



AMERICAN
PUBLIC
TRANSPORTATION
ASSOCIATION

Technology Trends: Where is Public Transportation Headed?

June 5, 2019

APTAU
Delivering the Future-Ready Workforce

Opening Remarks



Mr. David Carol
Chief Operating Officer,
APTA

What to Expect

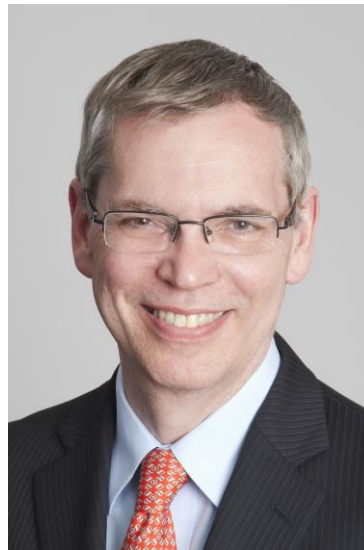
- **Topic overview**
- **Industry Presentations**
- **Panel Member Dialogue**
- **Audience Q&A and discussions**
- **Wrap up**

Asking Audience Questions

To submit a question or comment to the moderator during the session or during the Q&A, please type it into the **Question** box on your screen and then click on the send arrow located at the bottom of the box.



Moderator



Brendon Hemily, Ph.D.

Independent Consultant in Public
Transportation,
Toronto, Canada

Thinking Strategically about Technology

- Why technology?
- Efficiency and especially Effectiveness
- What is our mission in the new mobility ecosystem?
- How will individuals choose to travel?
- Are we able to take advantage of technology and innovate?
- How to pursue technology and innovation in the risk-averse public arena?

6 Questions for Transit Agencies

- Is your agency taking full advantage of existing technology? Are you “power users”? Best practices?
(ITS for operations, smart card data, social media)
- Have you re-examined business processes in light of technology?
- Have you invested in necessary tools & especially expertise?
(data scientists, business analysts, systems engineering)

6 Questions for Transit Agencies

- Have you reviewed/streamlined internal processes to encourage innovation and technological opportunities
(procurement, pilot projects, unsolicited proposals)
- How do you monitor technological developments and assess their pertinence?
- Have you started preparing for the future?
(connected vehicles, smart cities, big data)

Today's Presenters



Mr. Amos Haggiag,
CEO and Co-Founder,
Optibus,
San Francisco, CA



Mr. Steve LeVine,
Axios Future Editor,
Arlington, VA

Session Presenter



Mr. Amos Haggiag,
CEO and Co-Founder,
Optibus,
San Francisco, CA



Three predictions about the future of public transit

Amos Haggiag, Co-founder and CEO

optibus



01 FIRST PREDICTION:

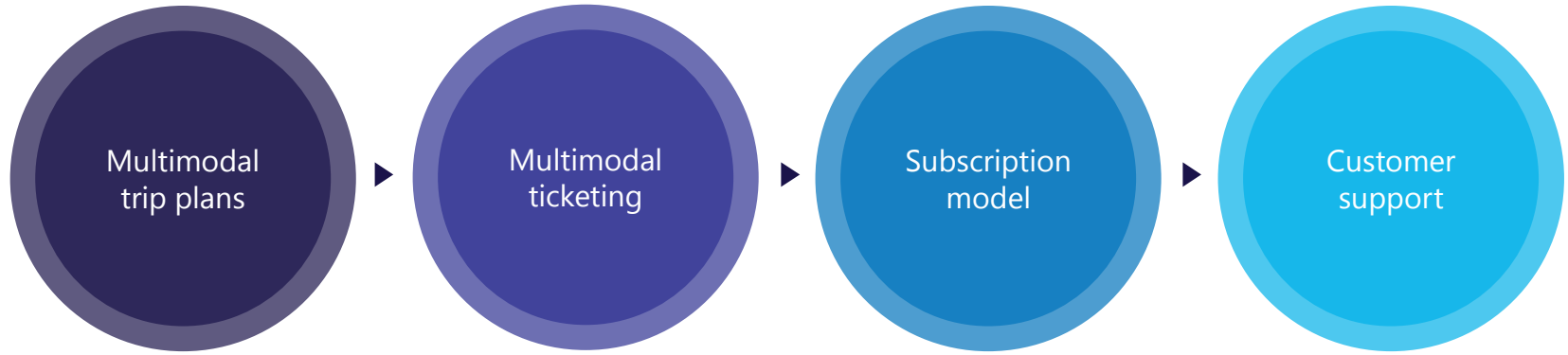
MaaS will become a reality

It will unleash a wave of mass
transit innovation

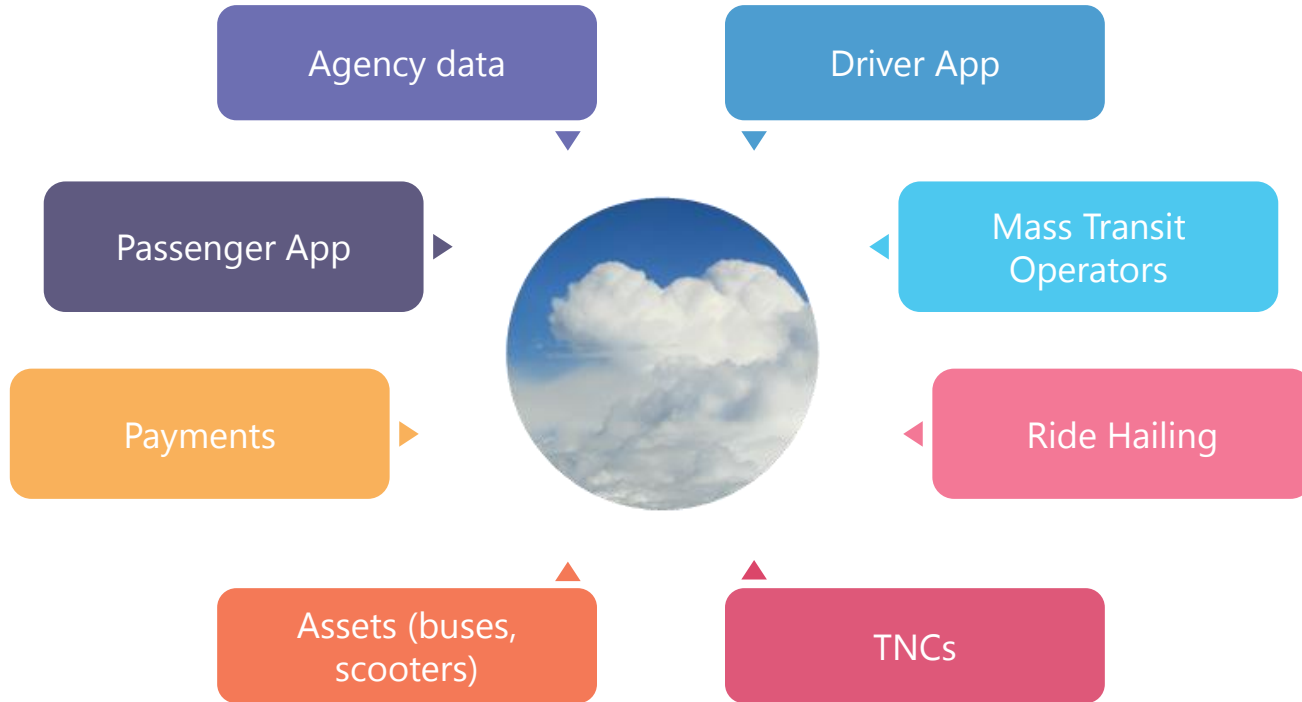
An opportunity to remake inflexible systems

- Information everywhere provides new opportunities to make transportation more efficient and user friendly
- Ability to chart millions of origins and destinations and calculate the best option for each – using cloud computing
- Less parking spaces, less vehicles more livable cities
- An opportunity to better manage cities as a whole

Components of MaaS



First phase: integration on the cloud







02 SECOND PREDICTION:

Artificial Intelligence and data-driven solutions will take center stage

ar·ti·fi·cial in·tel·li·gence

/ˌärdə'fiSHəl in'teləjəns/ 

noun

the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.



Data Driven Planning:

- Infrastructure
- Demand patterns
- Vehicle movements
- Traffic data



Using AI for on-time performance



Making Fixed Routes Less Fixed



Demand pattern analysis
Create optimal, always up-to-date,
day/time-specific routes

Operational planning
Assign relevant vehicles/drivers to
maximize efficiency

Real-time adjustments *
Continuously optimize passenger-vehicle-
bus stop allocations and routes



Driver
interface



Passenger interface

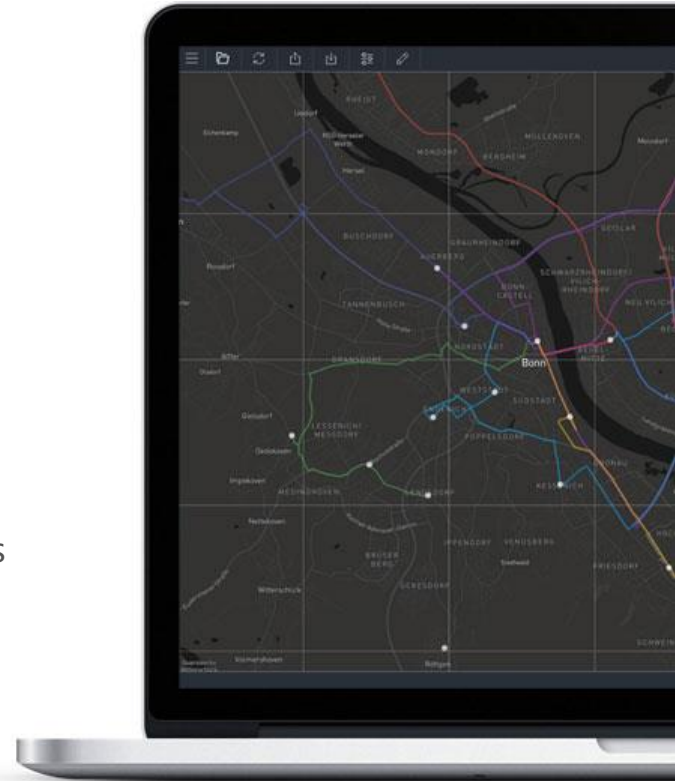
How will fixed routes change?

The passenger angle

- A fast & efficient bus service
- Fixed stops, flexible routes
- Better address passenger needs and improve service quality

The PTA / operator angle

- Increase ridership
- More efficient use of vehicles, driving cost and environmental benefits
- Continuous adjustments and optimization

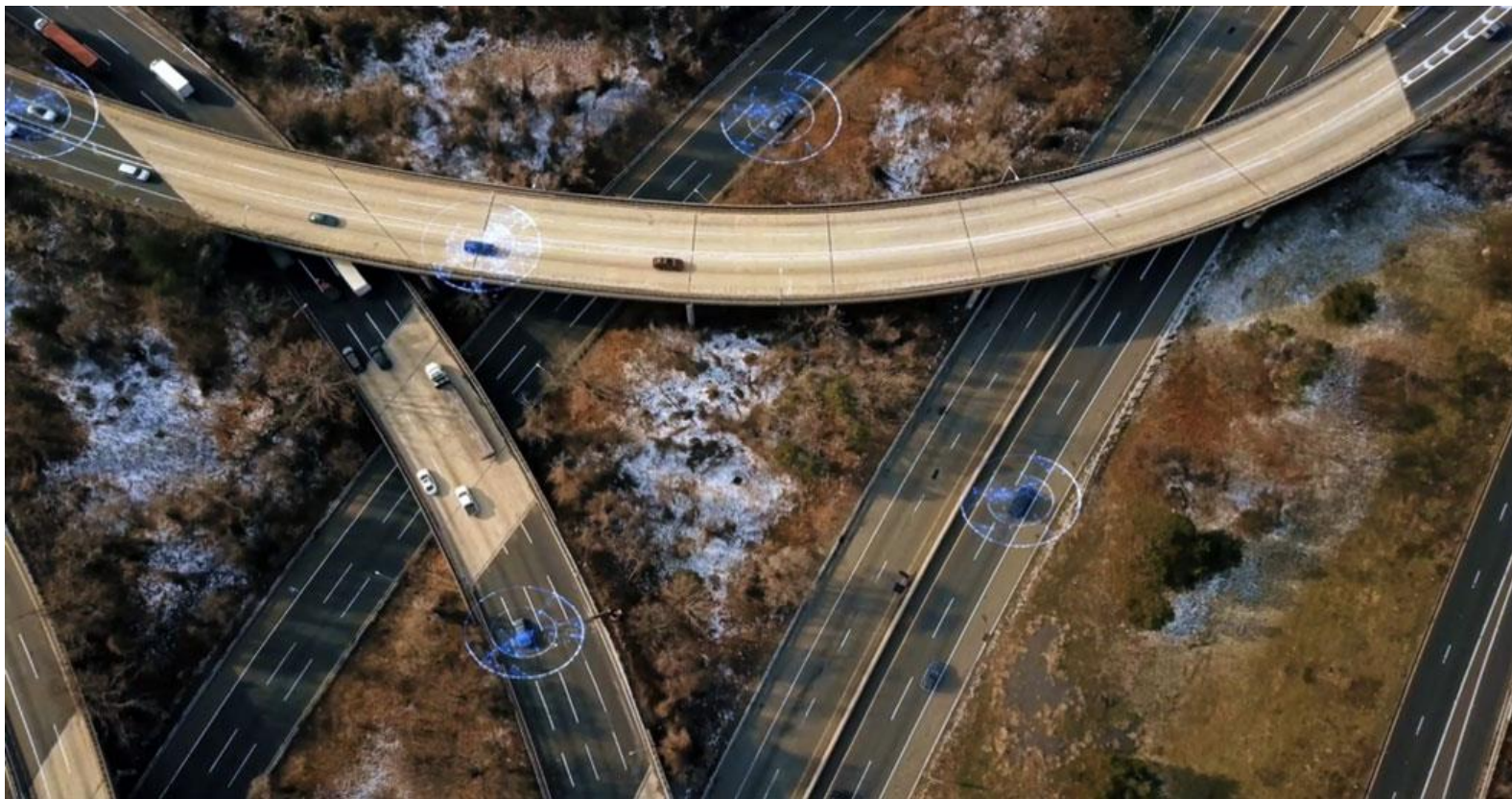




03 SECOND PREDICTION:

Vehicle innovation: electric and autonomous vehicles





optibus

Moderator/ Presenter Conversations



Brendon Hemily, Ph.D.
Independent Consultant in Public
Transportation,
Toronto, Canada



Mr. Amos Haggiag,
CEO and Co-Founder,
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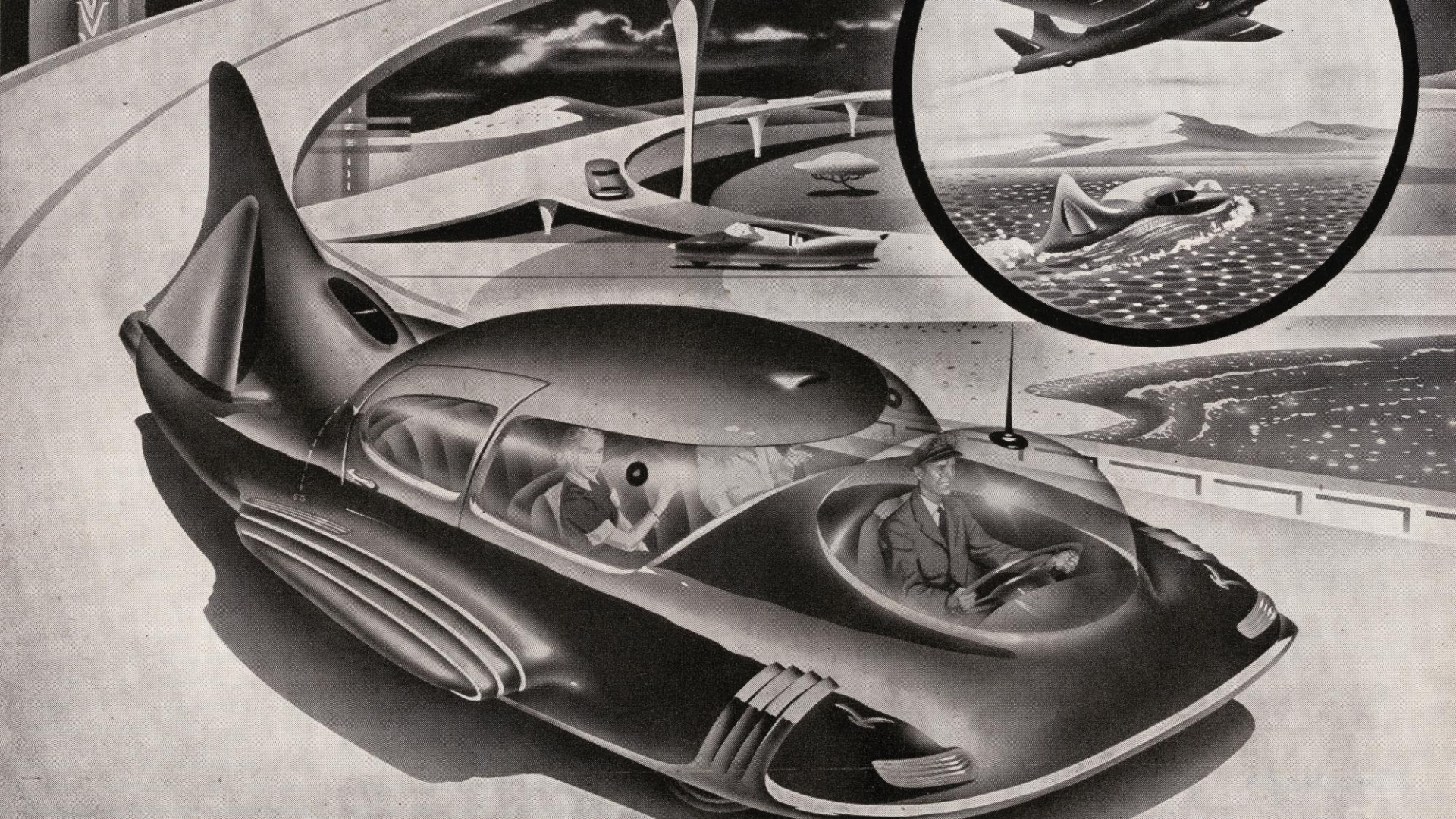


Mr. Steve LeVine,
Axios Future Editor,
Arlington, VA



APTA Webinar

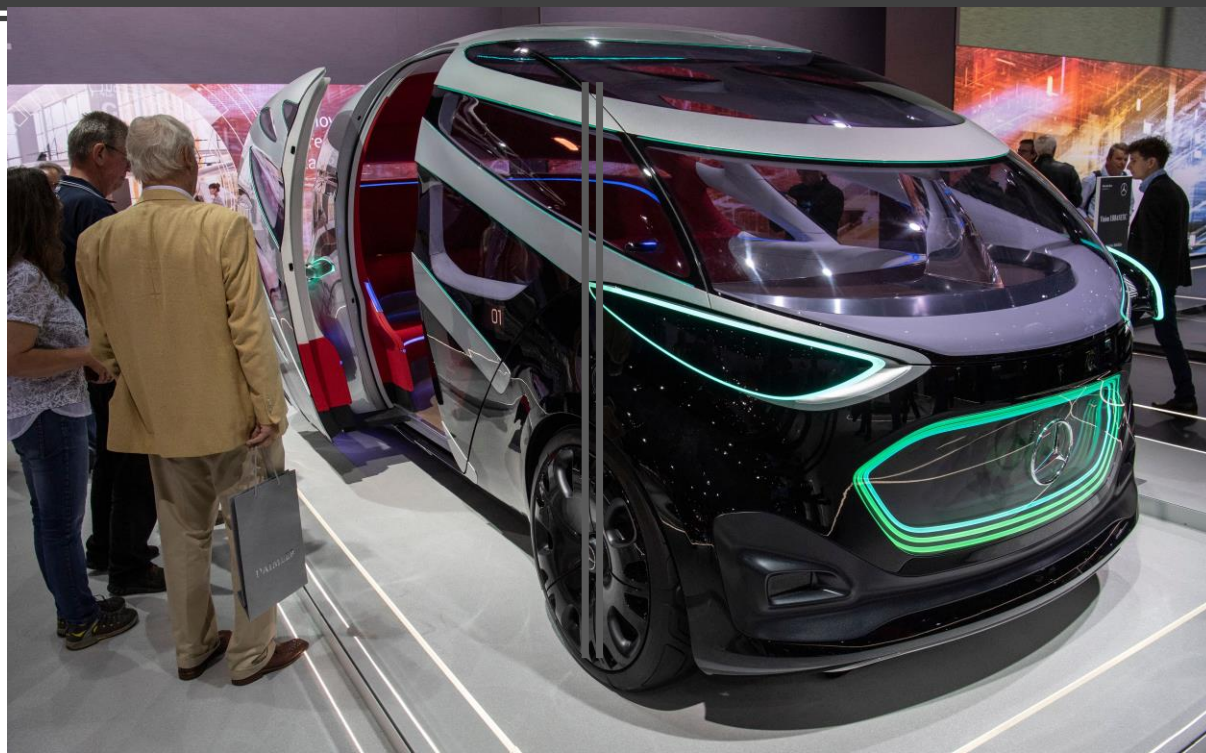
Steve LeVine



BUSINESS | ON BUSINESS

Driverless Cars Are 90% Here. Another 90% Is Left to Go.

If building a robocar were just about putting the parts together, we'd be living in the future already





**Viitorul
e prezent
în 5G**

**Prima hologramă
5G din România**

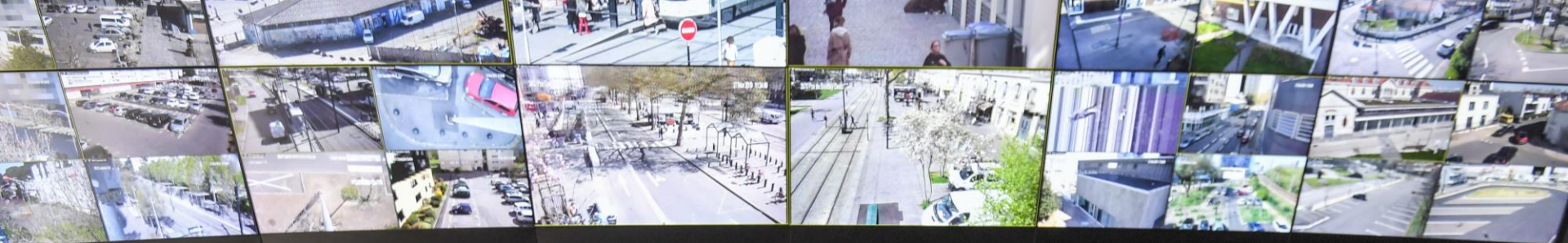
multe detalii pe www.vodafone.ro



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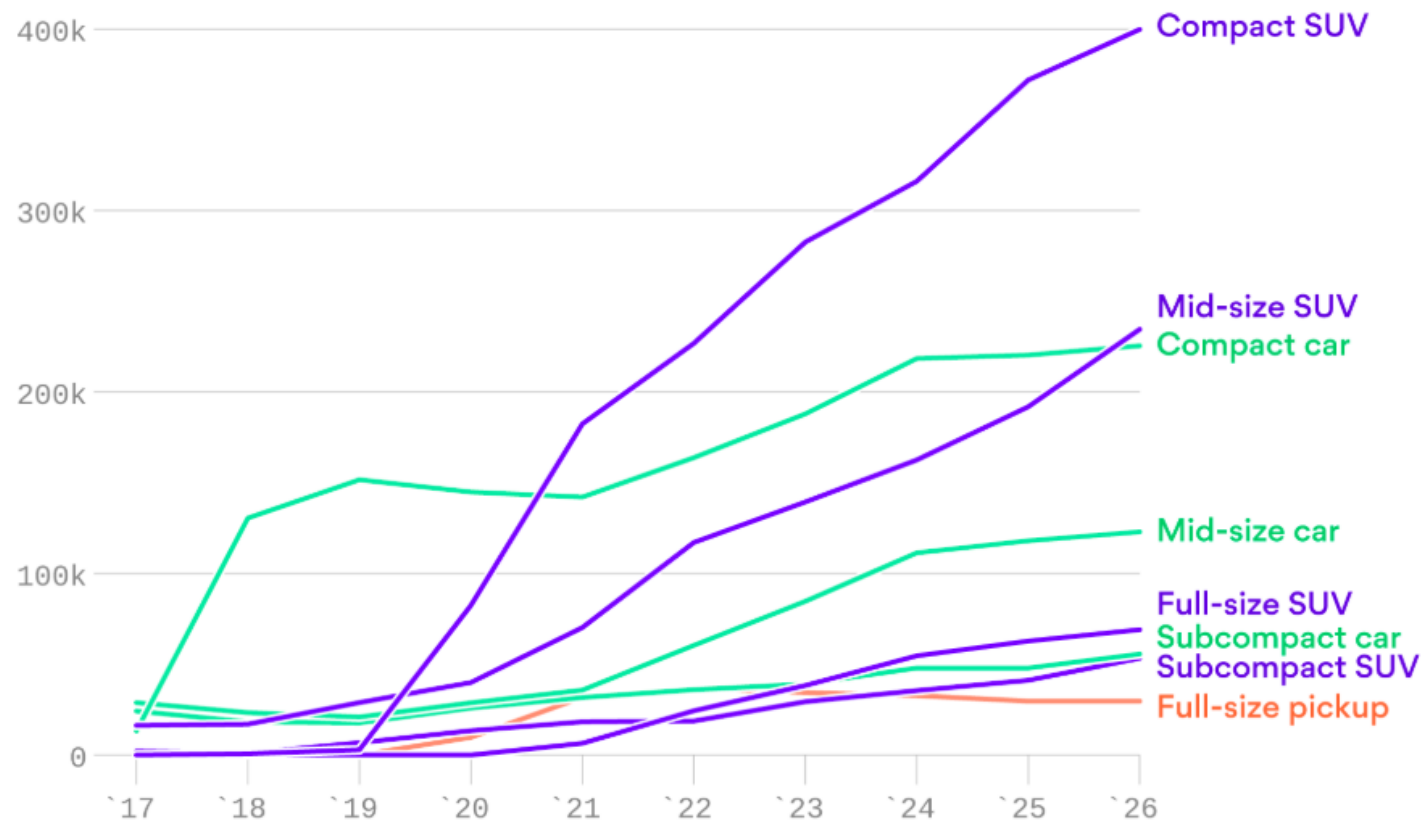
UBER

ADVANCED
TECHNOLOGIES
CENTER



Electric vehicle U.S. sales forecast, 2017-26

● SUVs ● Cars ● Pickups







SOURCE: CANGOROO



Moderator/ Presenter Conversations



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Q&A With Today's Moderator and Speakers



Dr. Brendon Hemily



Mr. Amos Haggiag



Mr. Steve LeVine

Audience Q&A With Today's Moderator and Speakers



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