

# Autonomous vehicle technology: impacts, benefits, and applicability for developing countries

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# History: Arrival of combustion engine...



At first: The horses were just replaced by an engine

# ... resulted in profound changes



Where we live  
How we work  
Whole new industries  
Accidents  
Pollution  
...



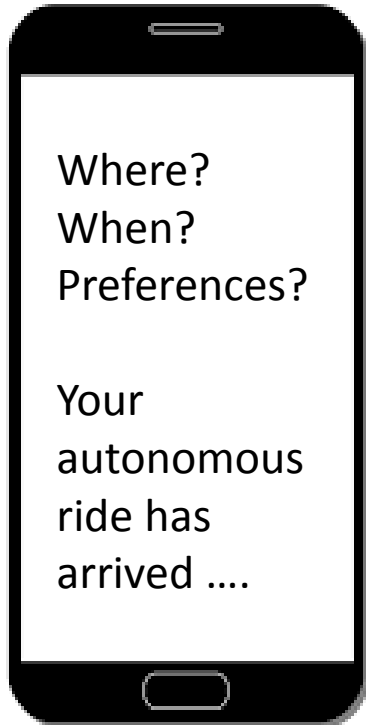
# Today: Trying to replace human driver



This again will result in profound changes.

We don't really know what all these changes will be, but we need to prepare.

# How will autonomous vehicle transportation look like?



Ubiquitous  
Convenient  
Efficient  
Equitable  
**Near zero fatalities**

... if we are willing to design it!



# Enabling technologies today



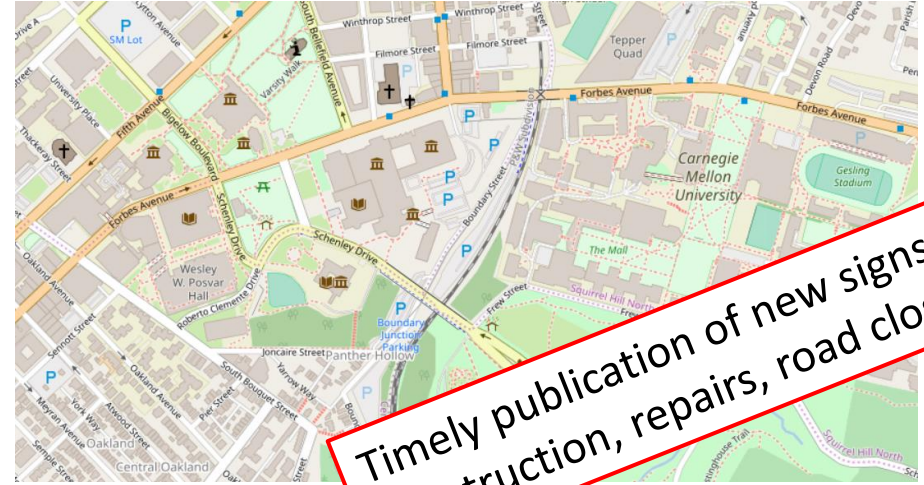
Add sensors to infrastructure

Sensors



All locations need to be connected

Communication



Digital map

Timely publication of new signs, construction, repairs, road closure...



Infrastructure

Consistent and clear design and signage

# Develop and use ecosystem of applications

Example:  RoadBotics

## Road Crack Detection using computer vision and machine learning



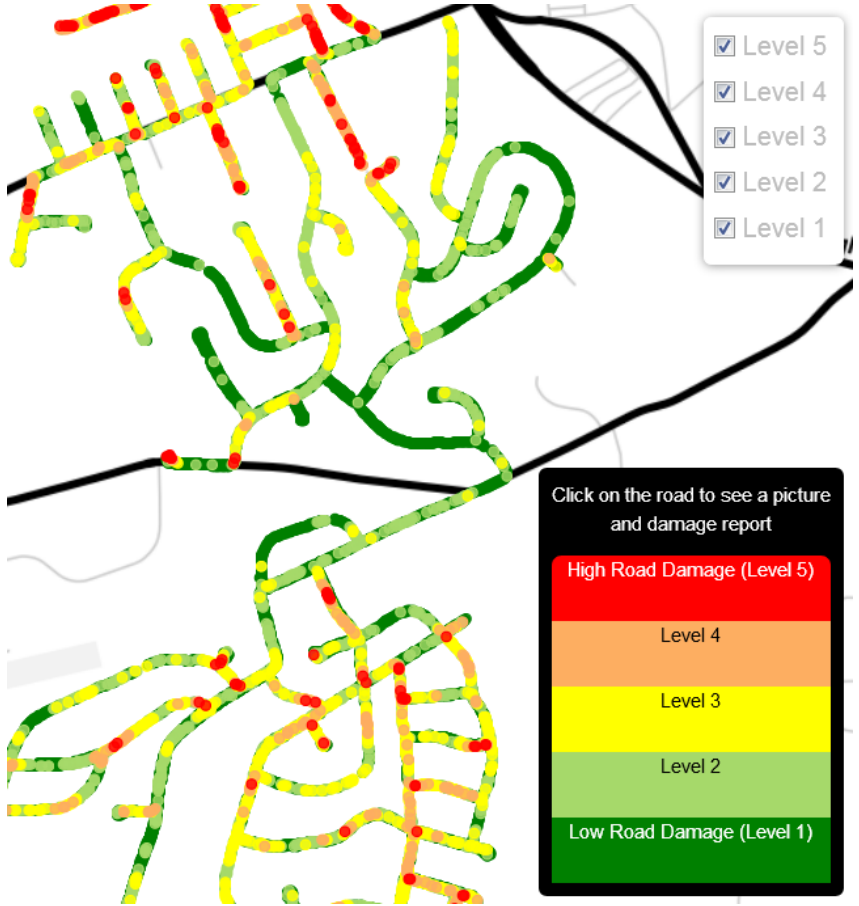
Collection of GPS tagged images with smartphones.



Road segmentation

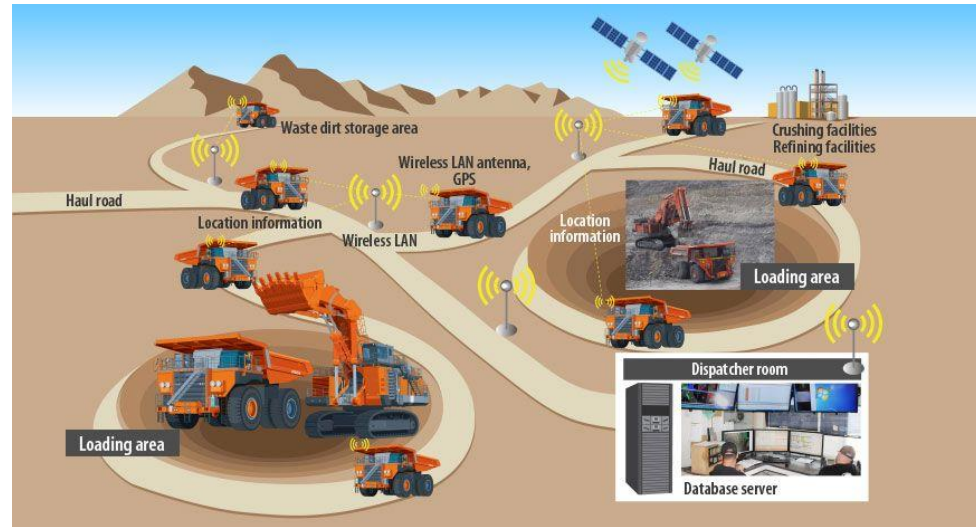


Detection of cracks



Result: Map of road damage.

# Experiment in constraint or controlled areas



**Airport**

**Factories**

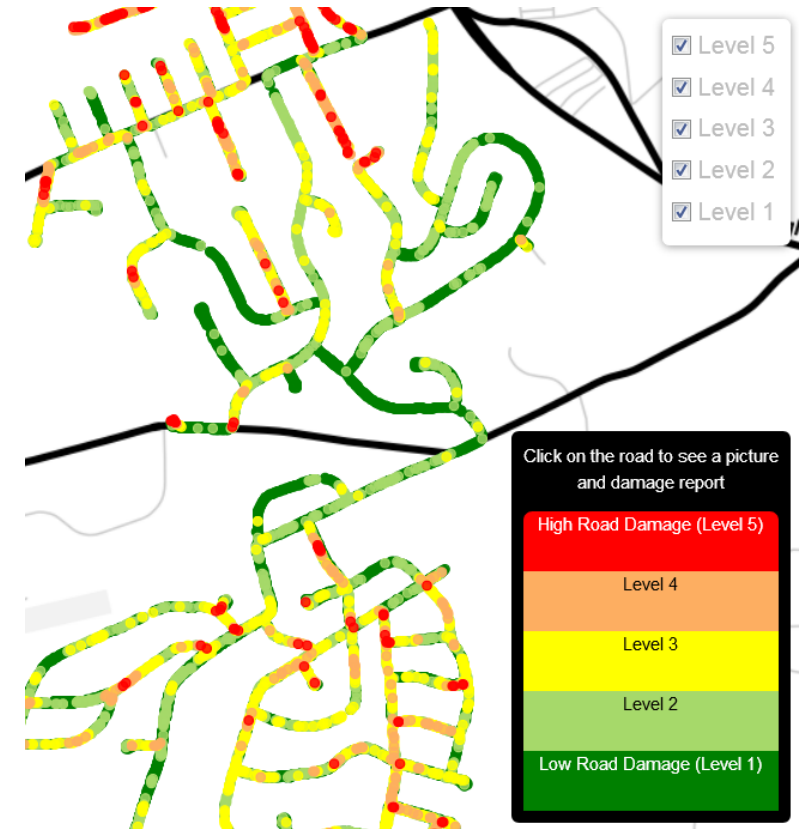
**City center**

**Mines**

**Dedicated lanes**







# Thank you!