Addenda

Addenda 1-Things You Should Know That Are Not in the Business Plan

Disclosures and confidential background

The founders of SmartSkyways are all at the end of their careers and want to leave behind what they have learned about transportation over the years. None of us have any wealth, but we are rich in experience with over 50 years by each founder. Each of us have routinely taken projects that have never been done before and from ideas to working drawings for dozens of clients.

Bankruptcy

I am the businessman of the group and my last project **Airpark Village**, broke me financially, forcing me into bankruptcy in 2011. Airpark Village was a 66-city block land assemblage that was zoned and master planned for five million square feet of mixed use density as an R&D park. Upon approval of the master plan, the land was appraised for $17 million in 2008. It was to start with a one-mile demonstration of Smartskyways, but our loan came due during the 2009 financial crisis. Our lender was under pressure from the FDIC to reduce their exposure by 1/3 and our land loan was not renewed even though it was current. No one would touch land loans during the crisis and we filed for bankruptcy trying for the court's protection. Eventually the lender foreclosed and held me for a $850,000 deficiency which forced me into personal bankruptcy. The bank also went under and the bank's purchaser dumped it for $2 million. I would like to offer $4 million for as much of it as we can get it and two additional buildings the current land owner has on the southern border.

Credit

I have borrowed millions of dollars over my 50-year career in real estate and keeping my credit clean was a must. However, the bankruptcy lowered my score initially, but now I am back to 750 on Equifax and 727 on Trans Union. I have only $1,500 in credit card debt and no loans. I don't owe any federal income taxes. My Real Estate design work/Bio is at: http://lloydgoff.com/lg/newslideshow.htm

Assets

The bankruptcy judge allowed me to keep my house which I recently sold. I am, looking for another with the cash from that sale. My only other assets are my social security payments, two 1977 Mercedes 450 SLs. that I am restoring and the intellectual property of Smartskyways. I have invested over $500,000 in cash for

this project over 16 years and over 10,000 unpaid hours since 1999. I stopped keeping track after I lost the Airpark project.

Income

Over the past few years, I have paid the bills by doing some real estate sales. For example, I recently assembled 30 condos for a single buyer in a 45-unit complex for about $40,000 in fees. I also live frugally off my social security. This allows me to work about 20 hours per week on Skyways. Occasionally I broker a property

Health

Although I am 74, I have enjoyed good health all my life and only have one complication: diabetes. This is controlled by walking an hour every day and some medication. I have been a meditator for 40 years which has added much to my health.

Education

I was educated as an architect at the University of New Mexico in the 1966. I went to New York City to serve an apprenticeship. I earned a Master's degree in Urban Planning at the University of Colorado in 1971. My Master's Thesis was on large complex projects such as new towns and how they are orchestrated. Much of the work shown in my resume is planning large projects and putting together development teams.

Roots

The roots of Skyways go back to 1995 when I was the president of a 100-city block association called the Platte Valley Landowner's Association. It is adjacent to downtown Denver in the old rail yards. Other huge developers controlled another 100 city blocks and were looking for an economic development concept. Working with the City of Denver, we master planned it for 50 million s.f. of mixed use development in the 1980's. One of our early participants sold us on the idea of a World's Fair, but the city lacked the hotel space. We came up with the idea of accessing the hundreds of thousands of condominiums in our12 mountain resorts to make up the needed lodging capacity and Skyways was born as the connector. The World's fair idea is shown on pages 31 and 32 of my unfinished Bio.

Districts

I started a Business Improvement taxing district over 20 years ago when I was the president of the Platte Valley Landowners Association. Although it is very small, I learned how to set them up, the reporting process and public finance techniques. I have been managing it for 20 years. This mechanism can allow property taxes within 1000 feet of a station to pay both its operational and amortization costs. Local circulators that feed stations could be taxed as low as 5 cents to 10 cents per sf of development to support free ridership. I believe such a financing mechanism as I have described would cause tremendous development business around the stations thus, growing exceptional property values for the landowners.

P.A.C.T.

Four years ago a group from Bogota approached me to look at using Skyways in Latin America. I did research and developed a plan for building a Skyways route from Rio to the USA. I learned Brazil has an exploding middle class that wants cars, but 80% of the roads in Brazil are dirt. Current options are only bus and airplanes for travel. There is no passenger rail industry between towns and the few that exist only carry cargo. Some of the big cities have metro rail. The Bogota group owns gold mines and has worked out a deal with the Bank of China for a $300 million line of credit backed by their gold. They are interested in building the $150 million demo for a Pan American Corridor Transport (PACT) backbone in Rio (shown in the business plan) and have asked me to come to Bogota soon to work out a deal. This venture will probably be the first Skyways spin off. Brazil is the key to PACT and we have an unusual way in. The International headquarters for CH2M Hill is located in Denver. They have 30,000 global employees as one of the largest engineering companies in the world. They focus on infrastructure. Five years ago they purchased Halcrow with 3,000 British engineers worldwide. Halcrow has an office in Brazil working on High Speed Rail and the Brazilian government uses them as their advisors. CH2M Hill is the first company we would like to engage for our future development consortium

Research

I have 25 pages of research notes for Latin America and it is full of nearly one hundred hyperlinks for this market. This work was done 3 years ago. It pointed me to further investigate the Latin American market. After the Rio Olympics, their site with 16 venues will have a need to find a new use. This research shows me our $200 Million proposal to the city will create a World Stage for our product that also brings business to these facilities. In fact, this site could host virtual reality events in sports, entertainment and religious gatherings distributed by our fiber optics..

China Rail Rio to Peru Plan

China Rail and The China Development Bank have signed a feasibility study with Brazil to build a cargo rail road across the Amazon linking Rio with Lima. The Bogota Group has a relationship with the Bank of China that may be able to get their attention using Skyways for cargo at night instead. In any event I think they will consider an advisory role to learn the technology and get access to a bigger system.

Other Spin offs:

VirtualReality

This industry is the future of video. It is now out of the labs and into the marketplace. I intend to develop a team capability using this technology for our sales. We have completed our own Virtual Reality test for Skyways. It uses the existing video that is on our home page. The first time I saw it, I was blown away. It is interactive and the user can look where he wants. It is

immersive, completely surrounding your senses. We have developed a portable viewing station for the viewer and customer using a mini computer with 16 GB of RAM that fits into a carrying case with the hood and monitor. Now Samsung has a more expense cell phone that displays video. As this division grows, I plan to spin it off into its own company in a couple years and take on outside business from many industries such as entertainment, medicine architect, real estate, construction, conferencing, etc.

Villages

Kent Bingham and I have been working on a self-supporting pedestrian village. We have a country version that farms around the village and an urban version around the station stops. Both versions use his Oasis Machine to generate water and electricity. An illustration of an 80-acre version can be spun off as our real estate arm someday. Driverless vehicles feed the station and circulate around the village. These pedestrian villages can grow every mile or so in an urban system.

Fiber Optics Could Double Revenues

As I looked at what else Latin America needs I discovered they have no fiber optics. Our proposed route travels through a market population bigger than the population of the United States and contains some of the world's largest cities**.** TV is going into streaming video for individual use as opposed to broadcasting. By placing 5 pipes underneath our guideway as shown in the business plan, we could carry 100 fibers in each pipe and each fiber can be spectrum divided into 100 channels for a total of 50,000 streaming channels. These can carry voice, data, video, virtual reality and holograms. I do not have experience in this industry, but asking around I have learned the cost of adding this capability would be less than 5% of the Skyways construction cost. These trunk lines can be rented to local operators at low prices serving many millions of subscribers. I don't know how to run these calculations so they are not in the business plan yet. Think of 50 million subscribers paying $10 per month and your get the idea.

LLC Operating Agreement

I have chosen to use a Limited Liability Corporation format mainly for the tax structure. It has a 50/50% split between capital and management after capital is returned and is specific about how to add members and management's responsibilities.

Other-Deals

Three companies have signed Terms Sheets and all have turned out to be scams. One has received a final agreement which was sent out recently for review. We still have sticking points that are unresolved. Two other companies are still asking questions. I expect to sign a deal with someone soon.

Intermediary
I would like the Investor to engage either Merrill Lynch/ Bank of America or JP Morgan/Chase for an escrow account under mutual control and to transfer the monies to my Chase Bank account as they are needed. These bank affiliations offer business check writing, financial reporting and even advise on practices. The investment houses also offer and/or assist in marketing private placements.

Competitors
Over the past 10 years I have found 150 competitor web sites online and put them into a Comparables file to show there is an industry gearing up entries for this huge new market. Only 4 of these projects have attracted funding to date and they are all outside of the USA. Now that the market is shifting to driverless, many of these companies are getting some traction. Most of them are paper companies like ours, but several are big companies positioning themselves.

Brother
My older brother is the Vice Chairman of a $12 billion New Mexico Educational Retirement Board (ERB). Both he and my father were school principals. My father was asked to propose the fund to the State in 1955, because the State only paid teachers $150 per month in retirement. Today it is over $3,000 per month. The fund lost $5 billion during the 2009 financial crisis, yet still has a $15 billion liability. I have never asked my brother to finance anything I was doing, because I needed stronger backing to get through the vetting process. I think the pension could be interested in participation of my $250 million Albuquerque Skyways project if I had a strong backer. I am planning this project as a national showcase for the USA. It will be next after the Rio showcase. One of the ERB pension board trustees is the State Treasurer who has retired. He has seen Skyways twice and likes it. He knows everyone in the state. I would like to put him in charge of the Albuquerque project.

Partner
Packaging is what I am best at. I know the techniques and languages used in legal, architectural, planning, economics, marketing, financing, illustration, computer and governmental approvals. I am interested in a partner that can help me market my packaging in the international marketplace. This project is only the beginning of fund raising. It will be followed by another $25 million for PACT, then $150 Million for the Olympic site demo, $250 million for Albuquerque, $ 140 Million for Branson and $450 million for Rio to airport. After that the numbers climb into the billions for each project.

Addenda 2- Deliverables in 12 months

As you can see from the body of my work, I am a packager. Look at what I have accomplished with nickels and dimes over 15 years. Then think about what I can accomplish in 12 months with $1.3 Million. In 12 months, I can have a consortium package ready for presentations. This is the deliverable because it parlays Skyways into

a contender with a consortium in play. Our next project in Rio needs about $200 million. This constructs a 10-mile demonstration of the Pan American Corridor Travel (P.A.C.T.) backbone at the Olympics site when ready. Skyways need bigger players to build it, so here is my plan. Ask 5 large companies to each invest $40 million for 10% of the PACT as a Public Benefit Corporation for Latin America. Each company will choose and area to become the exclusive vender for $billions in sales. In one year, I plan to have virtual reality presentations ready for the following types of participates.

Software Development -Targets are Apple or Google to develop our driverless operating code, travel reservations, mapping and cell phone interface. Software represent about 7% of the PACT construction or $10 billion

Civil Engineering – Targets are CM2H Hill or Parson Brinkhoff who integrate the route into the city for permitting and construction. Civil is worth 5% of Pact growth

Media Content- Targets are Universal Studios or Disney for stage VR events a Olympic site. Media is worth about 15% of PACT growth

Telecom Fiber-Targets are ATT or Comcast/Universal for building and managing fiber based streaming data, video and VR backbone to audiences along the route.

Vehicle Manufacturing- Targets are Ford/Mercedes/ Toyota for our shared on-line vehicles and private owner driverless vehicles from offline with sensors, steering and controls worth $20 billion for PACT and even more for driverless off line

Shipping Cargo- Targets are UP and FedEx for creating a shipping management system for both online and offline shipping, warehousing and last mile.

Financial Services- Targets are Merrill Lynch or JP Morgan for marketing and managing treasury. This can grow a $3 billion fee business

Construction management- Bechtel, Boing and Raytheon

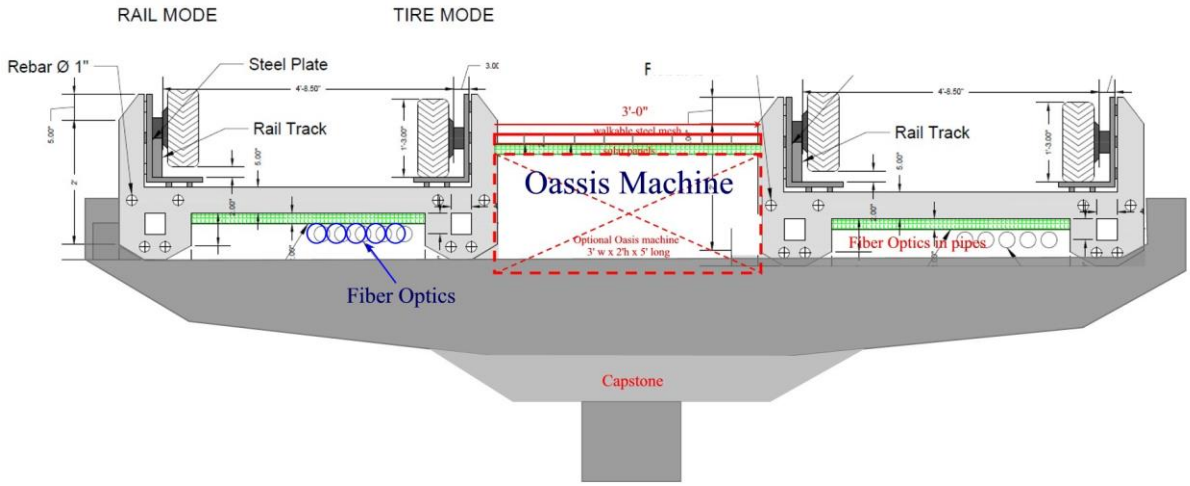
Addenda 3 – Skyways Add-ons that could double revenues

There are a couple more reasons to consider Skyways for investment. With our first funds, we plan to start a lab that studies operating software, virtual reality and electrical generation. Our unique feature that increases the revenues is called “stacked pay zones”. You have seen the main functions of carrying passengers and cargo in our business plan. However, we are studying how our structure could carry 50,000 channels of fiber optics in five 2” pipes hung below the guideway and how we could generate perhaps 6,000 kw of electrical generation for each of the 70‘sections of guideway. These fiber add-ons

leverage our revenues by as much as 100% at a cost of less than 20% increase in cost of construction. Here is why?

Oasis Machines

Kent Bingham our chief engineer has invented an Atmospheric Water Generator that pulls water vapor (humidity) out of the air in a manner similar to the way an air conditioner works. This is powered by electricity generated on the spot by splitting water into hydrogen and oxygen gases and used to run small electric generators like you can buy in the hardware store. Kent's bench testing has achieved a gain of 6 times the energy output over the input. Put this into Skyways terms. Perhaps we could generate say 6,000kw every 70' section or instead of electricity the Oasis Machine can generate mostly water. In his bench testing, his team has achieved 20 liters per hour on a tiny amount of self-generated electricity. An Oasis Machine (smaller than a refrigerator) could produce 250 to 300 gallons per day plus electricity on each 70' guideway section (see red box in drawing) or maybe up to 20,000 liters per day per direction. This is estimated at a 15% increase in the costs of each 70' section of guideway. More importantly the revenues generated by the other traffic will pay for the installation and the water could be very cheap to generate. Kent feels he can someday build an Oasis Machine that generates up to 200,000 gallons per day from the local water vapor for farming. We are proposing that these add-ons be studied further to determine their feasibility and performance to create our stacked pay zone concept. The Oasis Machines are not a part of the Skyways ownership and are being developed exclusively by Kent Bingham. Skyways could be a large customer. Oasis Machines can also water and power small villages along the routes and can startup and produce farming, recreation. sports and many uses around villages.



Fiber Optics and the future of TV

The future of TV is *Streamed Video on Demand and then interactive TV*. Where today we have 1,000 channels of broadcast video, tomorrow America will have 50,000 channels of interactive TV. It is coming over Fiber Optic systems where each fiber can carry 100 spectrum divided channels. We can carry 3" pipes underneath the guideway that carry

100 fibers each. Five pipes should carry up to 50,000 channels. There are over 200 million populations along our PACT route with ½ coming from just 5 major cities (which are among the largest in the world). Virtual Reality is an emerging technology that sure to be popular in this marketplace. It can serve many industries such as medical, geological, educational, sports, entrainment, engineering, software, construction and architecture to name a few. If each of these 50,000 channels served only 1,000 customers on the average, that would mean 50 million customers. We think the revenue potential from such a customer base leasing these channels to the market could someday match the revenues from transport for 1/10 cost.

Skyways Labs

We want to study these technologies in more detail during the next 12 months. We have allocated $50,000 for equipment training, programming and software. Skyways currently has a demo of a station in virtual reality showing the power of this medium. The image below is a kit of VR Technology we configured for emote production. The end user will need to have something simpler such as Samsung's VR gear for $1,000. User insert the Galaxy 6s cell phone into the goggles and hit play. We expect to use both of these technologies in marketing Skyways. We also hope to learn how to do multi point collaboration in Virtual Reality engineering using such a kit as below. We will have a 1/10th scale computer operated Skyways model with lots of chassis running around. We intend to capture this action and do some conferencing in Virtual Reality to learn how to distribute it to our team. During the 12 months, we hope to learn how to do these types of things for Skyways: http://www.angelnexus.com/o/web/93420. We will provide these developer tools to our experts and hopefully at the end of 12 months we will deliver a virtual reality proposal to FT Collins and Rio via this format. Below is our existing VR publishing kit.

Addenda 4 - We have not talked about this

There is lots of news about a coming recession or even a crash. Does this effect Skyways?

1. **Will Skyways be able to attract financing for routes**?

   * Over $10 trillion of flight capital is on the move. I have an article describing how over the past 5 years, $10 trillion of flight capital has landed in the USA as a safe haven. With everything in chaos around us soon, a new project may have more acceptance for financing because it can address a lot of problems such as:

   * The USA car market is said to be on the verge of a $1.2 trillion collapse see crisis because of sub prime borrowers starting to default in large number. There are huge inventories of new unsold cars that will get dumped on the market driving down used car prices.

   * With everything losing value because of the financial reset, millions of people wont be able to afford cars ownership for a long time. Skyways should be an affordable option

2. In a down market how will cities react to the approval process?

* As cars, housing, jobs, business and even cities go into chaos, city leaders will be looking for something to create economic development. Although they wont have the funds to finance transport, city approvals should be easier and faster, especially if we can land flight capital.

* Skyways can create construction jobs from building routes and by building real estate communities around the stations. This will be important to state and local governments and improve their tax base.

3. Will Skyways be able to attract enough ridership

* The biggest trends in the USA are the emergence of the shared economy and the greening of the economy. Uber and Lyft (ride sharing) are examples of a seismic shift in thinking that no one saw coming. The driverless industry fits well into this shift in thinking.

* Car manufacturing is going to change significantly with fewer cars sold as ownership becomes too costly for large sections of the population. Millions of people will be able to live without cars and use Uber, buses and walking for the feeders and last mile.

* greening of the economy is important to people. Skyways is electric and above the congestion

* pricing can be used to attract ridership and most routes will have a tiered pricing starting at $30 per month for unlimited ridership in public cars. Private cars and driverless cars that can drive onto the guideway will cost more.

Conclusion: the coming recession should help Skyways

Addenda 5- The Market is turning to driverless technology

At first glance, you may think it's the set of some Hollywood movie. But it's far from it. The state of Michigan, along with some private partners, has poured $10 million into creating the fake city you see in the photo. It spans 32 acres. It's complete with 40 brick-and-glass building facades, streetlights, sidewalks, intersections, traffic lights, parked cars, and construction barriers. There are even eerily quiet street cafes. It's built to resemble basically any small town in America. But there's absolutely nothing small about the profit potential here. The future of mobility

"What's unusual is not [the city's] construction, but what it's being used for," says David Lampe, Communications Director for the University of Michigan. You won't find any humans in this city. But you will find a robot named "Sebastian" roaming the streets and sidewalks. So how on earth could a fake city possibly be so lucrative... and how could it make YOU downright rich? Well, I'll explain everything to you shortly, but first, know *this*...

This fake city has nothing to do with some new "smart grid" technology or some solar power experiment. And no, it's not meant to replace the towns we live in today. Instead, it's part of a much bigger revolution in technology. This brewing transformation will usher in an entirely new mode of day-to-day living... It will send shockwaves through entire industries. Many will be reorganized from top to bottom... Others will be pushed to the verge of extinction... While some will flourish *tremendously*. Goldman Sachs says it's the dawn of **"a disruptive new era."** *Forbes* writes that **"the implications... will be staggering."**

Billionaires Are Staking Their Fortunes On This...

Morgan Stanley predicts that it could add $1.3 TRILLION to the U.S. economy — every SINGLE year. So it's no wonder that with so much money up for grabs, several states are vying for a piece of the huge prize

25 Corporations Not Named Google Working on Driverless Cars

Google isn't the only one making moves in the autonomous vehicle arena. There are a host of auto makers, auto brands and tech companies also attacking the driverless car market.

The arrival of autonomous vehicles will trigger the auto-industry's largest shake-up since its inception. While Google is the most talked-about player in the space, we identified 25 other major corporations or corporate brands using CB Insights' investment, acquisition or partnership data that are involved in the driverless car space. While some players are setting up funds to invest in new technology involving autonomous cars, others are trying to build self-driving vehicles from the ground up.

The list is organized alphabetically (autonomous industrial vehicles were not included in this analysis). Some of the automotive brands below are part of the same parent organization but as they're pursuing their own autonomous vehicle ambitions, they are detailed separately.

Apple's Project Titan

Rumors of an Apple self-driving car have been swirling around, but more illuminating details have been revealed in the last few months. The company, which dubbed the project "Titan," has poached several auto engineers from Tesla, Carnegie Mellon, Volkswagen, NVidia, and A123 Systems, among others. Here's one sign of how far along the project is: evidence has been discovered that Apple is testing their vehicles at the GoMentum Station (an old military base with miles of paved highways) and has approached the California DMV about testing their cars on roads. The project looks to have set

a goal of producing the cars by 2020, but they have slated a 2019 release date for their first electric vehicle (without the autonomous features).

Read More: The Guardian, Reuters, Bloomberg, The Guardian, Wall Street Journal

Audi Has Already Built 3 Self-Driving Prototypes

Audi revealed "Bobby" last fall, a self-driving RS7 that did laps around a Formula One racetrack, and later Audi also developed the more lightweight autonomous racing vehicle, "Robby." The company also revealed a consumer-facing autonomous A7 prototype named "Jack," which drove itself 500 miles from California to Las Vegas. The goal is to put this technology to use in the new A8 sedan, which will be the first Audi in production for consumer purchase with the ability to drive itself. The company has also demonstrated its Traffic Jam Pilot and Parking Pilot features (which allow for drivers to take a hands-off approach to driving in traffic jams and parking situations). Audi plans to roll some of these features out to certain models in early 2016. They were also part of the coalition that bought Nokia's mapping assets for $2.7B. Audi operates under the umbrella of the Volkswagen Group, which could have broader implications going forward (see Volkswagen).

Read More: Audi, Wired, Digital Trends, USA Today

Baidu And BMW Partner To Make Semi-Autonomous Cars

The Chinese search giant is partnering with BMW to release a semi-autonomous prototype by the end of the year. The prototype will be designed

to assist human drivers as opposed to replacing them. The partnership began in April of 2014, and the two companies have been testing the technology on the highways of Beijing and Shanghai. Baidu has its own mapping technology and has also invested in IndoorAtlas, a Finnish mapping startup. A large advantage that Baidu has compared to American companies is that the Chinese government could be more flexible and quicker to enact large scale-legislation to allow for self-driving cars, something that US regulators would likely take longer to do. BMW was also part of the coalition that bought Nokia's mapping assets for $2.7B.

Read More: Guardian, BBC

Bosch To Dedicate More Than 2,000 Engineers To Driver Assistance Technology

Bosch, a German engineering company, has responded to an increase in demand to its mobility business unit by dedicating more than 2,000 engineers to driver-assistance systems. The company has Google, Tesla, and Porsche as clients, and managed to outfit two Tesla vehicles to (expensively) make them fully autonomous. Bosch is also partnering with GPS maker TomTom for the mapping data necessary for this endeavor. The company has agreed with the projection that 2020 will see a driverless cars in action.

Read More: Forbes, Fortune, Wired

Daimler Is Testing 'Auto-Pilot' For Trucks

Daimler, an automotive company based in Germany, is developing autonomous 18-wheeler trucks. The company has been road-testing autonomous trucks in Nevada since May 2015, and hopes to get approval to operate these trucks on German roads. The company expects the technology to assist, not fully replace drivers, who would be present at all times to ensure

nothing happened during the journey. The company has acknowledged it could be 10 or more years before we see the actually application of these trucks. Daimler was also part of the coalition that bought Nokia's mapping assets for $2.7B.

Read More: BBC, Forbes, Bloomberg

Delphi Roadrunner Makes A Cross-Country Trip Using Their Autonomous Car Tech

Delphi, a maker of automotive technologies, has created a network of software and sensors that they outfit into existing car models to make them autonomous. Delphi completed a coast-to-coast trip in an autonomous Audi SQ5, which they outfitted using Delphi technology. The trip — coordinated by a group of Delphi employees — began in California and ended in New York.

Read More: Arstechnica, Delphi

Ford Announces Plan To Research Autonomous Vehicles

In early 2015 Ford announced the formation of its "Smart Mobility Plan" to move the company forward on innovation (including vehicle connectivity and autonomous vehicles). The company says it plans to bring semi-autonomous driver assistance features to its entire lineup within the next 5 years as it bridges the gap to fully autonomous vehicles. In June, the company announced a full team dedicated to autonomous vehicle research, with headquarters in Silicon Valley.

Read More: Ford, Business Insider, Forbes

General Motors And SAIC Motors Testing Out Driverless Tech In Chevrolet

In 1956, General Motors put together a vision for what self-driving cars might look like, involving a command center that directed cars down designated lanes and gave them approval to go autonomous (similar to an airport). The current vision might be nothing like that, but General Motors brand Chevrolet is partnering with Chinese auto manufacturer SAIC motors to create a fully electric and autonomous Chevrolet-FNR, which would hypothetically launch as a mass market product by 2030. The company also plans to roll out vehicle-to-vehicle communication in 2017, which would help its cars avoid collisions. The company has suggested it might work with Google in the future on the self-driving project, but details remain unclear.

Read More: Fortune, Fortune

Google's Self-Driving Car Project

Google has been very public about its foray into autonomous vehicles, with the project having its own website and a testing fleet that has been on the road in Mountain View and Austin. Currently, self-driving cars fall under the purview of Project X, a division that recently hired John Krafcik from TrueCar/Hyundai to act as CEO of the project (a sign Google is serious about commercialization of the product in a near timeframe). Google has sent mixed signals about whether it will manufacture its own vehicles. In some cases, the company has said it has no plans for manufacturing its own vehicles and instead wants to partner with auto makers, but there also have been several instances in which the company *has* floated the possibility of manufacturing its own cars. The company expects to have a finished product by 2020.

Read More: Wall Street Journal, The Guardian, Wired

Honda Receives Approval To Test Autonomous Cars

Honda has received approval from California to test autonomous vehicles on public streets (with restrictions on the number of vehicles and the testing methods, among others). In the summer of 2014, Honda revealed a prototype of an autonomous Acura at the Detroit Auto Show. Honda is also using the GoMentum military station with miles of city roads and highways to test out their self-driving fleet.

Read More: Re/code, San Francisco Business Times, Engadget, Honda Press Release

Hyundai's 'Empty Car Convoy' Ad Displays Driver Assistance Technology

In 2014, Hyundai debuted a commercial which showed a convoy of cars outfitted with Hyundai's autonomous technology. The video was meant to promote the assistance features in the new Hyundai models, which would essentially allow the car to assist the driver and act autonomously on highways. The Hyundai Genesis, which was used in the video, has lane-keeping assistance, advanced cruise control for highways, and an automatic braking system on its product page. The company hasn't released it's future plans for driverless cars, but the commercial demonstrated that the company has developed the tech to move in that direction.

Read More: Hyundai

Jaguar Land Rover Wants To Introduce Assisted Driving But Keep Driving Fun

Jaguar Director of Research and Technology Wolfgang Epple has said the company "doesn't consider its customers as cargo" and therefore doesn't accept the notion of driverless vehicles. But the company is testing technology to aid the driver and make the experience more enjoyable. This includes innovations like remote control of cars and assisted parking. Jaguar Land Rover is a subsidiary of the Tata Group.

Read More: Autonews

The Mercedes F 015 Concept Car Will Be Ready In 15 Years

Mercedes has unveiled their concept for the sleek F 015 autonomous vehicle, which the company says will be ready in 15 years. Until then, the company is taking other steps toward autonomous vehicles. In 2013, its Intelligent Drive semi-autonomous research vehicle drove 60 miles on a German highway and streets. Certain Mercedes models have a Stop-and-Go mode, which allows the cars to navigate themselves while in traffic. The company also has approval to test the cars in California, and some have been seen driving in the streets. The company is also considering setting up a large fleet of autonomous limousines for on-demand access (which would presumably compete with or supply cars to car-hailing services).

Read More: Wired, Slash Gear, Reuters

Mobileye Powers The Driver Assistance Technology Behind Self-Driving Vehicles

Mobileye, a $10B company, provides many of the chips and advanced driver-assistance systems that are used by manufacturers for autonomous vehicles (including Tesla). The company has not announced plans to manufacture cars themselves.

Read More: Bloomberg

Nissan/Renault Says Its Technology Will Be Ready By 2020

Chairman and CEO of Nissan and Renault Carlos Ghosn is giving a 2020 date for when he expects Nissan's autonomous car technology to be ready. He says that the current focus will be assisted driving as opposed to removing the driver (though that could shift in the future). Nissan unveiled its first public prototype in 2013 at the Nissan 360 event in California, and has been testing an autonomous Nissan LEAF on the roads of Tokyo. The CEO has said Nissan plans to release a "Traffic Jam Pilot" next year for stop-and-go traffic, and a more built-out version of the technology for highway driving in 2018.

Read More: Nissan, IB Times

Scania Is Developing 'Platooning' To Reduce Number Of Truck Drivers

Scania, a unit of the Volkswagen group, has been researching a concept called "platooning." Using this method, multiple trucks controlled by the lead truck would be connected through wireless signals, and form a train with one truck

following behind another. This allows more trucks to be controlled by fewer people, reduce the amount of space the trucks take, and decrease drag. The company tested a group of three trucks in a platoon on a Dutch highway earlier this year. The larger issues surrounding the Volkswagen emissions controversy may have implications on the R&D of future Scania projects.

Read More: Scania, BBC

Tata Elixsi Showcases A Valet System And Focuses On Autonomous Vehicle Security

Tata Elixsi, a division of the TATA group, has showcased technology for an autonomous parking valet, in which the car understands where open spots are and uses sensors to park itself. While it's unclear when these features will be rolled out to Tata Elixsi's lineup, the company has made it clear that it is moving towards autonomous vehicles. It is also putting a priority on security, designing a central unit in the car with extensive security measures that govern internal and external automotive communication.

Read More: Tata, GoAuto

Tesla Aims To Go From 'Autopilot' to 'No Pilot' in 5-6 Years

Elon Musk, CEO of electric vehicle maker Tesla Motors, has said he expects driverless vehicles to be ready in the next 5-6 years. Until then, Tesla is offering assisted driving benefits to some of its customers as it slowly rolls out its "autopilot" feature. Autopilot is designed to accelerate, decelerate, and move according to its surroundings, but still requires a human to pay attention and take control should something happen. The company also has a "summoning" feature, where cars can find their owners and also self-park in

garages. Musk has noted that on highways, light coloring, fading lane markers, and skid marks are making it hard to solve the self-driving problem.

Read More: Nikkei, Forbes, Wired

Toyota Dedicates $50M To Autonomous Car Research

Toyota has hired Gill Pratt from DARPA and MIT to head the company's research into autonomous cars and artificial intelligence. The company has dedicated $50M to establish research centers at MIT and Stanford to work on the technology, though it has not said explicitly that it will be manufacturing autonomous vehicles in the future. In fact, Toyota's CTO said last year that "Toyota's main objective is safety, so it will not be developing a driverless car."

Read More: Wired, Techcrunch

Uber Is Embracing The Autonomous Car Revolution

Uber CEO Travis Kalanick recently appeared on "The Late Show With Stephen Colbert" and talked about Uber being ready to embrace autonomous cars. The company has made several moves in that direction, the biggest of which was poaching 40 engineers from Carnegie Mellon's Robotics Lab to work on the project in Pittsburgh. Uber has also partnered with the University of Arizona to develop better mapping and safety optical technology. Uber also acquired mapping startup deCarta and the mapping assets from Microsoft as it bolsters that technology for its own self-driving car project. It should be noted that Uber's self-driving cars could compete with Google's. Google is one of Uber's investors.

Read More: New York Times, The Verge

Volkswagen Is Focusing On Autonomous Valets

Volkswagen has announced the V-Charge project, a partnership between Volkswagen and several universities across Europe to introduce an autonomous valet system for electric vehicles (V-Charge being shorthand for Valet Charge), which allows a consumer to drop their car off at a garage and let it park itself. The company has outfitted a Volkswagen e-Golf with sensors, 3D maps, etc. so that the car can find open parking spaces in a garage and park without the use of a human. A company page for this autonomous valet system has suggested that there will be a prototype for demonstration available within four years.

It should be noted that due to it's recent emissions scandal, it's possible that Volkswagen will lose a significant amount of public trust/usable capital, which could hinder the development of autonomous vehicles in all of its subsidiaries (like Audi and Scania).

Read More: Digital Trends, V-Charge, Reuters

Volvo's 'Drive Me' Program To Have 100 Customers in Self-Driving Vehicles By 2017

Volvo calls its autonomous vehicle endeavors its "Intellisafe" project, and the goal is to prevent deaths or injuries in a Volvo by 2020 when the company fully rolls out these features to the public. For now, Volvo is planning to give 100 vetted customers early-access to an autonomous XC90 SUV in 2017 (with

restrictions on the area, time, and context which autonomous mode will be used). The company has had a few speed bumps in developing and proving the viability of the technology, but the company is working closely with the Swedish government to get these cars into select consumers hands in the intended time frame.

Read More: Volvo, Wired, IB Times

Yutong Has Successfully Tested Driverless Buses

Chinese bus manufacturer Yutong has been researching driverless buses since 2012. The company claims to have successfully navigated a bus on an intercity road in central China's Henan Province. The bus can switch between manual and automatic mode. There has not been a release date announced yet for the new buses. **Read More**: Economic Times, Yutong

In the early **1960**'s, a dual-mode **P**ersonal **R**apid **T**ransit (**PRT**) concept called **Urbmobile** began to be developed by **Morton O. Weinberg** and **Robert A. Wolf** at **Cornell Aeronautic Laboratories**. This system made an important contribution to the development of **PRT** mainly because the **Cornell** people recognized the need for operation at headways down to one half to one second to get adequate capacity. Having strong backgrounds in the technology of automatic control, they attacked the problems directly and were able to show how it would be possible to operate vehicles safely at such short headways. The **Urbmobile** system was however, as usual, never built

Virtual Reality Is Reality

The New York Times made headlines this month for sending its print subscribers Google Cardboard viewers along with their Sunday paper. Now you can experience the news through virtual reality; in five years, you'll be able to experience everything through virtual reality (VR).

There's no doubt about it — 2020 will be an exciting time.

But VR itself will have changed. Rather than being an alternate reality, it'll be incorporated into your existing reality. Say goodbye to bulky, wrap-around goggles that close you off from the external world. Say hello to discreet technology that puts you in an immersive 3D VR environment with an unimpeded view of the surrounding environment and a broad field of view.

There are current initiatives to develop low-cost, augmented-pixel technology that's far less isolating. In addition, Magic Leap, an American startup that's raised more than half a billion dollars in funding, has also hinted that its launch product won't require a screen.

In 2020, after becoming non-invasive, VR will integrate into many facets of our life, from entertainment and education to work and exploration.

Robot cars go on trial in German 'rust-belt' city

September 05, 2015
ULRIKE HOFSAEHS
0 Comments

The city of Wuppertal in Germany's Rust Belt of old-era industrial towns has been chosen to test the driverless car of the future on regular city roads among pedestrians. Wuppertal is a far cry from California or Nevada, where Google has been putting its automated cars through their paces. The birthplace of Friedrich Engels, a father of Marxist political theory, and Friedrich Bayer, who founded the huge Bayer pharmaceuticals group, lies in what was once Germany's industrial heartland.

Its main claim to fame is Germany's only city-wide monorail public transport system. Wuppertal has seen much decline and is in desperate need of rebirth. Robot cars will soon be in action along a 17-kilometre "test track" in Wuppertal, the first of its kind in the country. The zone along public highway 418 offers a host of driving situations. There are fast stretches, traffic lights and pedestrian crossings.

Other road users need not be alarmed, however. An engineer will be on board any robot car that tries out here. He or she can instantly override all the automatic systems to bring the car back under human control. Wuppertal was not simply picked out of a hat for the project: US car component-maker Delphi has a big factory in the city employing 700 people. The firm pitched for a test highway in its own backyard and Wuppertal authorities agreed.

Several sections of autobahn highway in Germany have already been designated for use by robot cars, but Wuppertal is the only section of regular mixed-use road to get the thumbs-up. Test runs will begin next year. Delphi is keen to convince sceptics that the project using robot cars packed with high-tech electrical and guidance equipment poses no hazards.

"We are talking about vehicles with a specially trained engineer at the wheel," said Delphi spokesman Thomas Aurich. Delphi has long lamented the lack of a test track in Wuppertal and automated systems have until now been flown to North America for testing and customer demonstration. The United States has so far been at the forefront of automated car testing. For the past five years Google has been dispatching various robot cars on journeys across California and Nevada.

The egg-shaped, two-seat, driverless prototype also tools around the company's home town of Mountain View. German carmakers Audi and Mercedes-Benz have been using US roads as well to gain experience with their automated vehicles. Leaders of Germany's automotive industry insist they will not let internet giant Google get a lead on technology which could revolutionize personal transport within less than a decade. Delphi has already sent one of its product-equipped autonomous cars on a journey across North America and now it is Germany's turn to play guinea pig.

Roads in Europe are very different from those in America where motorists are accustomed to wide boulevards and broad intersections. German streets are narrower, the junctions are harder to negotiate and traffic density is higher. How will robot cars cope with the conditions? Wuppertal mayor Peter Jung is keen to allay any public fears: "I reckon the majority of drivers on the road will not even notice that an autonomous car is out there among them." The risk of collisions is minute, says the politician.

It is true that Google's driverless cars have been involved in around a dozen low-speed shunts down the years, although not one of these was the robot's fault, the firm claims. Most of the accidents occurred when cars driven by ordinary road-users hit the rear ends of Google prototypes after failing to brake properly, often at junctions. The test vehicles to be used in Wuppertal are rolling research laboratories stuffed full of cameras, sensors and radar distance scanners. The car's computer must decide in a fraction of a second how to avoid an obstacle, brake or accelerate. The trickiest situations include taking action when a pedestrian steps off the pavement and onto the road.

Industry gurus do not expect to see automated cars on the roads in any numbers until at least 2020. The technical aspects are challenging, yet they pale when compared to the legal obstacles. No one is sure how insurance companies can provide cover for vehicles whose owners are not liable for the manner in which they drive. Road regulations will almost certainly need to be rewritten world-wide before robot cars could go into general use. For police in Wuppertal the issue is straightforward. If an autonomous car on highway 218 gets involved in an accident, responsibility will be down to the engineer in the driver's seat, whether or not he has his hands on the steering wheel.