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Progressive AE

COMPLETE STREETS: HOW TO INCORPORATE AUTONOMOUS VEHICLES IN YOUR COMPLETE STREETS MODEL

ABOUT OUR COMPANY

FULL SERVICE
ARCHITECTURE & ENGINEERING FIRM

55 YEARS
OF EXPERIENCE

ACTIVE IN
48
STATES

10
MARKETS

120+ DESIGN AWARDS

230 SKILLED PROFESSIONALS

LOCATIONS = **4**

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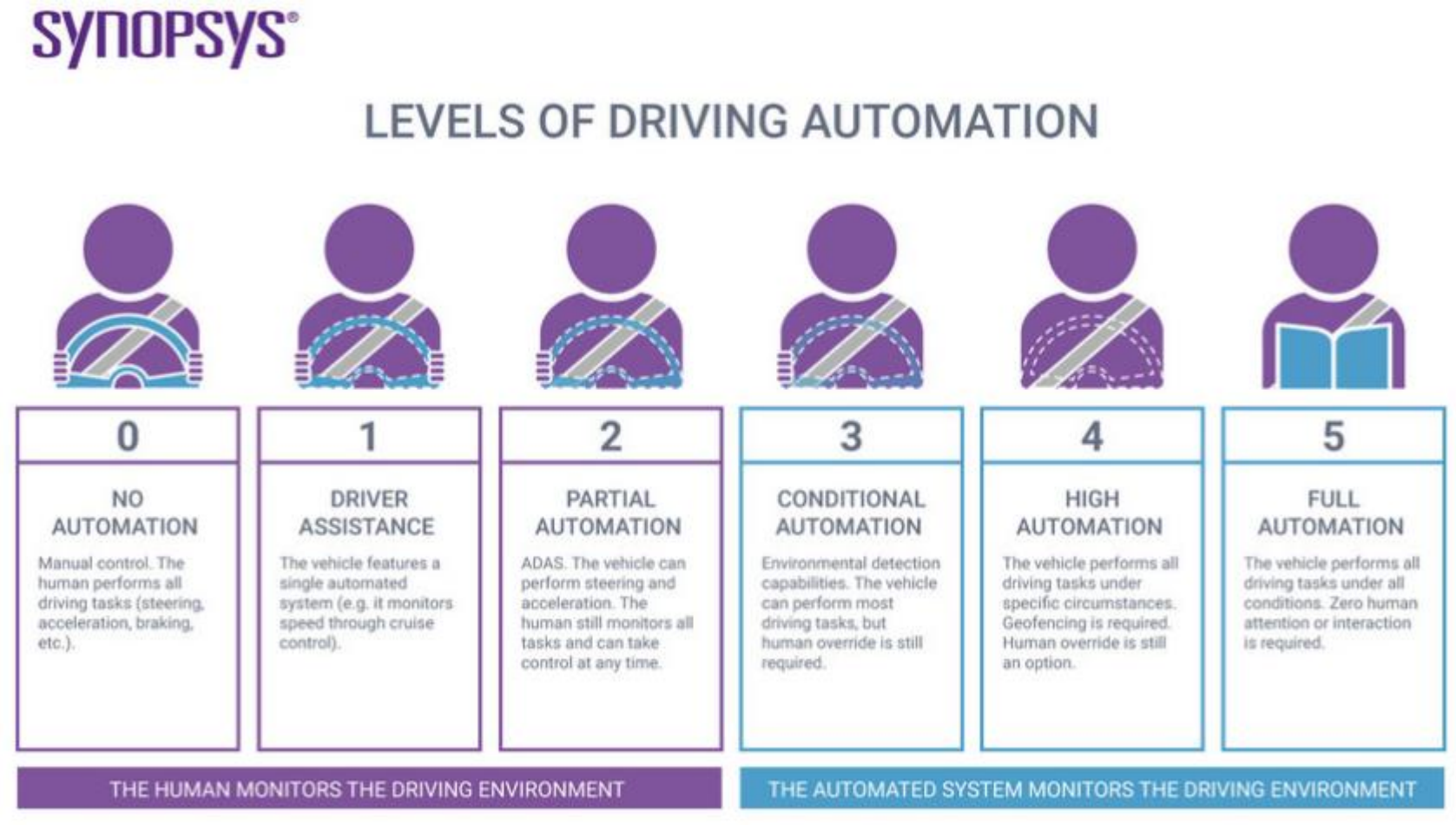
WHAT IS AN AUTONOMOUS VEHICLE?

Synopsys:

- An autonomous car is a vehicle capable of **sensing its environment** and **operating without human involvement**. A human passenger is not required to take control of the vehicle at any time, nor is a human passenger required to be present in the vehicle at all.
- An autonomous car can go anywhere a traditional car goes and do everything that an experienced human driver does.

LEVELS OF AUTOMATION



Source: Synopsys

WHERE ARE WE NOW?

- Level 2 – Partial Automation
  - By 2025 we expect over 8M autonomous/semi-autonomous vehicles on the roads
- Why only level 2?
  - “Connected vehicles are rich in physical safety features-seatbelts, airbags, antilock brakes-but not so rich in digital security features.”

    - Synopsys

WHAT IS A COMPLETE STREET?

U.S. Department of Transportation

- Complete Streets are streets designed and operated to enable safe use and support **mobility for all users**.
- Those include **people of all ages and abilities**, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders.
- The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network **safer and more efficient**.

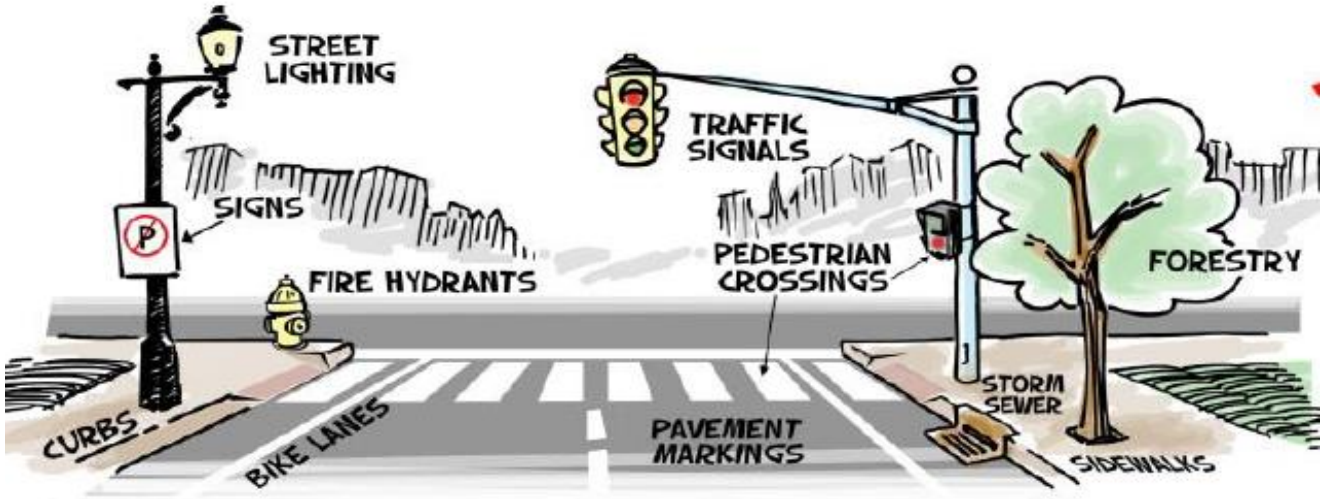
STREET DESIGN PHILOSOPHY

- Traditional Street Design vs. Complete Street Design
  - Traditional Street Design aims to maximize vehicle throughput
  - Complete Street Design prioritizes safety and mode choice

Our Vision

City Streets and rights-of-way will be accessible, attractive, and safe, serving all people of our community, contributing to the livability of our neighborhoods and business districts and increasing economic opportunity to individuals, businesses, and new development.

Infrastructure assets will be maintained and well-managed, using a multi-faceted funding strategy and innovative approaches to preserve our investment.



GRAND RAPIDS VITAL STREETS:

COMPLETE STREETS + GREEN INFRASTRUCTURE

ALL USERS INCLUDE:

- Pedestrians
- Motorists
- Bicycles
- Trucks
- Children
- Elderly
- People of all abilities

WHY ALL USERS?

- **1/3**rd of the population does not drive
- Aging population:
  - **1 in 5** seniors do not drive
  - Most seniors outlive their ability to drive by **7 to10** years (AARP)
- Young people:
  - **1/4**th do not have a driver's license
  - 2001-2009 vehicle trips declined by **23%**
  - Trips by bike ↑ **24%**, ↑ walking **16%**, ↑ transit **40%**

WHY ALL USERS?

- Expense:
  - Average cost of owning and operating one (1) automobile (2021): **$9,666/year**
  - Average household transportation costs (Grand Rapids MSA, 2009): **$14,676/year**
- Ability:
  - **20%** of Americans have a disability that limits their daily activities
  - **Nearly half** of people 65 and older have a disability

- Existing View – Complete Street?

- New multi-story multi-use infill – more Complete?

- Street trees, lighting, wider sidewalks – Completed!

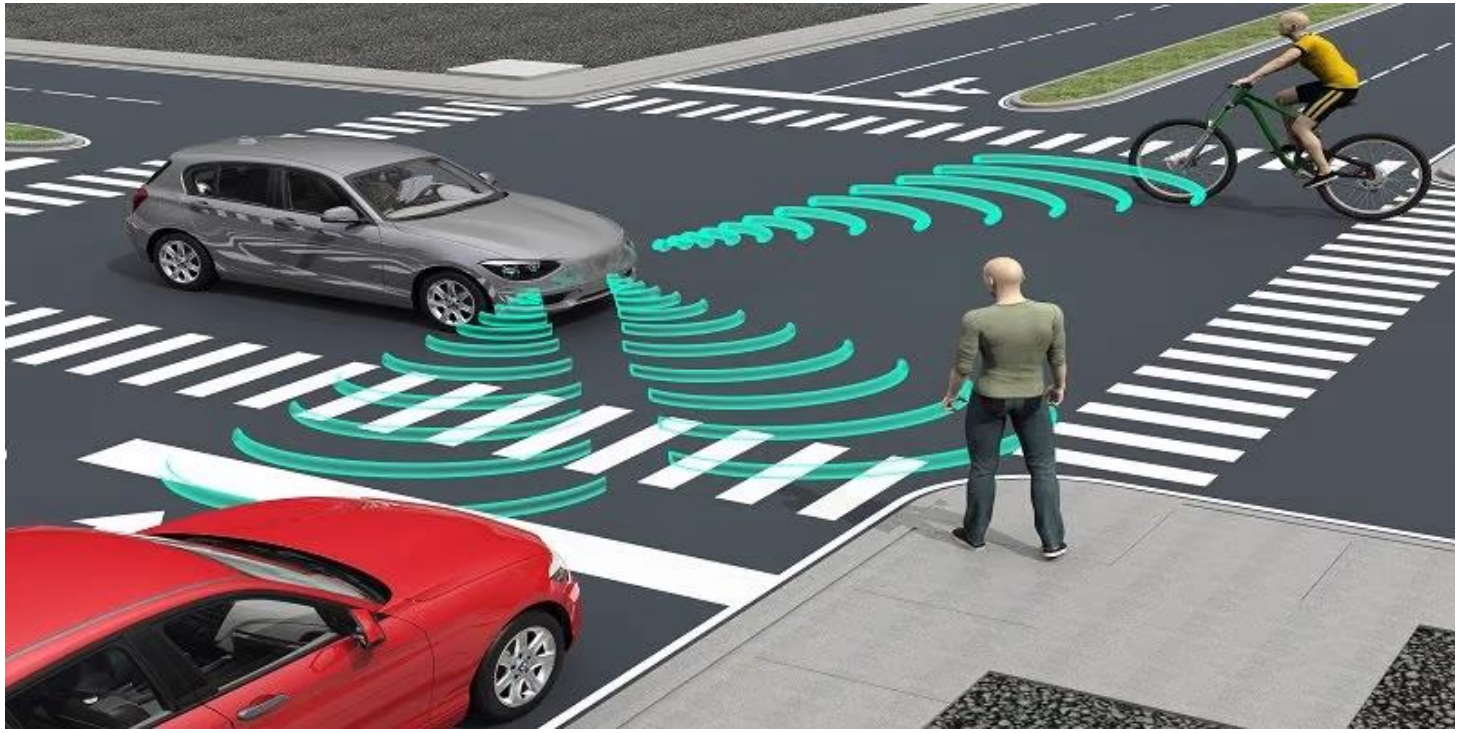
Almost…

- Outdoor café, additional infill

– A place has arrived! Mission Complete.

AUTONOMOUS POTENTIAL

- Parking Impacts
  - Parking demand could decrease by as much as 80%[1]
- Lane Capacity Impacts
  - Vehicles can travel closer together, increasing capacity by as much as 80%[1]
- Interactions with Cyclists and Pedestrians
  - Vehicles will sense other modes and automatically stop/avoid them

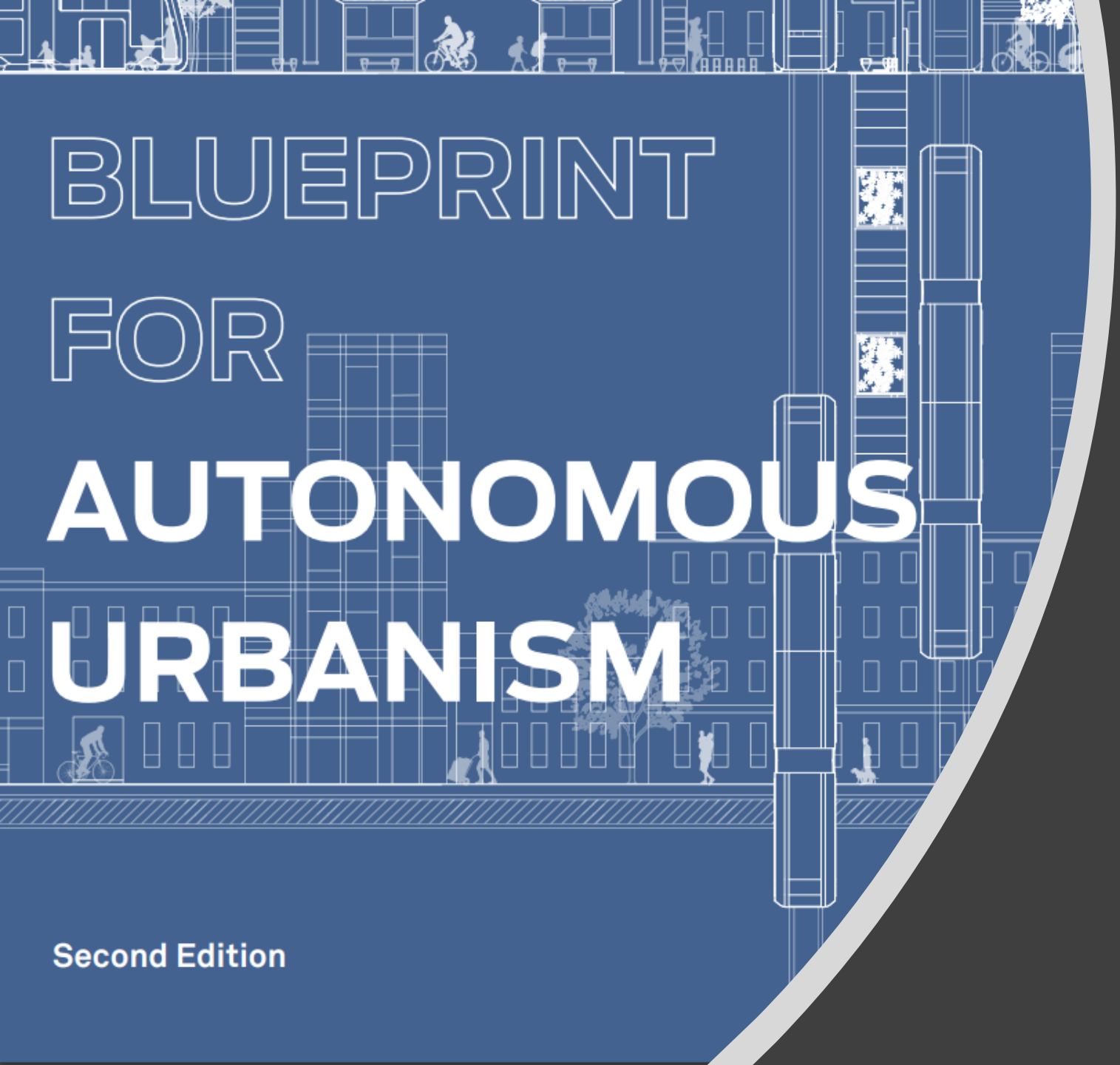


AUTONOMOUS POTENTIAL
INTERNATIONAL TRANSPORT FORUM – URBAN MOBILITY SYSTEM UPGRADE
HOW SHARED SELF-DRIVING CARS COULD CHANGE CITY TRAFFIC

- Nearly the same mobility can be delivered with 10% of the cars
- The overall volume of car travel will likely increase
- Reduced parking needs will free up significant public and private space
- The size of the self-driving fleet needed is influenced by the availability of public transport
- Managing the transition will be challenging

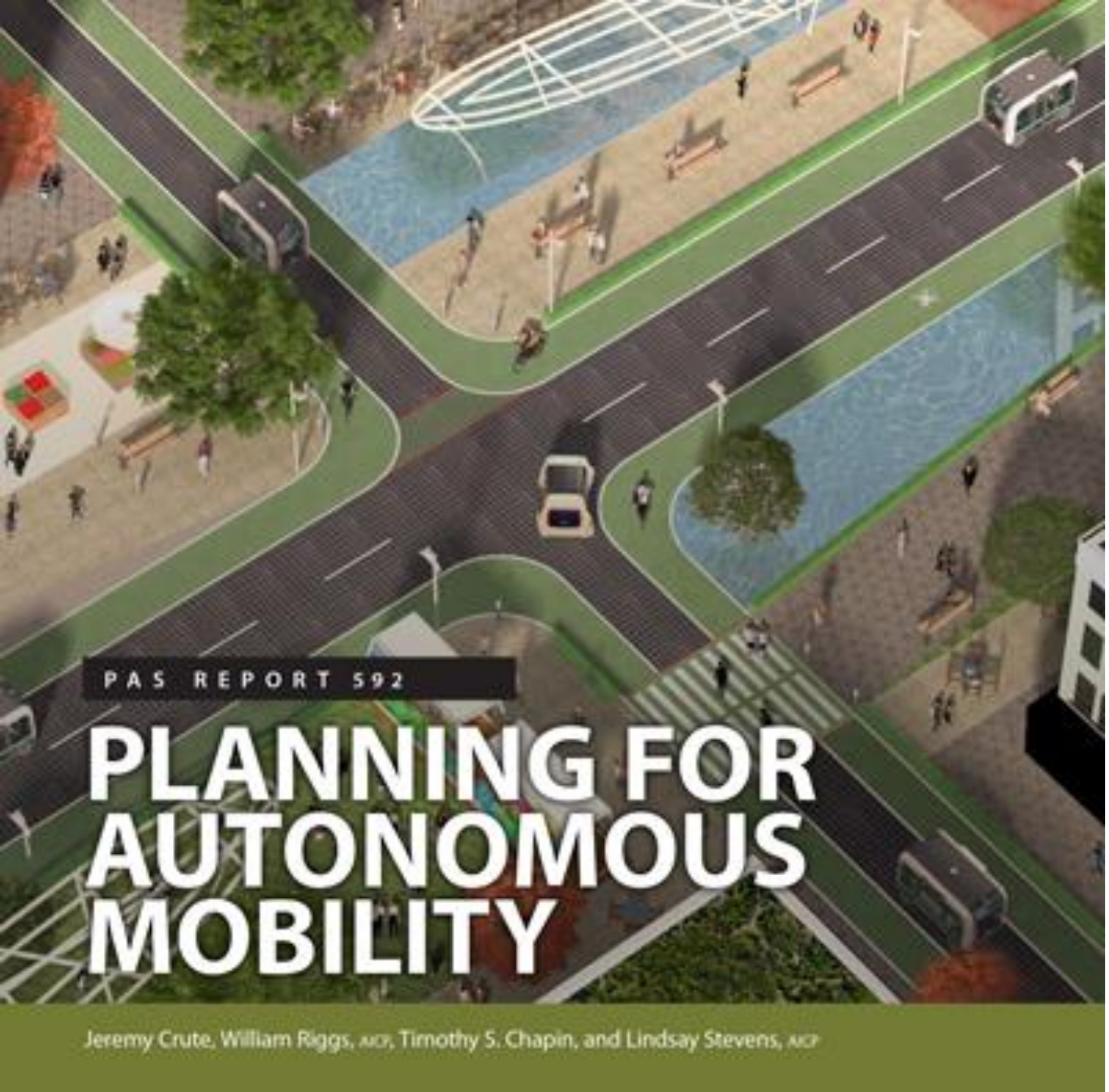
DECADES

- 2022 – General Motors Super Cruise system
- 2025, 2030? Progress is slower than expected.
- Fully autonomous vehicles are still a long way away.
- As self-driving technology rolls out, it won't be cheap.
- Most Americans buy used cars anyway, and they don't have the tech.
- Don't make plans to give up your driver's license.



- NACTO
  - First Edition 2017
  - Second Edition Sept 2019
- Key policy areas:
  - Transit
  - Freight
  - Pricing
  - Data

"The Blueprint for Autonomous Urbanism is centered on people and restoring life to our streets—showing how to adapt new mobility technologies to our cities instead of the other way around." – JS-K

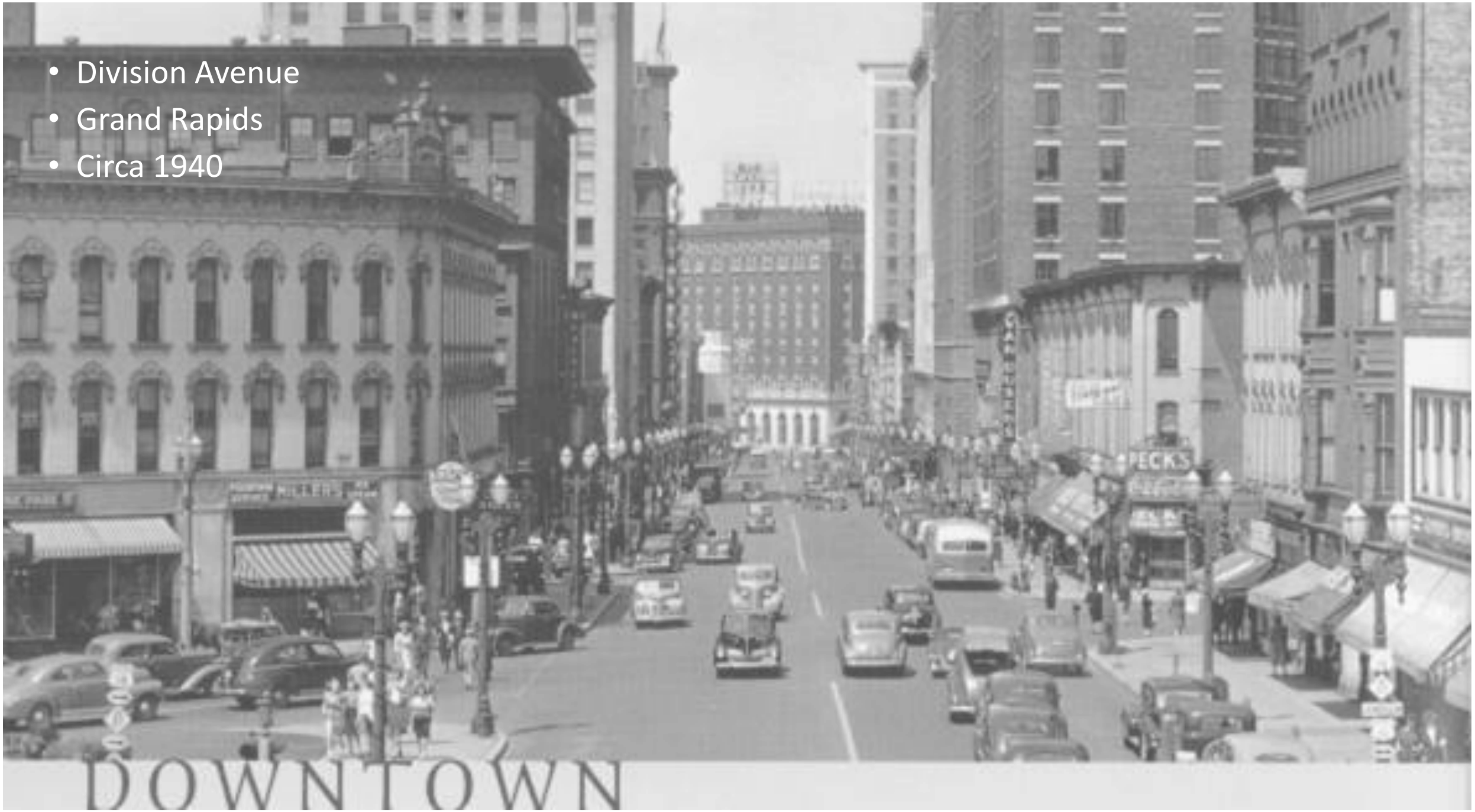


GUIDANCE/CHALLENGES

- Public Acceptance
- Technology
- Security
- Traffic enforcement
- Insurance/Liability
- Registration
- Licensing
- Taxes/Fees…

GREATEST OPPORTUNITIES

- Less space needed for storing vehicles!
  - Parks not parking
  - Repurposed residential garages and driveways
  - Roads can become narrower



- Division Avenue
- Grand Rapids
- Circa 1940

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