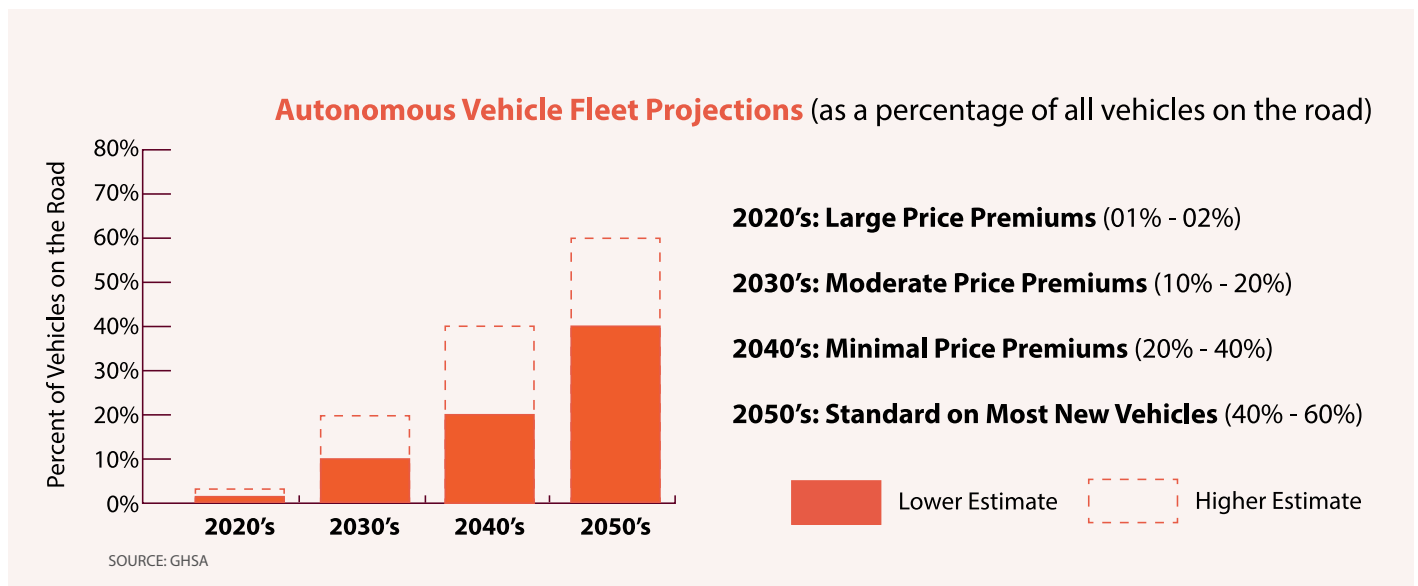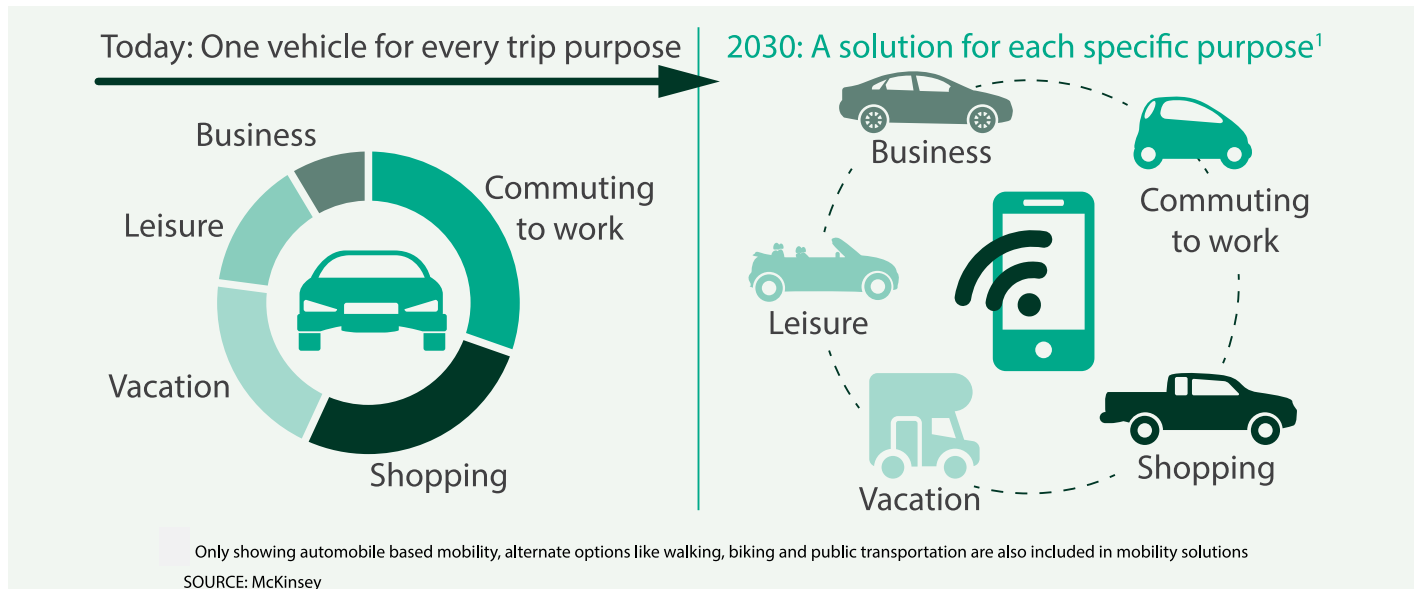# GETTING READY FOR AUTONOMOUS VEHICLES

**Abstract**

Autonomous Vehicles will change the way vehicles, drivers and operators are registered, licensed and regulated. This paper summarizes our understanding of how autonomous vehicles will impact motor vehicle and licensing agencies and what agencies should do to manage them properly.

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# Growth of autonomous vehicles

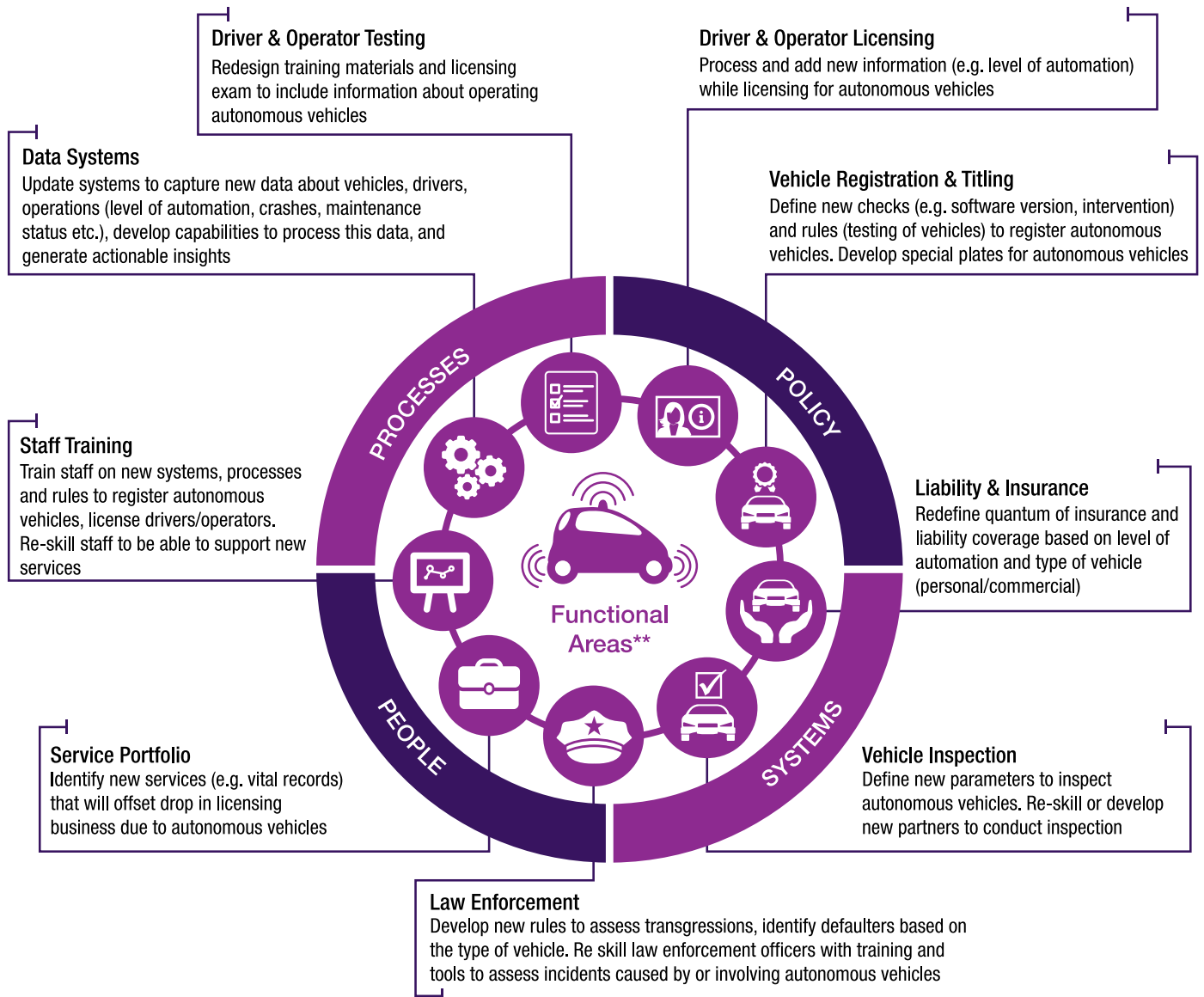Adoption of autonomous vehicles will accelerate over the next few decades. A recent study estimated that by 2035 more than 12 million fully autonomous vehicles and 18 million partially autonomous vehicles will be sold per year across the world[1]. Not only will there be more autonomous vehicles, but more types of vehicles as well – vehicles for business, leisure, commuting, vacation, etc. and most of these would be shared[2].



Today: One vehicle for every trip purpose

Business
Leisure
Commuting to work
Vacation
Shopping

2030: A solution for each specific purpose[1]

Business
Commuting to work
Leisure
Vacation
Shopping

Only showing automobile based mobility, alternate options like walking, biking and public transportation are also included in mobility solutions
SOURCE: McKinsey



**Autonomous Vehicle Fleet Projections** (as a percentage of all vehicles on the road)

Percent of Vehicles on the Road

80%
70%
60%
50%
40%
30%
20%
10%
0%

2020's   2030's   2040's   2050's

SOURCE: GHSA

**2020's: Large Price Premiums** (01% - 02%)

**2030's: Moderate Price Premiums** (10% - 20%)

**2040's: Minimal Price Premiums** (20% - 40%)

**2050's: Standard on Most New Vehicles** (40% - 60%)

Lower Estimate          Higher Estimate

# Impact of autonomous vehicles on motor vehicle and licensing agencies

Growth in the volume and diversity of autonomous vehicles, and the rise of the 'sharing' economy will impact the following areas overseen by motor vehicle and licensing agencies.
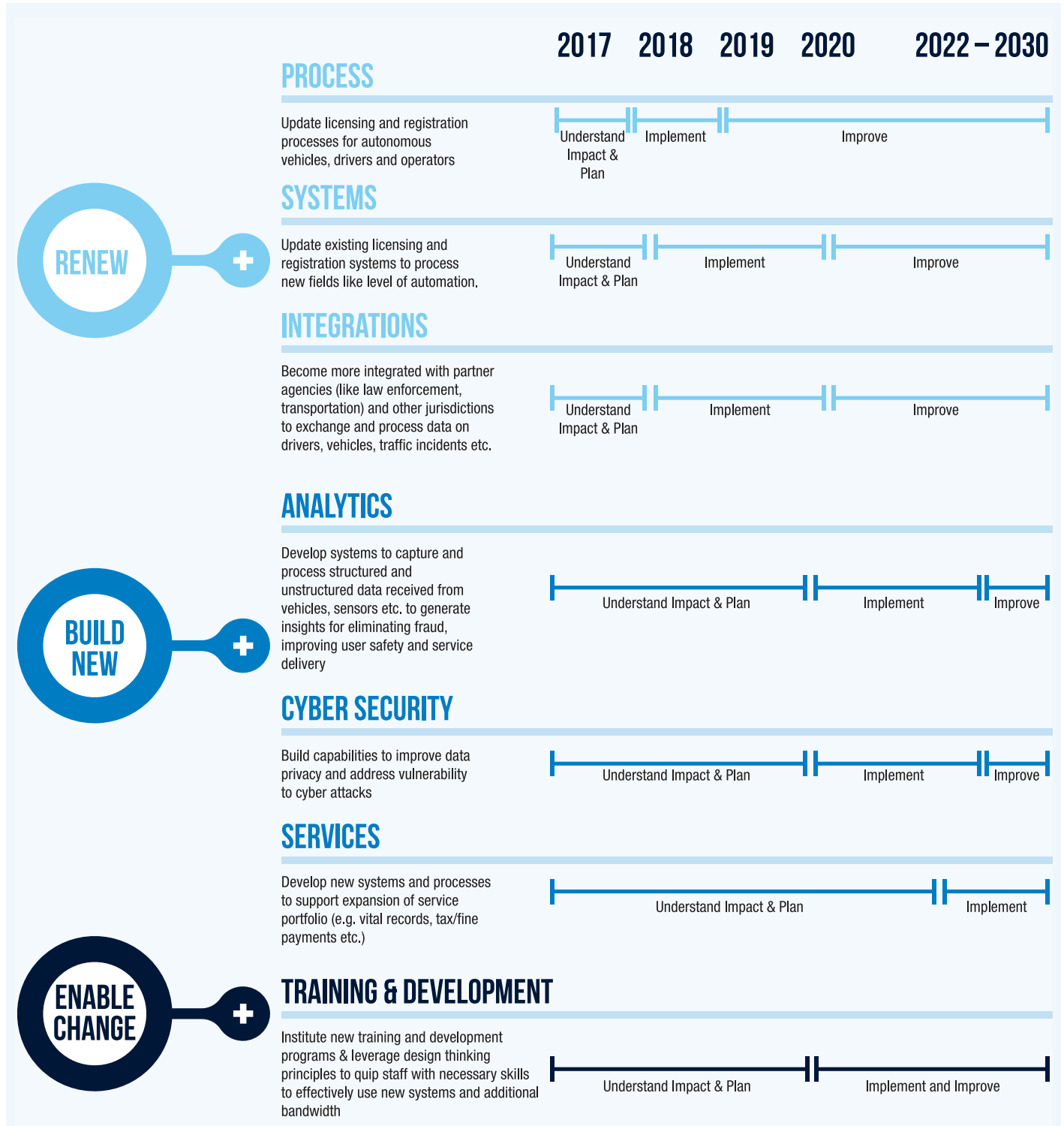
**Driver & Operator Testing**
Redesign training materials and licensing exam to include information about operating autonomous vehicles

**Driver & Operator Licensing**
Process and add new information (e.g. level of automation) while licensing for autonomous vehicles

**Data Systems**
Update systems to capture new data about vehicles, drivers, operations (level of automation, crashes, maintenance status etc.), develop capabilities to process this data, and generate actionable insights

**Vehicle Registration & Titling**
Define new checks (e.g. software version, intervention) and rules (testing of vehicles) to register autonomous vehicles. Develop special plates for autonomous vehicles

**Staff Training**
Train staff on new systems, processes and rules to register autonomous vehicles, license drivers/operators. Re-skill staff to be able to support new services

**Liability & Insurance**
Redefine quantum of insurance and liability coverage based on level of automation and type of vehicle (personal/commercial)

**Service Portfolio**
Identify new services (e.g. vital records) that will offset drop in licensing business due to autonomous vehicles

**Vehicle Inspection**
Define new parameters to inspect autonomous vehicles. Re-skill or develop new partners to conduct inspection

**Law Enforcement**
Develop new rules to assess transgressions, identify defaulters based on the type of vehicle. Re skill law enforcement officers with training and tools to assess incidents caused by or involving autonomous vehicles

Central wheel labels: PROCESSES · POLICY · SYSTEMS · PEOPLE — **Functional Areas\*\***

*\*\*This list is not comprehensive. Includes key functional areas that are directly managed by the DMV. There are other areas as well which would be impacted like Infrastructure, Transit etc. where DMVs are also involved, but not as a primary authority.*

# Re-thinking capabilities to address the impact of autonomous vehicles

At the moment, motor vehicle and licensing agencies are focused on testing autonomous vehicles. Soon, these vehicles would be on the roads, probably as early as 2020.

To address the impact of these vehicles as listed above and to ensure disruption free services, agencies should renew existing systems and processes, and build new capabilities – and, we believe they should start to do this immediately.

## RENEW

### PROCESS

Update licensing and registration processes for autonomous vehicles, drivers and operators

| 2017 | 2018 | 2019 | 2020 | 2022 – 2030 |
|------|------|------|------|-------------|
| Understand Impact & Plan | Implement | | | Improve |

### SYSTEMS

Update existing licensing and registration systems to process new fields like level of automation.

| | | | | |
|---|---|---|---|---|
| Understand Impact & Plan | | Implement | | Improve |

### INTEGRATIONS

Become more integrated with partner agencies (like law enforcement, transportation) and other jurisdictions to exchange and process data on drivers, vehicles, traffic incidents etc.

| | | | | |
|---|---|---|---|---|
| Understand Impact & Plan | | Implement | | Improve |

## BUILD NEW

### ANALYTICS

Develop systems to capture and process structured and unstructured data received from vehicles, sensors etc. to generate insights for eliminating fraud, improving user safety and service delivery

| | | | | |
|---|---|---|---|---|
| Understand Impact & Plan | | | Implement | Improve |

### CYBER SECURITY

Build capabilities to improve data privacy and address vulnerability to cyber attacks

| | | | | |
|---|---|---|---|---|
| Understand Impact & Plan | | | Implement | Improve |

### SERVICES

Develop new systems and processes to support expansion of service portfolio (e.g. vital records, tax/fine payments etc.)

| | | | | |
|---|---|---|---|---|
| Understand Impact & Plan | | | | Implement |

## ENABLE CHANGE

### TRAINING & DEVELOPMENT

Institute new training and development programs & leverage design thinking principles to quip staff with necessary skills to effectively use new systems and additional bandwidth

| | | | | |
|---|---|---|---|---|
| Understand Impact & Plan | | | Implement and Improve | |

## Conclusion

Every major automotive company (and some non-automotive companies too) is investing in autonomous vehicles. These companies will want to start monetizing their investments quickly. Uber has already tried to do this in Pittsburgh. This means that autonomous vehicles will be on-the-road sooner than expected – probably by 2020.

What should motor vehicle and licensing agencies – which are currently focused on testing of autonomous vehicles do to effectively manage and regulate these vehicles when they hit the road?

In this paper, we discussed the impact of autonomous vehicles on policy, processes, systems and people, and the capabilities

that motor vehicle and licensing agencies need to build to address this impact. In our next few papers, we will explore these new capabilities (like analytics, collaboration and change management) in detail and discuss what motor vehicle and licensing agencies should do to be ready for autonomous vehicles.

References
1. https://www.bcg.com/en-in/expertise/industries/automotive/autonomous-vehicle-adoption-study.aspx
2. https://www.mckinsey.de/files/automotive_revolution_perspective_towards_2030.pdf
3. http://www.ghsa.org/sites/default/files/2017-01/AV%202017%20-%20FINAL.pdf

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