Smart and connected communities

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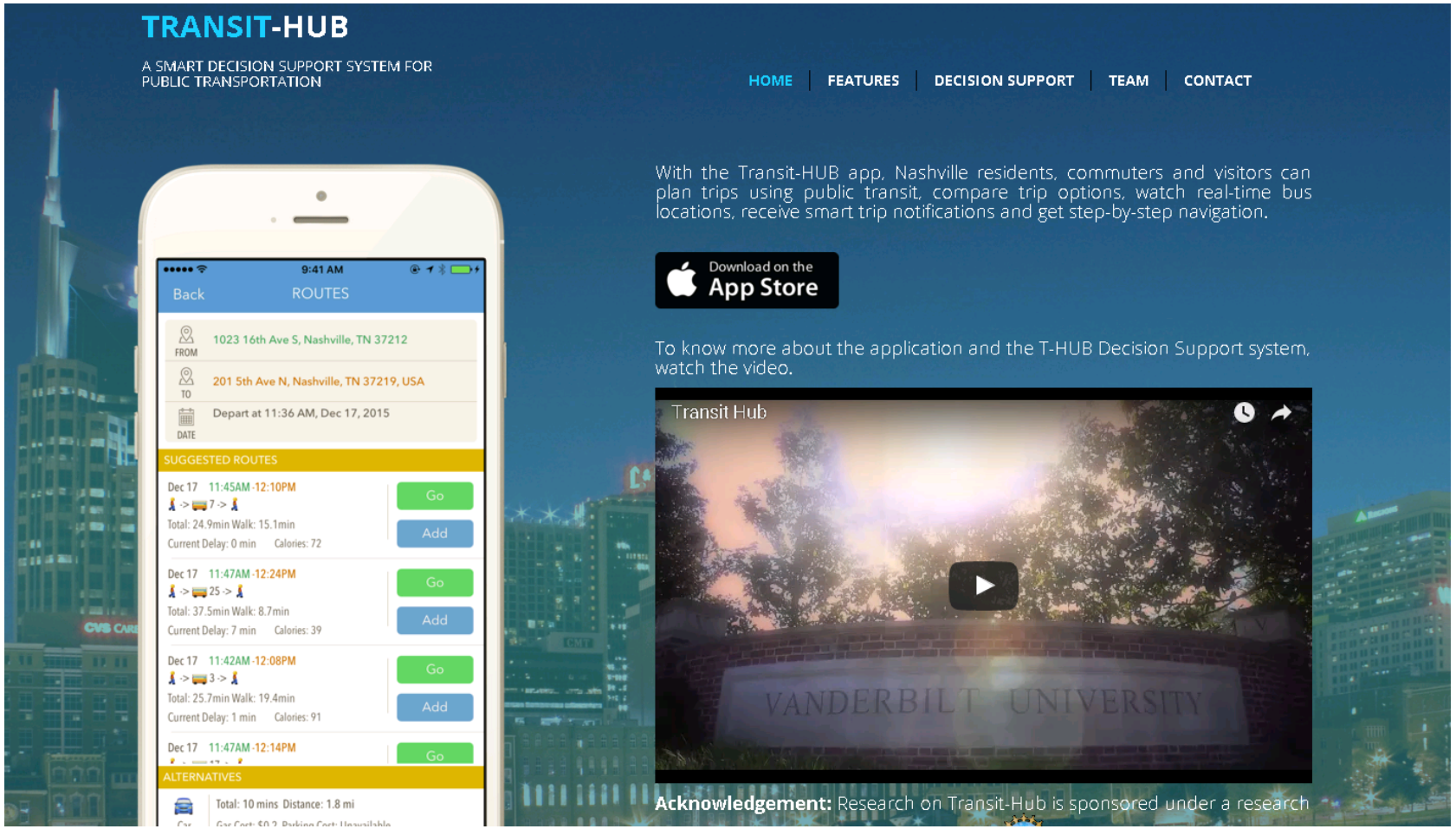
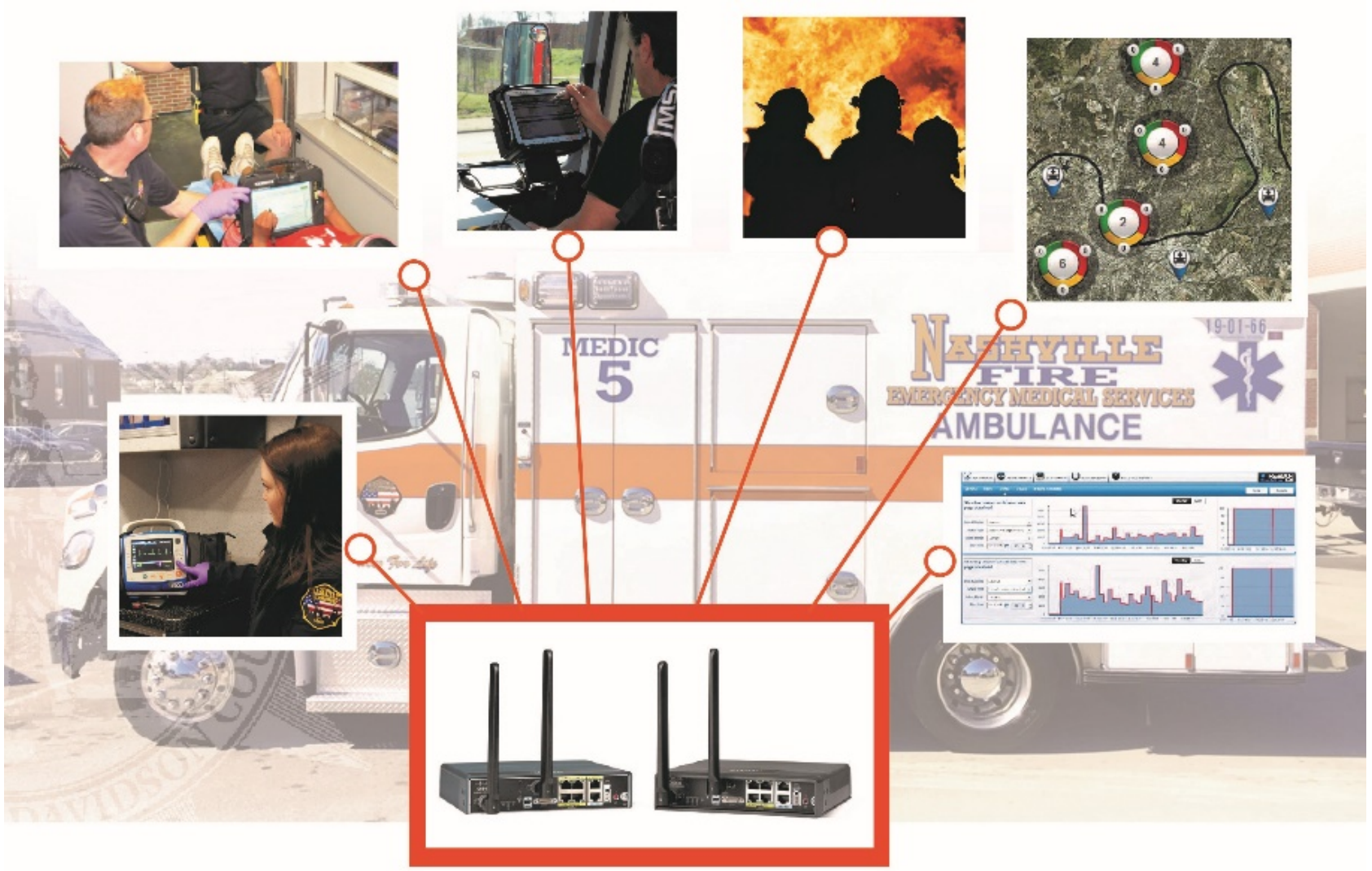
What is a smart city

- A city where connected technology permeates daily operations, enabling
  - Large scale and frequent sensing of a number of indicator variables, e.g. traffic speed, energy usage across buildings
  - Big Data analytics is used for optimizing both city operations and residents interactions with the cities
  - Decision support systems are enabled and employed to allow the residents and city officials to take optimal decisions.

Example 1: Smarter Public Transit Operations



Example 2: Smart Emergency Response System



Why now? What has changed?

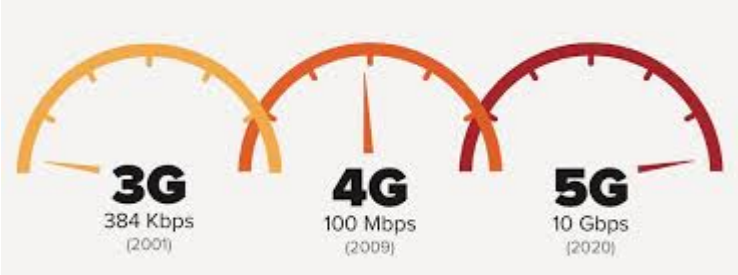
Machine Learning is changing the “old economy”

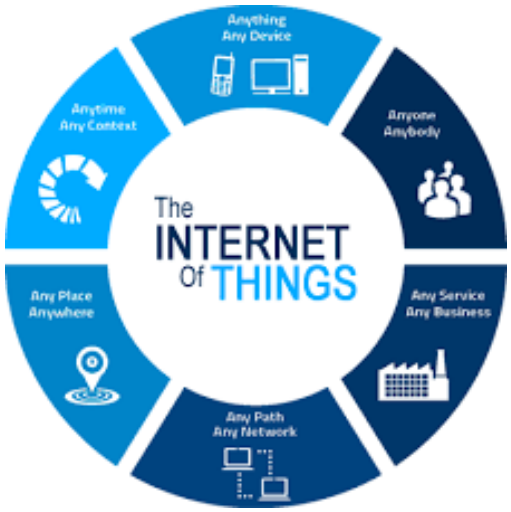
“Apple’s Project Titan could reshape the auto world”

Prototypes are already on the road in California

Every 2 days a new city, each week a new country!

Network connectivity is enabling tighter integration





Accessible Computing

All smart devices have ability to compute and collaborate.

Social network is connecting residents

What is smart city?

- Smart city =
  - Social Network + Accessible Computing + Network connectivity + Machine Learning and Data Analytics

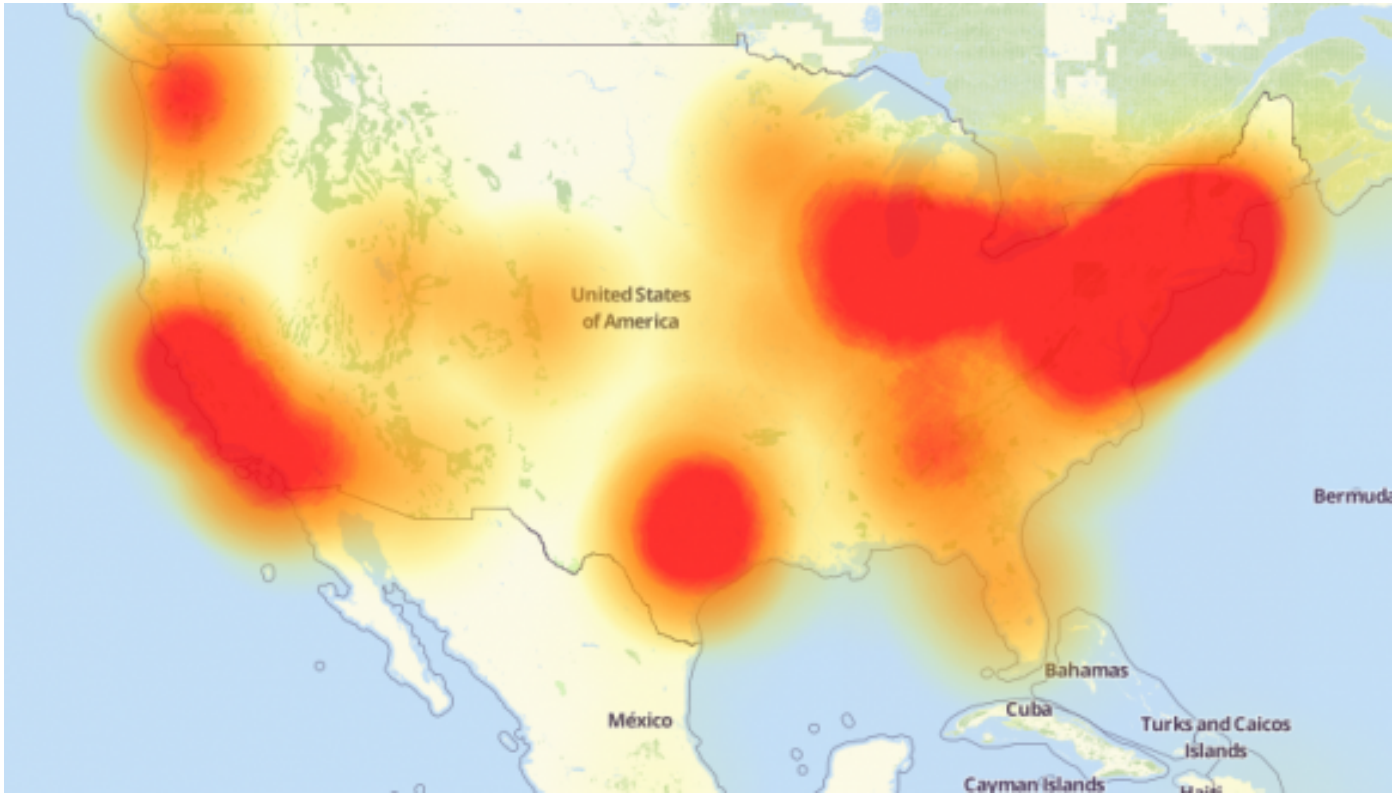
What are the challenges?

Optimal distribution of Information

- The biggest challenge is to **connect the information** from sensors to the analytics, which then has to be **disseminated** to residents in real-time.
- This has to be done smartly otherwise even the 5G network will not be enough.
  - For example, the size of all raw video images in a large city can easily be **more than 1 TB** per second.

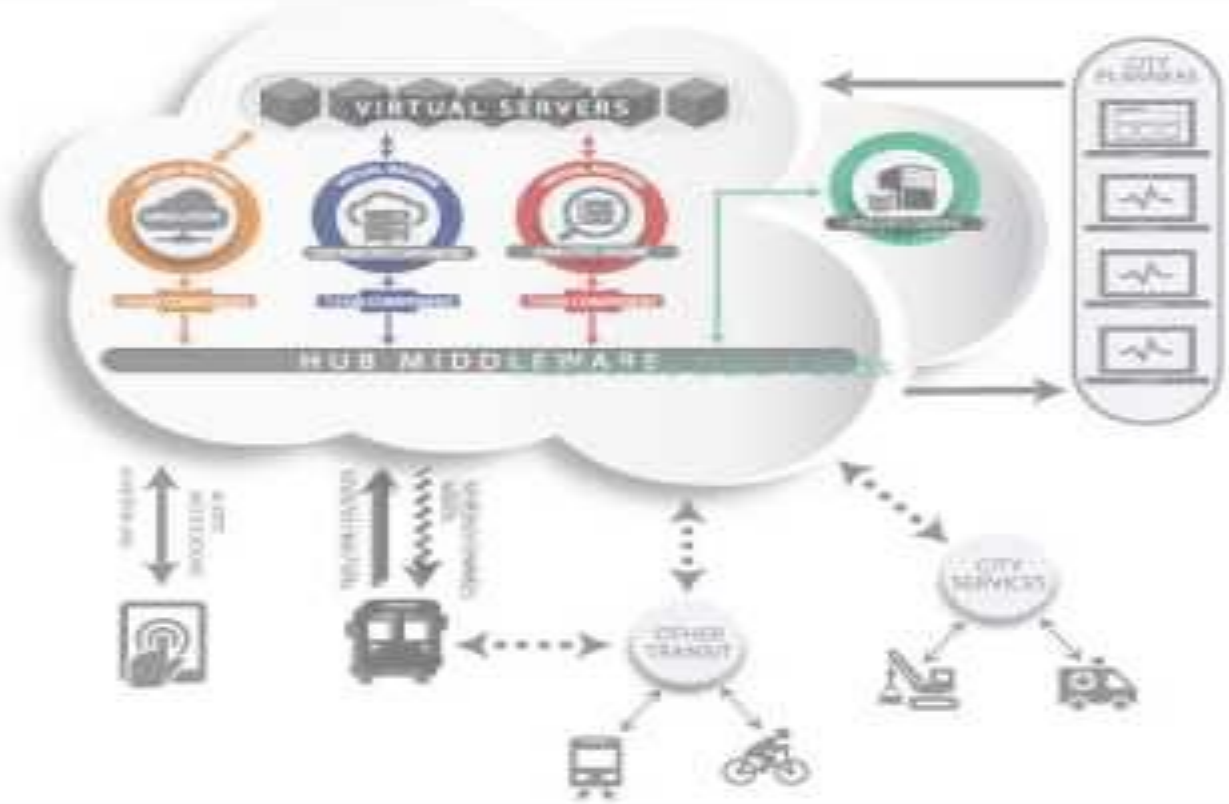
Better Decision Support Algorithms

Better Security of Devices



A depiction of the outages caused by attacks on Dyn, an Internet infrastructure company. Source: Downdetector.com.

Transit-hub



Questions?