it seems to be estimated that 35-45% of all vehicles in the US will be another form of hybrid propulsion. Namely it appears to be that Hydrogen Cells will take the place of much of what we know.

http://www.ceramicindustry.com/CDA/ArticleInformation/features/BNP__Features__Item/0,2710,27484,00.html

There will be manufacturers and suppliers of these filters no doubt and companies like our will replace them. There are significant opportunities for companies in the Filter manufacturing business of ceramic filters and membranes. Will fuel cell service stations supply these parts at the counter of their C-stores? As a matter of fact the answer is yes, some will, while others will be a typical looking C-Store with gasoline stations, only with hydrogen with kiosks near ATM machines? How many brands will there be? Will auto manufacturers design many different models and will auto service businesses need to stock all the Fuel Cell Service items too? Today just stocking air filters can be a hardship with over 161 common types?

Will These Fuel Cell Stations Be franchised? Who will be doing this? Will the Oil Companies see this and jump on the opportunity? Will Wal-Mart add Fuel Cell Card Lock stations at all their Sam's Clubs? The future is predictable, most of this seems like obvious questions to answer. We feel we could answer most of these and be pretty close on target. Are the Futurists all they are cracked up to be? Or just realists-idealists and theorists?

When you start seeing hydrogen fuel stations pop-up then you will see people buying those cars. Then you will see trucking companies investing in their own systems to haul along major freight lines, then you will see railroad try to run for lower fuel costs and heavier loads to compete, and thus you will see the ushering in a new age of transportation and form of distribution, cleaner air, water and more efficiency.

Regarding filters for hydrogen cell? Honda is pushing their electric hybrids claiming no needed filters. However this might be a bit misleading to the general public who has knowledge of such technologies, these vehicles require other usable parts, and you can bet the Japanese want to sell you those reusable parts. The high heat may be use in conjunction with larger fuel cells in factories or grid generation and plasma torches to clean the areas of the filters, which may last several cycles longer or may have a plasma unit running continually to clean the particulate. Cars will have some obstacles because what is good for General Motors is good for America concept.

Now realize brake fluids, windshield wiper blades, etc will still need servicing. But the days of the $24.99 Jiffy Lube oil change appear to be on their last decade. Not only because of price competitiveness of Wal-Mart, but also due to shifting technologies in oil intervals, additives and introduction of Hydrogen Cells. So you ask how hard is it to replace fuel cell filters? Very easy. And take a look at these sexy little anodized fuel cell filters. Small and expensive. About $35.00 and even the fuel sending units are considered replaceable parts, yep $80.00, not cheap. But remember for an industry still in its infancy, these are not bad.

Just because your auto repair business is without a future, does not mean a little adaptation cannot keep you in business for another 40 years.

Electric Cars

Well it appears that the Electric Car Industry is moving right along and making great strides as more and more technology is making them faster and faster. Some of the newest models according to the Electric Car Association are smaller, faster, charge faster and go further between charging.

There is even a new group with Venture Capital called Tesla Motors, which is about ready to complete and put the finishing touches on a car which can accelerate as fast as a Ferrari. They have been getting some good press lately too. It appears that pure electric cars, not just hybrids will indeed change the dynamics of the market place.

Tesla Motors: http://www.teslamotors.com

Wrightspeed: http://www.wrightspeed.com

Electric Cars have two speeds; off and on. So if you put one in a certain gear it will really boggy off the line. Imagine an Electric Car That Out Accelerates a Porsche? And you will see the very near future of what electric cars are capable of. Consider a pure electric car, which runs off only a battery, zero emissions and fast too.

What does it run off of? I mean will the power plants that make the extra electricity pollute, as they run off coal? Well some say that coal fired electric plants pollute, but with new clean coal technologies they do not. And so maybe America with 250 years of coal reserves can indeed have its cake and eat it too. The true electric car of the future will soon be here so consider all this in 2006.

Electric Cars Too Quiet

Electric cars are fun to drive and accelerate fast from a dead stop. This is because the have two speeds; off and on. They are nice too because they are quiet and peaceful; no noise pollution. How could this be a bad thing?

For safety sake the silent running electric vehicles will now be required to make noise; to prevent accidents of other cars, bicycles and pedestrians. Electric Automobile makers are using this as a marketing tool saying you can choose the sound you wish your car to make.

You can get the Ferrari Sound, Beethoven, Motorcycle sound, or even swooshing air. The sounds will be played at 60 watts with speakers facing out. And will be required by law so you have to choose one when you buy the car. You can get the sound of the day buying all seven if pay for that added feature. If you are a street racing enthusiast, count on new safety items for you too; The Auto Service industry also takes this seriously too; Some say the best way to stay safe is to be bigger and others say that is the problem. Big cars take more go go juice and the bigger they are the more damage they do when they hit something. Take a 6000 pound SUV for instance; hate to be T-boned in a Honda Car.

In case you are wondering why we study this, it is because 40,000 people a year lose their lives in traffic accidents. You are worried about the Iraq conflict? This is 2000 times greater. Electric cars have not caught on widespread and many have been recalled, but hybrid electric diesel and gasoline or Hydrogen Electric cars seem to be a wave of the future. In 2004 those auto makers which sold hybrids over took the companies that did not. The issues of high fuel prices are propelling the profits and demand for these cars.

Sure you could drive your electric car in the library without disturbing anyone, but you are liable to hit someone using the computer or looking for a book using the old Dewey Decimal System. A little noise in this case is a good thing. Think about it.

Bio Diesel - B30, B50

It is truly amazing how easily people are confused with so many choices of how we might power our vehicles in the future. There are hybrids and Tri-brids, using a combination of propulsion systems. Some run gasoline and batteries; others run ethanol and gasoline or a combination with batteries. Some also charge those batteries with solar panels on top it is amazing the amount of innovation goes into these cars; everything from new materials to super powerful state-of-the-art and high-tech batteries. Indeed, there are some advanced thinkers in the Trucking Industry making waves too with innovative ways to improve efficiency, save fuel economy and delete pollution. There are a lot of sharp minds and engineers working on the challenges in front of us on the road ahead.

The B30 and B50 are Bio-diesel blends and many people today use these in the Northern Midwestern states in their pick-ups and over the road trucks. E85 Ethanol is 15 percent gasoline and 85 percent ethanol. Of course in the future granddaddy of them all would be running our cars on hydrogen, which just happens to be the most common element on planet Earth. That would be cool wouldn't it?

Indeed, however each one of these technologies has its advantages, as well as disadvantages. Buying enough hydrogen to take your car 20 miles might cost as much, as a $1.60 although with economies of scale the price would come down. Ethanol and many bio diesel blends mean that we can grow our own fuel, which is a nifty idea however, what about droughts? Hybrids make a lot of sense however, currently they are quite expensive and there is a waiting list at Toyota and Honda, but there is also a $3400 tax rebate, Hello! That would sure come in handy.

Many believe that the more options possible the greater the competition and this in itself will lower prices which OPEC sells their oil for. As new technologies come into play and more

competition in the marketplace exists, then these options will help lower prices. As we know current gasoline prices and diesel prices are affecting American families and our small businesses.

Flying RV

Everyone seems to be talking about the Flying Cars of the future and are not considering the offshoots of this. Such as the Flying Recreational Vehicle of the Future; imagine taking a trip to see America and flying over the sites of interest or flying or hovering over those areas you really want to get a good look at? Of course you think this is all fantasy right? Well it isn't really.

You see with new carbon nano-tube construction the materials will be much stronger and 20-50 times less weight. Meaning the entire RV may only weigh 1000 lbs or less. It does not take much energy to fly something that only weighs 1000 Lbs. Most ultra-lights weigh a third of that much. Maneuvering in parking lots will also be a lot easier too, no more bumping over curbs, you can fly over them and then land there in the parking space you desire. Piece of cake.

The question is will you indeed need to get a pilots license to fly your RV or motor home in the future? Maybe so, and this means you will most likely have to go down to the DMV and the FAA or maybe you can just register online for the license? Of course if you RV can fly you will save lots of money also crossing peninsulas, great lakes and following rivers instead for roads or maybe just following railroad tracks to your destination? The future and your future retirement seems bright indeed.

OnStar Self Driving Cars

The General Motors OnStar system is a cool system for any family. There is even the ability to unlock your door from Space, if you lock yourself out of your car you simply call a number and they unlock the door. With this great technology and the fact it always knows where you are with GPS means the OnStar system could do much more, if it were designed to do so.

For instance OnStar Satellite System could be used for Engine Efficiency, self-driving buses, over the road trucks, train controls or even street sweepers at night and Garbage Trucks in the early mornings.

With GIS information data sets figured into the GPS Navigational system it would be easy to control unmanned ground vehicles in our civilization. There is a shortage of truck drivers and cities need to cut labor costs. Many of our Nations Largest Municipal Transportation Systems have had strikes in the last year. Additionally with fuel costs up, we must cut costs somewhere. By over laying map systems, ESRI software and XML database sets this system can be integrated and that is not a problem. Thus taking care of the coming shortages in drivers and the escalating labor costs, which threatens to sink our nations most critical transportation systems.

There would also be military applications for this to save fuel and increase range on the heavier bullet proof re-enforced Humvees. Indeed as we saw in the DARPA Challenge all these technologies are fully feasible and during that event much of this technology was not even used or allowed due to contest rules. These systems for true autonomous ground transportation along with anti-collision devices now available by German and Japanese Automakers this whole plan could be a done deal in relatively short order.

This could also prevent wartime deaths from roadside bombs and be used for robotic war-fighting vehicles especially for army tanks, robotic vehicles and UAVs too. By developing these systems and technologies to the fullest we maybe able to allow for the transfer technology to the private sector to insure a greater advantage in efficiency in Ground Transportation.

Lunar and Mars Mining Trucks

In the future, near future within a decade or two, mankind will begin to mine the moon and in doing so he will have to deal with that local environment and its unusual requirements. Requirements, which are much different than those here on Earth; one big problem will be the moon dust which will get on the robotic mining equipment and cause problems with potential eventualities such as motors over heating due to the moon dust getting into the cooling vents and moon dust corroding parts of the equipment.

Specific considerations must be taken to prevent this. Here on Earth when cleaning heavy equipment it is very important to keep radiators cleaned otherwise the engines over heat and can cause unnecessary wear and even complete failure costing upwards of $35,000 in repairs.

If we look at the current state of the art automated unmanned equipment in the truck sector for instance we see components we can use to help make robotic mining equipment cleaning machines for the moon. Here is a system by Belanger called the "V-Max" which could work.

http://www.belangerinc.com/products/vmax.htm

http://www.belangerinc.com/markets/truckbus.htm

Now then of course we will need to use different high-tech materials to keep it light-weight, as the cost to send a steel structure to the Moon is too costly as is. But believe it or not my thoughts most recently have actually been to use this particular design for Lunar Colony mining equipment cleaning, due to the issues with Moon Dust.

Although in my estimation the system would have to work on high-pressure gas and ionic charge to break the dust away from clinging to the side and then blow it away. We cannot use water, because it is a precious commodity on the Moon.

Flying Trucks of the Future

Are flying trucks really possible? And if so what on Earth would they look like? Believe it or not there are folks that study anti-gravity concepts and manipulation of the forces of nature trying to figure out such things as trying to build a flying car such as the one depicted in the Famous Hollywood Movie ***Back to the Future***.

One gentleman, Bill Butler of www.HoverTech.com and his team have been working on such theories and techniques for many years and come up with some plausible solutions to the challenge. In fact, they have indeed built a few prototype models as well. In the eBook on page 34, from the Online Think Tank you will find some of the concepts that are potential feasible once science learns more: http://www.worldthinktank.net/pdfs/hoverboards.pdf

Gravity Manipulation

Humans are getting closer to being able to manipulate gravity, yet the question is can we trust mankind to use the technology correctly? Being able to manipulate gravity might come in handy, lifting a car off the ground, which has a suicide car bomber in it, then turning off the machine and letting it fall to the ground.

Unfortunately, the International Terrorists might also use it against us and it is for that reason that such a wonder technology should be well guarded and agreed upon in advance to how it will be used. Uses such as creating energy, building structures or transportation would be the first consideration. And it probably does not take an Art Bell or George Noory UFO believer to see the transportation value or uses for space flight.

Once such a technology exists you can image its destructive power in the wrong hands such as an International Terrorist picking up a bus 100-feet in the air and letting it drop if their demands are not met? Those are not such pretty thoughts, yet ones which should be consider as we advance our technologies to be used in aircraft, transportation building.

If you consider building a building without using dangerous cranes or saving people in a burning building by lowering them safely to Earth you can see the advantages. No more traffic, cars can fly. No in-efficient aircraft as they fly to where they want to go and lower into place, saving fuel during take-off and climbing out.

No more worries about launching satellites or putting colonies in orbit, as they could float up effortlessly and easier than launching a balloon. Mining an asteroid and putting it into geo-sync for needed materials. We could launch a space ship the size of an Aircraft Carrier and go visit our neighbors around the solar system and discover all that we quest to explore and learn of other worlds and life of all types.

Here on Earth we could pick up large Icebergs the size of football fields as easy as picking up an ice cube and then putting it in a drought stricken area or in a dried up lake to provide water for our people and those areas of the world, which have surpassed their water supplies due to population increases.

The potential for such technologies can save fuel, save pollution, provide water, help with materials we need and make transportation safer. Now then we must also be considering it unfortunate uses due to the fact that humans are still a warring species and they may use such technologies for things, which are not so noble.

Perpetual Motion Car Fails to Impress Investors

At the Online Think Tank we are always coming up with crazy ideas. One invention I had was a prototype of a Perpetual Motion Car. Unfortunately, the Prototype failed to Impress Investors or even impress many in our think tank. The perpetual motion car was about the size of a GI Joe sitting in a little go cart with rings around it, where magnets went around the track.

On my design the driver slides his feet and pushes the metal plate forward. The closer he pushes it the faster he goes. Sliding the seat back pushes the rear plate does the same thing. It is how I adjust the speed. The unit pulls the center of gravity of the driver.

The magnets keep spinning against themselves once started and they spin as they go around. Each passing tugs or propels the center of gravity, where the driver sits in the middle.

The problem we had was that the weight of the system was more than the magnets we could find to move the GI Joe forward, the darn thing works. The magnets keep moving fine and you can see the thing inching forward. It needs a pulse system and the balsa wood frame kept coming apart. It wobbles terrible. It needs more magnets, but the magnets eventually try to come to equilibrium and the whole thing wobbles like the Dickens. In theory it should work.

It needs better materials to work, pulse magnetic system not magnets, like a UFO might have, I think I have seen theories of how a UFO might work if there was such a thing in books somewhere. Anyway the cool deal would be to have carbon nano-tube construction, pulse magnetic system, larger scale (ditch the GI Joe Doll) and put the thing in a balloon and float it around? UAV style.

I should talk to who is it Lockheed or thinking if I ever got anywhere with the design, I would write a white paper and pitch it to Aerovironment, Northrop, Boeing, Lockheed or DARPA or someone. Maybe recruit a GA Tech, MIT or Berkeley kid to the game?

Industry Truck Links

ASSOCIATIONS

Alberta Trucking Association
http://www.albertatrucking.com
Searchable for various items including: events; services; calendar; a feedback section; and Partners In Compliance program.

American Association of Motor Vehicle Administrators
http://www.aamva.org
Member forums; help desk; driver services; legislative affairs; "must see items"; employment; and the week in review.

American Society of Transportation and Logistics
http://www.astl.org
Membership information and services; HAZMAT self study courses; resume service; in-house training; and scholarship information.

American Truck Historical Society
http://www.aths.org
How to join the association; and ad posting service; how to section; old truck fun; a discussion page; the upcoming show season; and an ATHS store.

American Trucking Associations
http://www.trucking.org
What's going on in the trucking community; a cyber shopping centre; calendar of events; classified ads; information about ATA; and a detailed site map.

Information on specific U.S. state associations
http://www.trucking.org/stateside

Atlantic Provinces Trucking Association
http://www.apta.ca
Services include; membership information; current issues; events; road conditions; regional awards; reference material; a buyers' guide; and this site is searchable.

Atlantic Provinces Chamber of Commerce
http://www.aptc.nb.ca/apccfront-index/apcc_front&index/maina.html
About the APCC; chamber programs and services, trade and business development links; recent activities; and annual general meeting subscription.

Atlantic Provinces Transportation Commission
http://www.aptc.nb.ca
Pay-for-use site with an annual fee; information on trade corridors; the Gulf Ferry Service; and other East Coast transportation issues.

Canadian Council of Motor Transport Administrators

http://www.ccmta.ca

About the CCMTA; events; standing committee on drivers and vehicles; standing committee on road safety and research policies; CCMTA publications; standing committee on compliance and regulatory affairs; and people news.

Canadian Transportation Equipment Association

http://www.ctea.on.ca

Order industry documents; get recall notices; regulatory updates; upcoming events and other association information

Canadian Trucking Human Resources Council

http://www.earningyourwheels.com

An introduction to the trucking service industry for prospective drivers; driving as a career and the skills required to be successful; truck driver training courses; and a self-assessment questionnaire.

Commercial Vehicle Safety Alliance

http://www.cvsa.org

Information about CVSA; new offerings; inspection information; CVSA publications; recent events; updates; safety seminars; intelligent transportations systems; and the North American inspectors championship.

Freight Carriers Association

http://www.fca-nftb.org

Quebec Bill 430 information; products and services; about FCA/NATC; currency exchange; industry information; fuel surcharges; and membership roster.

Intermodal Association of North America

http://www.intermodal.org

How to join the IANA; Y2K information; membership discounts; events; and upcoming speakers.

Manitoba Trucking Association

http://www.trucking.mb.ca

The association's history; associated trades division; vehicle maintenance council; training awards; special events; upcoming courses; membership benefits; highway conditions; weather conditions; and statistics and facts.

National Private Truck Council

http://www.nptc.org

Service provided through PSIWeb and visitors must navigate through the subscriber index.

National Truck Equipment Association

http://www.ntea.com

Sections include: business; education; excise tax information; personnel safety; sales and marketing; technical; and truck sales.

Ontario Trucking Association

http://www.ontruck.org

Issues; submissions; statistics and facts on the province's trucking industry; association divisions/councils/forums; products; services; and a marketplace section.

Owner Operator Independent Drivers Association

http://www.ooida.com

About OOIDA; membership information associate membership; a call to action; court cases; E-mail U.S. Congress; office directory; and regulatory action.

Private Motor Truck Council of Canadad
http://www.pmtc.ca
Association goals; safety issues; how to join; upcoming events and awards; previewing the annual conference; and a feedback section.

CANADIAN GOVERNMENT

Alberta Infrastructure
http://www.tu.gov.ab.ca
Send a message to the minister; what's new; infrastructure management; safety services; driver services; transport industry services; highway driving conditions; publications directory; and disaster response.

British Columbia Ministry of Transportation and Highways
http://www.th.gov.bc.ca/bchighways/index.html
About the ministry; transportation initiatives; road report/route information; major projects; quick facts and FAQS; resources and services; and ministry publications.

Federal Government Directory
http://canada.gc.ca/depts/major/depind_e.html
All Government of Canada institutions are listed here alphabetically.

Manitoba Highways and Transportation - road conditions only
http://roadinfo.hwy.gov.mb.ca
This road report is based on information available at the time of preparation and actual conditions may vary from those reported.

News Brunswick Department of Transportation
http://www.gov.nb.ca/dot/index.htm
A guide for trucks in New Brunswick; the Adopt a Highway Program; applications for closed road permits; conditions for movement of oversize loads; road restrictions; and standard specifications.

Newfoundland Department of Government Services and Lands
http://www.gov.nf.ca/gsl
Licensing information as well as enforcement-related issues.

Nova Scotia Department of Business and Consumer Services
http://www.gov.ns.ca/bacs
Drivers licenses; motor vehicles registration and permits; graduated drivers license; driver suspensions and reinstatement; drivers examinations; permits and approvals for things like ovresized loads; scale house contact information; and the registry of joint stock companies.

Nova Scotia Department of Transportation and Public Works
http://www.gov.ns.ca/tran/home/index.stm
A searchable site complete with a trucking section featuring: vehicle weights and dimensions; scale house information; B-train map; transporting dangerous goods; the Motor Vehicle Act.

Ontario Ministry of Transportation
http://www.mto.gov.on.ca
Road safety; year 2000 information; online license checks; emissions testing; about vehicles; contract bulletin; traffic cameras in the GTA; carrier abstracts; traffic conditions (GTA and Nagara areas); and construction reports.

CLASSIFIEDS

MotorZoo
http://www.motorzoo.com
World's Greatest online Vehicle classifieds.

Component Suppliers

A&A Exhaust Systems
http://home.nas.net/~exhaustman
Information on complete exhaust systems and maintenance for cars, RV's, and heavy-duty vehicles as well as clearance items.

Aux Generators
http://www.auxgenerators.com
Company information; product information; and customer support.

Canadian Kingpin Specialists
http://www.kingpinspecialists.com
Remanufacturing process; engineering spec's; contact information; and franchise information.

CarCoverWorld
http://www.carcoverworld.com
CarCoverWorld is a worldwide supplier of premium quality, custom-fit car, truck, SUV, and motorcycle covers and other accessories.

Carlisle
http://www.carlislemotion.com
Braking system products information; a company overview; worldwide locations; contact numbers; and career opportunities.

Carrier Transicold
http://www.carrier.transicold.com/carrier/ctdwww.nsf
Replacement components; and dealer contact information for both refeer units and air conditioning systems.

Chalmers Suspensions International
http://www.chalmerssuspensions.com
Company description; suspension product information; a complete guide to technical support; and contact information.

CPL Systems
http://www.cplsystems.com
Complete product information on Automatic Greasing Systems; Twin AGS Systems; Speed Limiters; Temperature Registration; Brake Stroke Indicators; and Ultrasonic Backup Systems.

Eaton Corporation
http://www.eaton.com
Searchable site for 31 different Eaton product divisions ranging from Aeroquip and Eaton VORAD Technologies.

Espar Products Incorporated
http://www.espar.com
Technical manuals and product support for Espar's range of independent and compact fuel fired Air and Water Heater Products.

Fontaine Fifth Wheel Canada
http://www.fifthwheel.com
Company information and FFW; product information; on-line catalogue; dealer locations; free product literature; and contact numbers.

Gear Centre
http://www.gearcentre.com
Information on the parts warehouse, remanufacturing, dyno-testing, ISO 9002, light-, medium- and heavy-duty trucks, industrial off-highway and agricultural vehicles.

Grote
http://www.grote.com
Product catalogue; literature request service; technical information; what's new; and company profile.

Haldex Midland Services
http://www.midland.com
Product descriptions; ABS information; how to place an order; customer listings; distribution centers; service centers; new product lines; product support; and the Master Cross Reference system.

Hayes Lemmerz International
http://www.hayes-lemmerz.com
Product information on wheel and brake components; locations; a site map; stock update system; and how to order an investor's kit.

Hendrickson International
http://www.hendrickson-intl.com
Company background information; product information; reference; sales and technical support; parts and service; careers; and an employee intranet.

Horton Vehicle Components
http://www.hortoninc.com
Product information on engine cooling system solutions for diesel engine applications.

Index Sensors and Controls
http://www.indexsensors.com
Product information on Heavy-Duty Pressure Switches; Heavy-Duty Temperature Switches; Heavy-Duty Sensors; and On- and Off-Road Electronic Controls.

Jacob's Vehicle Systems
http://www.jakebrake.com
Everything you need to know about "the Jake" including products information; distribution; servicing; and FAQs.

Maddocks Systems
http://www.maddocks.ca
Trucking software solutions including the flagship product, TruckMate for Windows; additional product and service information; and customer support.

McCoy Bros.
http://www.mccoybros.com
Company profile; what's new; products and services; locations; investor relations; employment opportunities; and an information request service.

Meritor Automotive
http://www.meritorauto.com
Searchable site; product information on wide range of Meritor components; company structure; a technical support library.

Merritt Equipment
http://www.merritt-equip.com
Aluminum truck accessories such as: cab guards; dyna-droms cabinet guards; logger guards; bulk heads; and much more; as well as a link to PACCAR parts featuring a coupon book.

Neway Anchorlok International
http://www.nai-inc.com
Complete product information on trailer and semi-trailer air suspension systems; truck air suspensions; Anchorlok spring brakes; and air control valves.

Parts for Trucks
http://www.partsfortrucks.com
A one stop shopping centre for truckers needing anything from alternators to wheels.

Ridewell
http://www.ridewellcorp.com
Product information on truck suspensions; trailer suspensions; bus and RV suspensions; as well as air controls.

Shur-Co Canada
http://www.shurco.com
Tarping systems for agricultural; construction; and flatbed haulers.

Thermo King
http://www.thermoking.com
Testimonials; product information; dealer locations; and contact information.

Tiger Tool International
http://www.tigertool.com
A wide variety of product information; technical support literature; and customer support contact numbers.

Timbren Industries
http://www.timbren.com
Information on both ride control and suspension product; as well as customer support numbers.

Tran-Steer Inc.
http://www.tran-steer.com
Product information on power train and steering components; monthly specials; and customer support service.

Truck Stuff USA
http://www.truckstuffusa.com.

UAP Incorporated
http://www.traction.com
Product descriptions; locations; factory information; and customer support contacts.

Webasto
http://www.webasto.de
Product spec information; dealer and service information; company profile; and customer service support.

Engines
Caterpillar
http://www.cat-engines.com
On-line spec sheets; company history; product information; and a Cat Engine Division screen saver - you need Windows 95, at least 5 mb or free disk space and at least 256 colors to download.

Cummins
http://www.cummins.com
Searchable product information including access to Fleetguard, Nelson, and Onan homepages.

Detroit Diesel
http://www.detroitdiesel.com
Market descriptions; corporate information; product profiles; and service information.

Mack
http://www.macktrucks.com
Engine close-ups; spec's; powertrain information; and customer service.

Navistar
http://www.navistar.com/engines/index.html
Coming soon

Power Solutions
http://www.powersolutions.com/index.html
Definitions; designs; product information; sales; and service support for power conversion devices.

RoDi Power Systems
http://www.rodi.com
Product information including spec's on the HT1-450.

Volvo Trucks North America
http://www.volvotrucks.com
Product information; customer support contacts; the Highway Angles Program; testimonials; and upcoming trade shows.

Road Conditions

AAA
National list of road costruction projects.

GeoTraffic.Com
http://www.geotraffic.com
Real time traffic reports for the nation.

Rain or Shine
http://rain.advance.net/index.ssf
Up-to-date weather conditions with 5-day forecasts.

RWA Direct
http://rwa.metronetworks.com/rwadirect.html
Links to regions and states for traffic and road condition information.

Satellite Weather
http://weather.yahoo.com
Four-day forecasts for 84 Canadian cities; meteorology; storm chasing; weather phenomena; maps; and observations

The National Weather Service
http://weather.noaa.gov
Searchable forecasts; weather watches and warnings; and a frequently asked questions section.

Traffic Station
http://www.trafficstation.com
Create your own customized traffic report.

U.S. Department of Transportation - Federal Highway Administration
http://www.fhwa.dot.gov/trafficinfo/index.htm
National traffic and road closure information.

Weather.Com
http://www.weather.com
The ultimate place for up-to-date weather information.

Services

Cancom
http://www.cancom.ca/mobile
Product information; driver's area; advantages of wireless tracking; contact information; and client's area.

Clearnet
http://www.clearnet.com/english/index.html
Personal communication system product information.

Compunet Credit Services
http://www.compunetcredit.com
About the company; how to subscribe; services offered; and customer support service.

Kim Richardson Transportation Specialists
http://www.krway.com
Company profile; programs; featured programs; current customers; and safety coordination training programs.

Link Logistics
http://www.linklogi.com
Products; services; company information; and a free trial offer.

Park'N'View
http://www.pnv.net
Fleet services; truckstop services; and in-cab driver services.

Ryder
http://www.ryder.com
Integrated logistics; vehicle leasing and maintenance; truck rental; student, public transit and fleet management; vehicle sales center; environmental services; and safety services.

Trinomic Technologies Int.
http://www.trinomic.com
About the company; testimonials; and a free CD-ROM offer.

Tires

Bandag
http://www.bandag.com
Who we are; worldwide locations; tread products; services and programs the Bandag store.

Bridgestone/Firestone
http://www.bridgestone-firestone.com
Corporate information; tire products; racing; retail operations; other products; and international affiliates.

Goodyear
http://www.goodyear.com
Product information; dealer locations; logo merchandise; and contact information.

Michelin
http://www.michelintruck.com/home.htm
A tire selector; new product information; retread technology; and a dealer locator.

Toyo Tire
http://www.toyo.com
Product information; dealer locations; and customer support.

Toll Routes

Canadian Highways International
http://www.chichwys.com
Ontario's 407 ETR; Nova Scotia's Cobequid Pass; and other tolling solutions information.

Confederation Bridge
http://www.confederationbridge.com
Bridge operations; toll rates; fascinating facts; design and construction information; and staging facility.

ETTM On The Web
http://www.ettm.com
Accurate and up-to-date information on electronic toll collection and traffic management; all toll facilities in the U.S.

Fredericton-Moncton Highway Project
http://www.gov.nb.ca/mrdc/index.htm
Highway agreement; tolls; facts; route map; safety operations.

Marine Atlantic
http://www.marine-atlantic.ca
Schedules; rates; routes; and a description of vessels and amenities.

Trailer Manufacturers

Durabody and Trailer
http://www.durabody.on.ca
Product information on insulated van bodies and trailers; dry van bodies and trailers; flatbed truck bodies and trailers; and curtainside truck bodies and trailers.

Great Dane Trailers
http://www.greatdanetrailers.com
Company history; locations; and career opportunities.

Landoll Corporation
http://www.landoll.com
Product information for agriculture; transportation; and material handling

Manac
http://www.canammanac.com
Products; plants; sales network; and parts and services.

McCoy Bros. Scona Truck and Trailer
http://www.mccoybros.com/scona
Wide variety of heavy-duty trailers; lowbeds; oilfield floats; log trailers; and custom trailers.

Merit Equipment
http://www.merritt-equip.com
Aluminum class livestock commodity trailers and Class 8 aluminum truck accessories.

Simco
http://www.ncci.net/simco/index.htm
Product information on lowbed and specialized trailers.

Trail-EZE Trailers
http://www.traileze.com
Tag Trailers; hydraulic tail trailers; sliding axle trailers; low-boy trailers; E-mail; and company brochures.

Trailmobile
http://www.trailmobile.com
What's new; dealer network; product lines; used trailers; and safety awards.

Utility Trailers
http://www.utilitytrailer.com
Product information on refrigerated vans; dry freight vans; flatbeds; and the Tautliner (Curtian Sided Van).

Wabash National
http://www.wabashnational.com
Searchable products; locations; company store; and E-mail contact list.

Transit Trailer Limited
http://www.transittrailer.com
Currently under construction

Trucking News & Magazines

AGG's Driving Force Magazine
http://www.drivingforcemag.com

ETrucker.Net
http://www.etrucker.net

Fleet Owner
http://www.fleetowner.com

Overdrive
http://www.etrucker.net/overdrive/index.htm

Road King
http://www.roadking.com

RoadStar
http://www.roadstaronline.com

Truck Manufacturers

Bearing Truck Corporation
http://www.beringtruck.com
Product searches; company background information; and dealership locations.

Freightliner
http://www.freightliner.com
Freightliner Trucks; Sterling Trucks; SelecTrucks; Freightliner Custom Chassis Corp.; Thomas Built Buses; American LaFrance; Alliance; Mercedes-Benz Credit Corporation.

Hino
http://www.hino.com
Engineering and design spec's'; service recommendations; fleet management programs; and mobile service.

Kenworth
http://www.kenworth.com/kw
Used truck locator; dealer locations; events and promotions; and product information.

Mack
http://www.macktrucks.com
Corporate information; product line; dealer and service locations; Mack Leasing; Mack Canada; and the Mack Shop (merchandise).

Navistar
http://www.navistarinternational.com
Heavy trucks; medium trucks; severe service; bus; parts and service; used trucks; and engines.

Paccar
http://www.paccar.com
Kenworth Truck Company; Peterbilt Motors Company; KENMEX/Kenworth Mexicana; DAF Trucks; Foden Trucks; Leyland Trucks; Dynacraft; and PACCAR financial sites.

Peterbilt
http://www.peterbilt.com/pb
Trucks; dealers; service; calendar; and company brochures.

Sterling
http://www.sterlingtrucks.com
Trucks; parts and service; dealer locations; and truckers' lounge.

Volvo
http://www.volvotrucks.volvo.com
Products; support; dealers; Hwy. Angles; trade shows; safety tips; and testimonials.

Western Star
http://www.wstar.com
Product information; investor information; WST Finance; merchandise; and dealer locations.

Truck Stops

AM Best Online
http://www.am-best.com

North American Truck Stop Network (NATSN)
http://www.natsn.com

PTP Stop
http://www.ptpstop.com

Truck Stops Direct
http://www.truckstopsdirect.com