



Future of Moving People and Goods

MEETING SUMMARY

Mike Boyer, DVRPC Associate Director, welcomed attendees and began introductions around the room. He gave an overview of the *Connections 2045* Plan and the importance of the Futures Group in scenario planning as a first step in the long-range planning process.

Daniel Miles, Econsult Solutions, Inc.

The Future of Moving People

Discussed two recent projects from [ESI Thoughtlab](#):

- [Smarter cities 2025](#):
 - Multiple global sponsors and research partners fueled this look into smart cities to identify and define them through interviews and quantitative analysis.
 - Smart Cities surveyed 136 global cities from 55 countries ranging in population from 35,000 to over 37 million, and identified 10 pillars of smart cities.
 - Choose 11 cities for a deep-dive analysis
 - Cities were Chicago, Copenhagen, Tokyo, Shanghai, Madrid, Moscow, Dubai, Athens, Lagos, New Delhi, and Greater Belo Horizonte.
 - Surveyed ~200 citizens, 75 businesses and government staff and executives from each.
 - Measured level of priority vs. perception as well as level of maturity among 10 pillars.
 - Findings were:
 - The #1 area of investment among cities interviewed was mobility. Investments in smart mobility expected to increase across all maturity levels.
 - The level of importance of all modes increases dramatically over the next three years; the future of mobility will be multi-model.
 - Emerging on-demand transportation options have convinced 9 percent of citizens to get rid of their cars.
 - Urbanites want investment in a wide array of transportation modes.

- Surprisingly, the survey found that businesses were less interested in smart city investments than the public and municipal officials.
- [KPMG Autonomous Vehicle Readiness Index \(AVRI\)](#)
 - Examines where countries are today in terms of progress and capacity for adapting AV technology.
 - Evaluates each country according to four pillars that are integral to a country's capacity:
 - Policy & legislation; technology & innovation, infrastructure and consumer acceptance.
 - Pillars are comprised of variables that reflect the wide range of factors that impact a country's AV readiness.
 - Netherlands and Singapore are in the lead, with the U.S. close behind. India is last because of its PM's stance on effects on employment, but residents are most in favor of any country.
 - US is 10th for Policy and Legislation; 1st for Technology and Innovation; 7th for Infrastructure; and 4th for Consumer Acceptance.
 - Benefits include: Congestion mitigation; Accident reduction; Reduced oil consumption; Value of time; and Cheaper taxi fares
 - Potential issues to widespread adoption include safety concerns, the last 1% of riding conditions, liability, consumer trust, and infrastructure.
 - Unexpected risk to worsened pavement condition is that AVs drive straight down the center of each lane in the same path wearing it out faster, whereas humans are all over in the lane spreading damage out in a wider area.
 - There is no consensus on what AVs mean for land use. Policies in land use and transportation will largely drive impact.

Steve Viscelli, University of Pennsylvania

Driverless, Digitized and Door-to-Door? Emerging trends and the future of goods movement

- Thinking about goods movement from a labor perspective
- Goods movement is in a period of rapid transformation. Trends are:
 - Shift from Big Box Supply chains to Ecommerce.
 - Rapid transformation in industry.
 - Deregulation of trucking allowed for emergence of big box stores and large supply chains.
 - Created truckload trucking, externalities on retailers, land use, etc.
 - Digitization (a.k.a. "Uberization of Freight").
 - Similarly rapid but more complex.
 - Highlighting some of issues to consider as we develop scenarios of automation.

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- Changes in demand are also driving trucking changes.
- 'Uberization' hasn't penetrated the market as quickly as there aren't millions of underutilized trucks sitting around, so there's not the same liquidity as personal vehicles. Much greater efficiency potential.
- Automation.
 - Limited to long-haul; lowest paid and toughest jobs.
- Labor Issues (e.g. shortage, hours of service, misclassification, minimum wage, breaks)
 - Hours of service affect efficiency, capacity.
 - Misclassification (e.g. amazon flex) of the fundamental employment relationship is important.
- Electrification and alternative fuels.
 - Potential and uncertainties with technology and policy.
 - Leading in California (replacing federal approach to climate change with a state one, focusing on trucking industry clean tech).
- Trucking industry is diverse as the goods it moves.
 - Large part of industry won't change operations.
 - In short-haul trucking, driving is only one of many tasks that drivers do.
 - Job quality and pay varies widely.
 - Long-haul and local will change most.
- Fears of massive job loss. These aren't always the best jobs, so they may be ones we want to automate, but must consider impacts.
- Identified six potential adoption scenarios, as well as a most likely scenario absent policy intervention, and a future with proactive policy (see slides):
 - Human-human platooning.
 - Human-drone platooning.
 - Highway automation + drone operation.
 - Autopilot.
 - Technology changes on nearly a day-to-day basis. One of the recent big questions is whether LiDAR will be needed in vehicle automation, or whether it can be replaced by high-definition video.
 - Highway exit-to-exit automation.
 - Facility-to-facility automation.
- Most at risk to automation: long-distance drivers.
 - Concern is not lack of job opportunities, but losing better-paying jobs and gaining bad ones.

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- Older & rural workers lose better paying jobs; urban & younger gain bad jobs; low-level automation will also depress wages because less-skilled drivers will be necessary.
- From freight efficiency perspective, ecommerce is bad.
 - Leads to more inefficient truck movements due to time sensitivity.
 - Can't do the efficiency planning that made big box retail so cheap.
- Outcomes of concern include:
 - Inefficient operations, trucks moving that are only partially full.
 - Infrastructure impacts, such as congestion and safety due to more trucks on the road.
 - Underinvestment in equipment.
 - Air pollution.
 - Waste of public money.
 - Job Quality.
- Tech adoption is fundamentally impacted by employment relationship (e.g. amazon EV or delivery person driving personal vehicle).

Mimi Sheller, Drexel University

Mobility Justice: The Politics of Movement In an Age of Extremes

- Outlined mobility challenges for the year 2050 relating to climate, congestion, and inequality, and opportunities including information and communication technology, shared use, automated and driverless vehicles, emerging mobility enterprises, and policy changes: e.g., Complete Streets, Vision Zero, and pricing the curb.
- Identified Four Future scenarios based on John Urry's *What is the Future?*
 - Fast mobility city:
 - Speedy and mobile lives, especially for the "kinetic elite," who are served by flexible, on-demand workers. Big engineering and luxury real estate are prevalent. High-speed rail could increase pressure for vertical real estate development around 30th street station.
 - Digital city:
 - Digital experience replaces presence. Objects interact independently. People move virtually using digital doubles.
 - CHIP – connected, heterogeneous, intelligent, and personalized vehicles are the norm. They incorporate augmented and virtual reality within them, and have been branded to remediate and reform traditional gender roles.
 - Transmobility (Adam Greenfield) – people become digital nomads as places lose local feel, there is a loss of empathy due to increasing communication with digital devices, and experiences become shallower.

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- Livable city:
 - Fragments into smaller-scale systems of self-sufficient neighborhoods with EV micro-grids, access economies, and local currencies fueled by blockchain. Center City and other downtowns become car free and focus on autonomous rapid transit (ART).
 - Downside is green gentrification; access is priced. Mobility austerity as a result congestion pricing, parking scarcity, and costing the curb, with low-income people bearing the greatest burden of reduced transportation.
- AI city (called Fortress City in Urry's book):
 - Characterized as Big Brother + The Matrix. Bureaucratic, top down, digitized city with algorithmic controls on human behavior through cellphone surveillance and personal tracking. Social credit score scheme in China is the most developed example, using social media scraping and AI face recognition to restrict travel for low scores.
 - Concern is that not that our data is no longer private, but that it is being privatized.
- Suggests new transportation infrastructure that addresses social inequities.
 - Need a dual transition toward environmental sustainable mobility and greater mobility justice.
 - Ensure deliberative and procedural justice, and reject technological determinism and market inevitability.

Questions

- Where is USPS – the second largest employer in the country – in this planning conversation?
 - Steve – commodity pricing changes are needed.
- Did you look at ROI comparison and right balance between AV and transit?
 - Daniel – ESI struggled to tease out ROI and didn't have the necessary data for this project. There needs to be a balance, especially for public equity.
 - Mimi – the question is how to protect public infrastructure, which is being fragmented because private premiums are taking up space.
- Is trip data ever non-personally identifiable?
 - Mimi – the bigger concern is privatization of data for profit. A recent NYT article showed trips are easily identifiable.
- To what degree has the panel investigated drones as possible solution?
 - Steve – on the freight side, weights and volumes are too great for drones to be practical.

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- Mimi – U.S. air space is heavily regulated by FAA; pilots need to stay in eye contact with their drone. There is pressure from developers, though.
- Many technologies only improve certain people’s lives, sometimes to the detriment of others. How are we to narrow and reverse the social divide?
 - Mimi – need to expand the conversation outside planners (e.g. people for mobility justice).
 - Steve – need to set goals and allow the market to reach those goals.
 - Daniel – this also about pricing infrastructure correctly (e.g. private vehicles stopping in bus lane and delaying public’s trip).
 - Steve – that’s where data is missing. Does the city know where Uber drivers are stopping/double-parking? Uber needs to tell us what’s happening.
- With changes in trucking, what’s to happen with rail freight?
 - Steve – rail is constrained by supply and limited to where it is built, but a largescale move from rail to truck would be bad.

Brett Fusco, Manager of Long-Range Planning at DVRPC announced the forthcoming scenario planning effort to be tackled by a smaller Futures Working Group. Brett called for volunteers to participate in 4 consecutive monthly meetings to be held in February, March, April, and May.

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