The End of Driving **Planning for Autonomous Mobility**

Organized by:

FACTUAL

Harmonize MOBILITY esadecreapolis

3-Day Executive **Education Course**

BARCELONA > 4, 5, 6 Feb 2020

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ABOUT THE COURSE

FACTUAL

Autonomous vehicles change the way we think about urban transportation, public transit, land use and urban design. While every city will experience change in the near future, some will be better prepared for it.

In this 3-day course, you will think through multiple, interrelated causes and stages of change. Focus on achievable, near-term adjustments while minimizing reliance on uncertain, long-range technology projections.

Discover ideas that permit a directed, gradual and immediate approach to preparing for coming changes in mobility technologies and their diffusion. Apply these ideas to specific problems in the city or region of your choice. Consider what needs to be done to prepare for ten percent of all passenger kilometers in a target jurisdiction to be provided by autonomous taxis or shuttles. Look at configuring and regulating sidewalks and curbs. Deepen your understanding of such important and interrelated issues as parking, road-use fees, bike lanes, rights of way, seniors' mobility, pedestrian safety, delivery drones and much more. Enhance your planning outlook to address productivity and job opportunities in this vibrant new sector.





WHAT YOU WILL LEARN

- Understand the expected acceptance and impacts of automated vehicles in cities and regions.
- Consider four stages of planning: Early, Rising, Plateau and Mature.
- Approach solutions with an understanding of economic, environmental and social opportunities and risks.
- Integrate private and public transit, with an eye on congestion, land use and other critical issues.
- Consider custom plans to address deployment issues in any planning area.







COURSE MODULES

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Day 1 > 4th February 2020 — **CONTEXTS** — Modules 1 to 5

- 1. **Two Markets.** Critical distinctions between the autonomous markets for car buying and ride buying help us understand whether we can or should plan for what will happen to cities or whether we should plan for what we want to happen.
- 2. **Multiple Transitions**. We will be going through multiple concurrent changes each of which will be interacting with many other changes in hard-to-predict ways. This will have significant, and likely "wicked", impacts on planning.
- 3. **Conflicting Narratives**. There are (at least) 15 oft-repeated narratives about the future of automobility and its automation. Each is polarized creating dissonant understandings of possible, realistic, desirable or unacceptable futures. This will confuse, dilute and delay planning responses to these potential changes.
- 4. **Contexts of Change**. The changing system of "driving" is only one of several contexts of change. It is the totality of contexts social, built environments, technical, digital, monetization, intensification, disruption, jobs, transit, etc. that will influence how vehicle automation will change our cities, our societies, and our lives.
- 5. Digitalization and New Mobility. We all know what digitalization has done to print, retail, leisure, and many other industries. We see this happening to mobility, but it is harder to understand that we have hardly begun. Today's people and goods movement industries are to their 2060 counterparts what cuneiform clay tablets are to the printed page. How can we prepare ourselves for that, even while we cannot predict its changing form?



COURSE MODULES

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Day 2 > 5th February 2020 — CHALLENGES — Modules 6 to 10

- 6. **Diffusion**. We look at two theoretical diffusion models and one practical model on which staged plans can be built. This practical model will inform a component of the 50%-City module to follow.
- 7. **Barriers**. There are barriers to the acceptance of automation, car sharing, and ride sharing, as well as to the deployment of automation, and the diffusion of carsharing and ridesharing. These include personal, social, regulatory, and infrastructural barriers. Can we understand enough about these to work through them over the coming decades?
- 8. **Mobility Justice.** Mobility Justice in the forms of social justice, employment justice, and environmental justice are reviewed. Can we address all these facets? How?
- 9. Infrastructure Risks. Modelled on an analytic structure developed by Strategy Corp this module looks at six infrastructure development risks for autonomous vehicle deployment: Political & Regulatory, Governance, Funding & Financing, Industry Capacity, Innovation and Technology, as well as Environmental Sustainability & Climate Change.
- 10. **50% Percent City.** What needs to be done to prepare a city/region such that fifty percent of its motorized passenger kilometres travelled within its boundaries is provided by shared, driverless (non-rail) vehicles? As an example of one city's way forward, Toronto has begun to "plan for planning" for Autonomous vehicles. This initial work is laudable and can teach us much.



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Day 3 > 6th February 2020 — **OPPORTUNITIES** — Modules 11 to 15

- 11. Land Use. Both intensification and sprawl will almost certainly happen. Why? How might transit-orienteddevelopment change? In what order will parking attrition roll out? What will parking garages be repurposed for?
- 12. Autonomous Transit Fleets. Governments may wish to or be forced to own-and-operate fleets of autonomous buses, shuttles or robotaxis. Whether or not this is recommended, if it is undertaken, how could it be phased to be most effective in attracting ridership away from private vehicles?
- 13. Software-Defined Transit. There are now proven digital methods to integrate commercial transportation-asa-service with public transit. This allows cities and regions to extend and enhance current transit. It also allows us to build an optimized and integrated transit-plus-robotaxi system under municipal or regional governance in a specify-and-operate model.
- 14. Behavioural Economics. There are many aspects of human economic and psychological behaviour that can be relied on to avoid changes in behaviour or to behave in apparently economically suboptimal ways. There are also many ways to use these human features to change those same behaviours. This module focuses on ways to have automation and sharing become more acceptable.
- **15.** What About Rapid Transit? If the municipal bus is threatened, does that mean rapid transit (heavy rail) is also threatened? How can we defend future ridership on our urban train systems?

SCHEDULE



Day 1 > 4th February 2020 — **CONTEXTS** — Modules 1 to 5

- 10.00 10.30 > Intro to Course
- 10.30 11.15 > Module 1: Two Markets
- 11.15 11.45 > Coffee break
- 11.45 13.15 > Modules 2 / 3: *Multiple Transitions / Conflicting Narratives*
- 13.15 14.15 > Lunch
- 14.15 15.45 > Modules 4 / 5: Contexts of Change / Digitalization and New Mobility

Networking with local stakeholders & Social event (@Pier01)

- 18.00 18.30 > Barcelona, one of the most vibrant tech hubs in the world (Speaker TBC)
- **18.30 19.00 >** Prospects of Future Mobility in Catalonia (Speaker TBC)
- 19.00 19.30 > Autonomous Vehicles: a roadmap for Catalonia (Speaker TBC)
- 19.30 20.00 > An overview on current developments on AVs in Catalonia (Speaker TBC)

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20.00 > Dinner (venue TBC)



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SCHEDULE



Day 2 > 5th February 2020 — CHALLENGES — Modules 6 to 10

- **09.30 10.15 >** Module 6: *Diffusion*
- **10.15 10.55 >** Coffee break
- 10.45 12.15 > Modules 7 / 8: Barriers / Mobility Justice
- 12.15 13.15 > Lunch
- 13.15 14.45 > Modules 9 / 10: Infrastructure Risks / 50% Percent City

Networking with local stakeholders & Social event (Sponsored by Galileo For Mobility. Host & Venue TBC)

18.00 – 18.20 > Galileo For Mobility AV Pilot UAB (Victor Moyano, <u>CREAFUTUR</u>; Martí Jofre, <u>PILDO Labs</u>)

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- 18.20 18.50 > Roadmap to Automation in Public Transport (Speaker TBC, UITP)
- 18.50 19.10 > Catalonia Living Lab (Speaker TBC)
- **19.10 19.40 >** Piloting AVs for real in Catalonia (Speaker TBC)

Harmonize esadecreopolis **ECARNET**

19.40 – 20.00 > Demonstrating AV fleets for Public Transport in Catalonia (Speaker TBC)

20.00 > Dinner (venue TBC)

SCHEDULE



Day 3 > 6th February 2020 — **OPPORTUNITIES** — Modules 11 to 15

- **09.30 11.00 >** Modules 11 / 12: Land Use / Autonomous Transit Fleets
- **11.00 11.30 >** Coffee break
- 11.30 13.00 > Modules 13 / 14: Software-Defined Transit I Behavioural Economics
- 13.00 13.15 > Short Break
- **13.15 14.00 >** Module 15: *What About Rapid Transit?*
- 14.00 > Closure & Lunch







WHO IS IT FOR?

This course is geared to anyone whose responsibilities require knowledge of AV related issues, processes and regulations – urban planners, educators, fleet managers, transit agency staff, economists, analysts, R&D managers and others.











INSTRUCTOR

Bern Grush is Chief Innovation Officer at Harmonize Mobility and Automated Fleet Strategist at Grush Niles Strategic. An inventor and entrepreneur, Bern authored "The End of Driving: Transportation Systems and Public Policy Planning for Autonomous Vehicles" (Elsevier, 2018). He was named Toronto Star Wheels' Newsmaker of the Year for his research on vehicle automation. Bern's latest innovation — software-defined transit — manages the social, spatial, and environmental policy performance of massive, competing fleets of TNCs and robotaxis. Bern earned the MSc in Systems Design Engineering from the University of Waterloo. He usually gives this course at the University of Toronto.



BARCELONA February 4-5-6th 2020

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