

# FUTURE MOBILITY

## (Connected-Autonomous-Shared-Electric)

Presentation to the South African Road Pavements Forum



Duncan Mason

8-9 May 2018

An initiative of:

1

**Who/What is MCA?**

2

**The Wicked Problems**

3

**The Megashifts**

4

**Opportunities**

5

**AV Testing in SA**

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## Who/What is MCA?

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On 20 June 2017, a meeting was held with officials from GridCars, Sanedi and the CSIR to discuss the way forward with regard to the development of technologies to support the roll-out of Electric, Connected and Autonomous Vehicles in South Africa



**sanedi**

South African National Energy  
Development Institute

**CSIR**

*our future through science*



**GridCars™**



➤ Subsequent to the meeting held at the CSIR on 20 June 2017 and further interactions between key roleplayers the idea was born to establish the **Mobility Centre for Africa**

➤ The Mobility Centre for Africa was officially established as a Non-Profit Company end October 2017



- Platform for testing and deployment of C.A.S.E. Mobility Solutions
- R & D for current and future mobility solutions and standards
- Platform for incubation of start-ups, investments, etc.
- Advocacy for policy and legislative shift
- Educating the public and training on future skills

**Key Focus Areas**

# MCA – The Business Case

Need to avoid disruption to our labour force by retraining for future work

Need to proactively manage the disruptive forces...



Need to develop and localise technology innovations (economic growth)

Need to maintain a globally competitive auto industry

# Case Studies



UKAutodrive

AstaZero, Sweden

American  
Centre for  
Mobility



K-City, South  
Korea



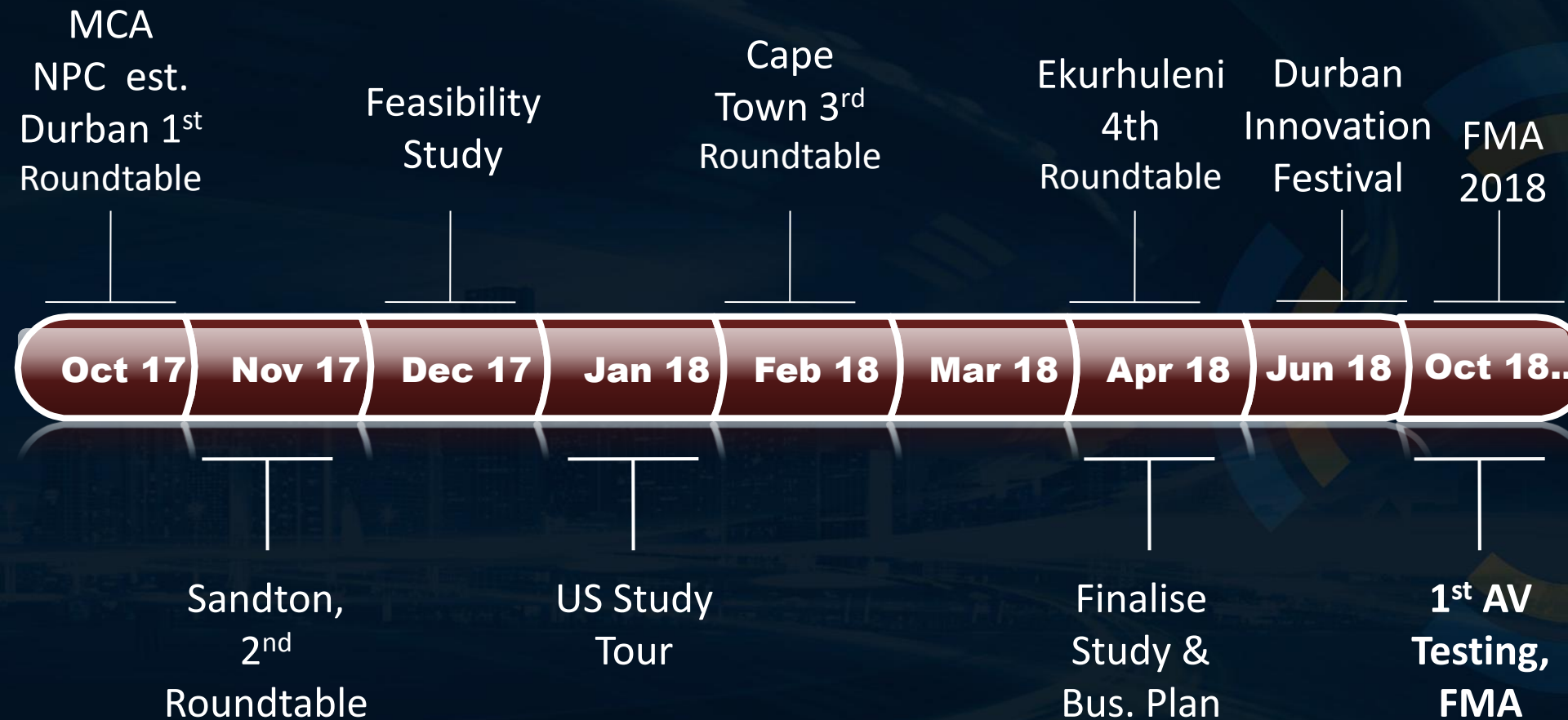
Mobility  
Centre for  
Africa



# Some of the Key Stakeholders Consulted



# Short-term Action Plan



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# Problem Statement

## Crashes



- Over 14,000 deaths in 2016 (RTMC).
- Driver behaviour
- R142bn societal cost – 3% of GDP (CSIR, 2016)

## Congestion



- 9-day stay away p.a. (PWC)
- Productivity
- Drain on economy R60bn for 3 cities (Tom Tom)

## Affordability



- Poor pay up to 40% on income, no subsidy.
- Minimal public transport

## Environment



- 36% air pollution due to cars (eEthekwini).
- Minimal asset utilisation



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The Wicked Problems

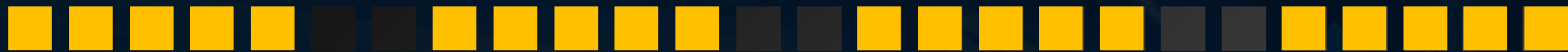
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The Megashifts

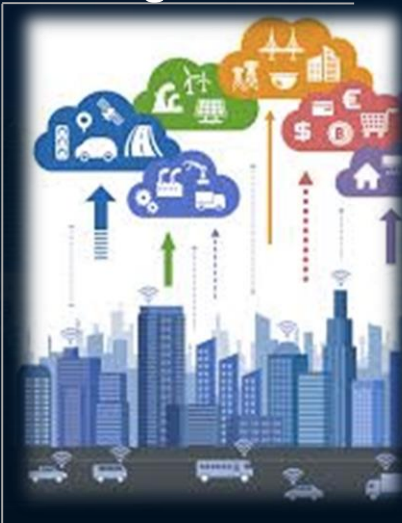
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# Disruptive Forces Shaping Mobility



**Big Data**



**IoT/E**



**Sharing Economy**



**AI**



# Who are the major disruptors?



Invested into Lyft for self drive taxi & Cruise Automation.



Chinese internet company is testing AV's from 3 local auto's.



Announced \$1bn investment in Argo AI. Plans to build AV's & operate ride-hailing service



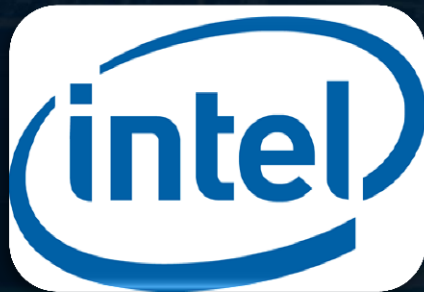
Google (Alphabet) partnered with Lyft & FCA to build a fleet of AV minivans.



Placed an order for 24,000 XC90 Volvo AVs.



Elon Musk with Hyperloop One and TESLA is leading the evolution of mobility and EV & AV technology development

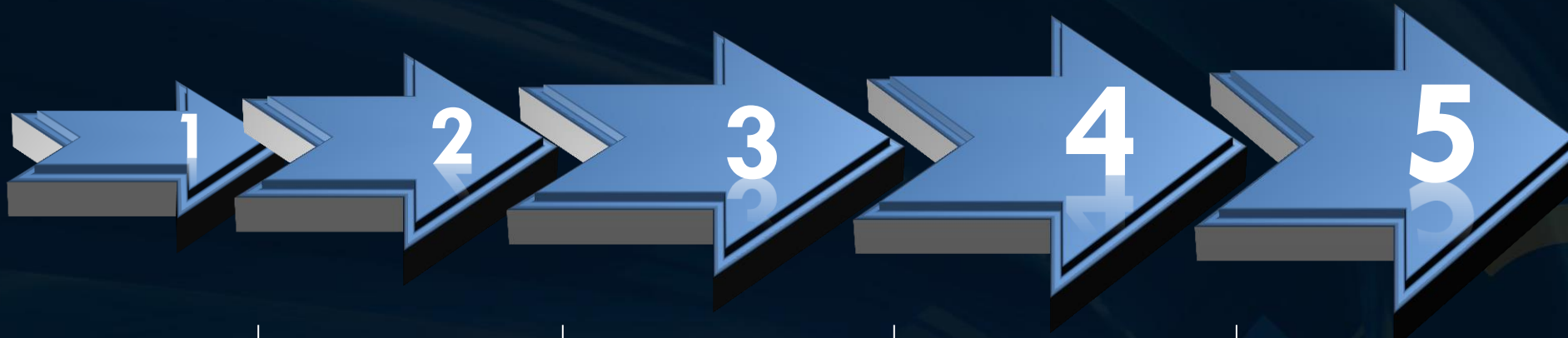


Bought Israeli telco, Mobileye that makes cameras and sensors for AV's.



# Levels of Automation

(SAE International, 2014)



★ Zero Automation

★ At least one ADAS functionality, e.g. ESC, Park Assist

★ Full ADAS  
★ V2V and V2I connected,  
★ Limited self driving like self-parking.

★ Full self driving, but human can take full control.  
★ Not on public roads

★ Full automation  
★ No human controls except giving instructions



2017



2017



2017 - 2021



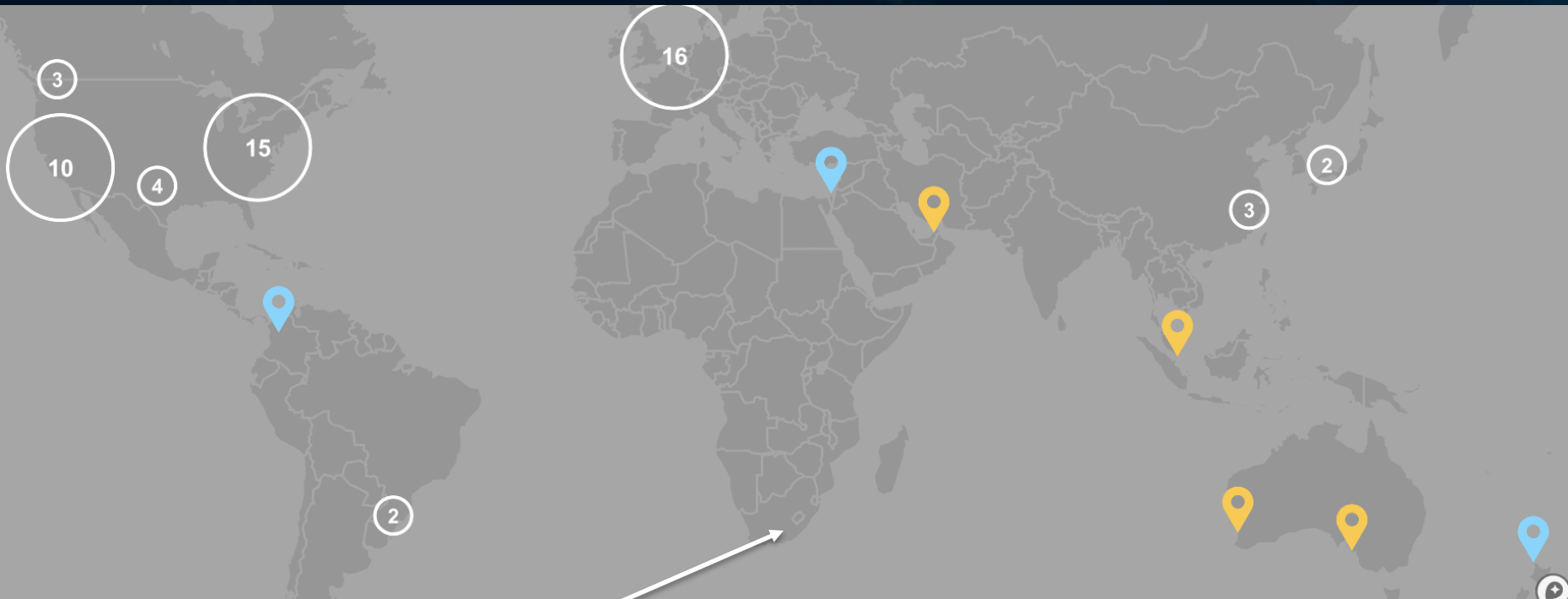
2017 - 2025

No steering wheel, no pedals

2017 - 2030



# 53 Global Cities are Testing AV's, none in Africa



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# A Collaboration Platform for the Industry

**Government &  
Public Entities**



**Industry**

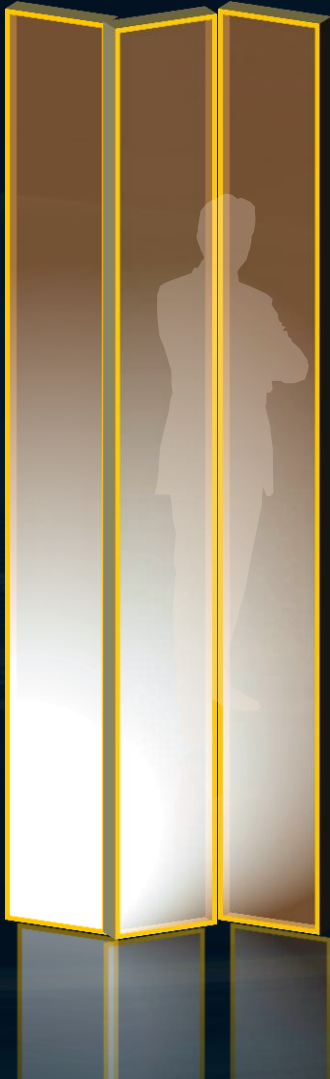


**Knowledge  
Partners**



# Opportunities for RSA

- 1 Government:** Conducive Policy & Legislative Environment and Green Sustainable Transport
- 2 Cities:** Build and retrofit the right infrastructure to accommodate CASE Mobility (RPF Focus area) 
- 3 Industry:** Disrupt yourself or wait to be disrupted out of business
- 4 Academia:** Research, test, evolve and produce fit-for-purpose workforce
- 5 Research Institutions:** Grow knowledge economy and support innovations.





# Opportunities for the South African Road Pavements Forum



Dynamic Charging



Intelligent / Interactive Pavements



V2I Technology



**RPF**

# Opportunities for RSA

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## First Mover of Autonomous Vehicle Testing in Africa:

### Michigan's Mobility Assets

Michigan ranks **No. 1** in the nation in connected and automated vehicle projects (49)

**1st** in mobility-related patents (data processing- vehicles, navigation, relative location), with **2,583** patents awarded during the past five years in Michigan, followed by California with **1,468** patents issued

**5,000** connected and automated vehicles on the road by 2018 in Ann Arbor's Connected Vehicle Test Environment



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**AV Testing in SA**



# Proposed AV Testing in SA...

- The MCA is in an advanced stage of planning the launch of the 1<sup>st</sup> Autonomous Vehicle in South Africa / Africa during Transport Month – October 2018
- The vehicle proposed is the NAVYA or EZ10 People Mover Bus





# Proposed AV Testing in SA...

- An initial cost proposal has been received from the developers of the NAVYA and EZ10 EasyMile busses and the MCA is in the process of preparing a business case and operational model for the project as funding need to be secured
- Various Cities and Institutions have indicated their interest in the project as it would be the ideal opportunity for initial testing and research & development
- **The fact is, AV's are coming, we do have the opportunity to lead the research and development pertaining to implementation of AV's in SA, actively managing the technology or wait for it to be let loose on us.....**

# The machines are not coming...

## They are here!

### So what's the end game?



OR



### Thank you....