

***FORCES*: Foundations Of Resilient CybEr-physical Systems**

FORCES Testbeds: ground mobility

Alexandre Bayen, UC Berkeley

Kick-Off Meeting

April 12, 2013 | Washington, DC

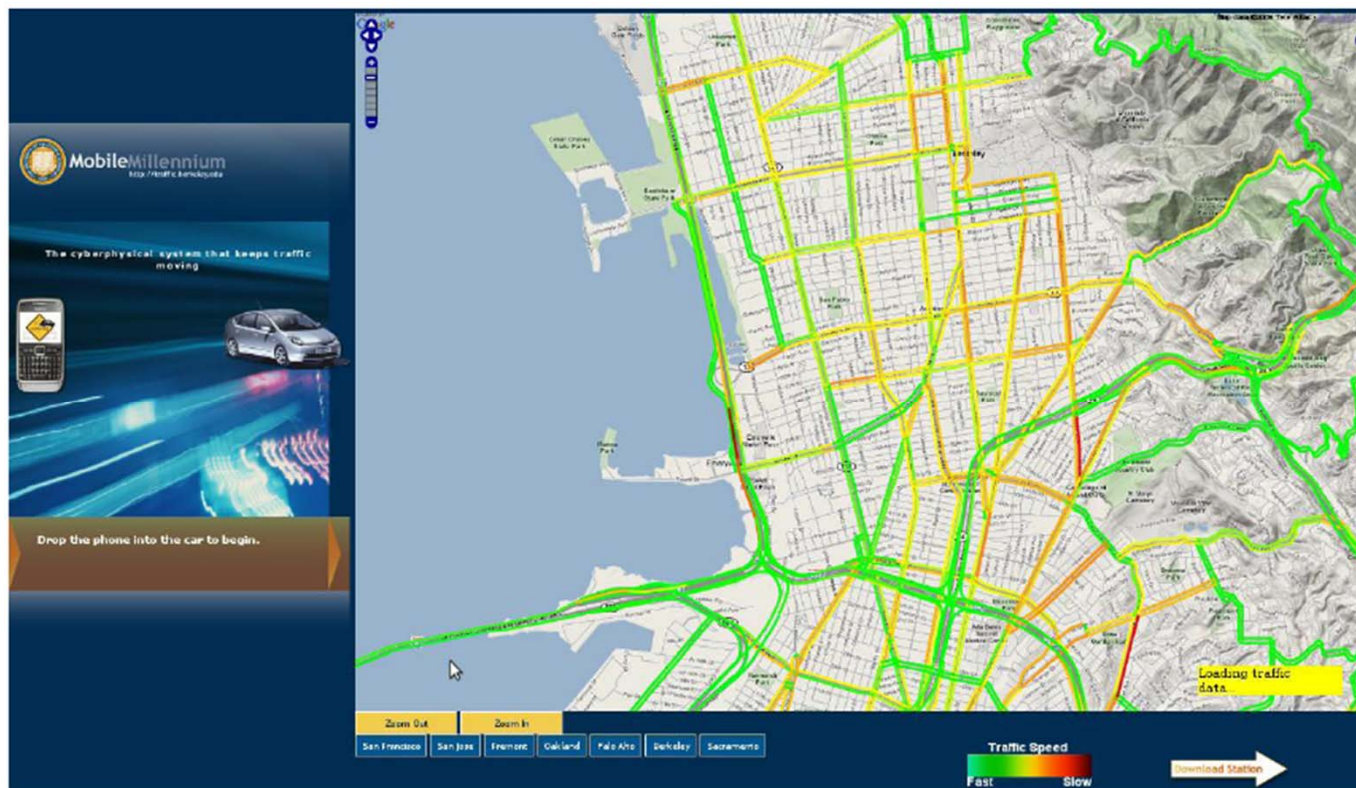




Mobile Millennium

An early instantiation of participatory sensing

- Funded by California DOT (DRI), US DOT, Nokia, NAVTEQ, NSF
- Initially, 5000 downloads of the FIRST Nokia traffic app worldwide
- Today: gathers about 60 million data points / day from dozen of sources (smartphones, taxis, fleets, static sensors, public feeds)
- Provides real-time nowcast (soon forecast) of highway and arterial traffic, provide routing and data fusion tools.

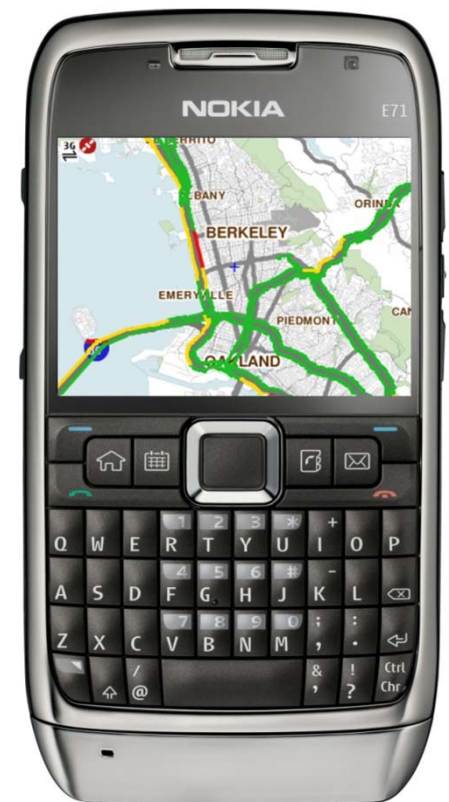
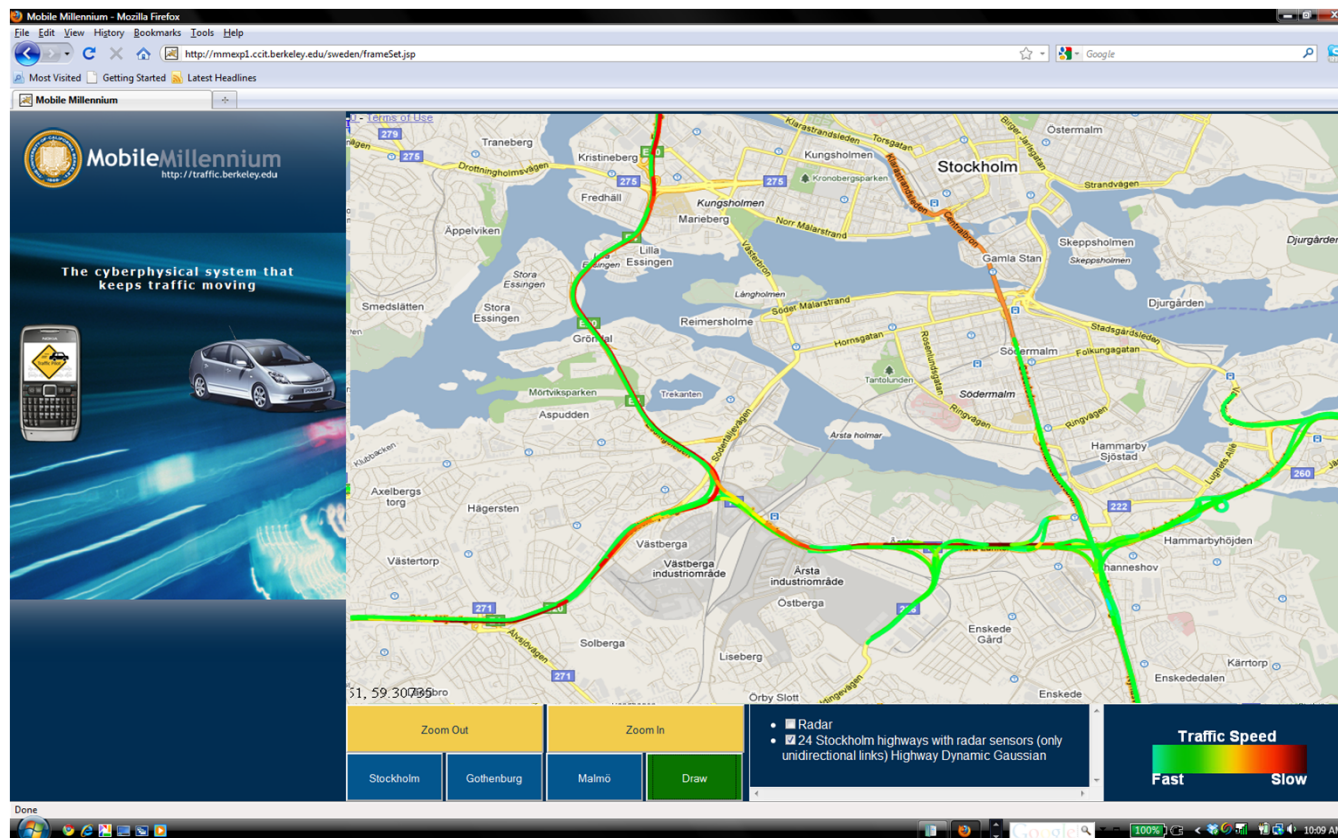




Mobile Millennium

An early instantiation of participatory sensing

- Expanded to other cities, Stockholm (with IBM Watson)
- Collaboration with IBM Singapore (Sebastien Blandin)
- Routing in uncertain networks
- Provides integration platform for any mobile data stream



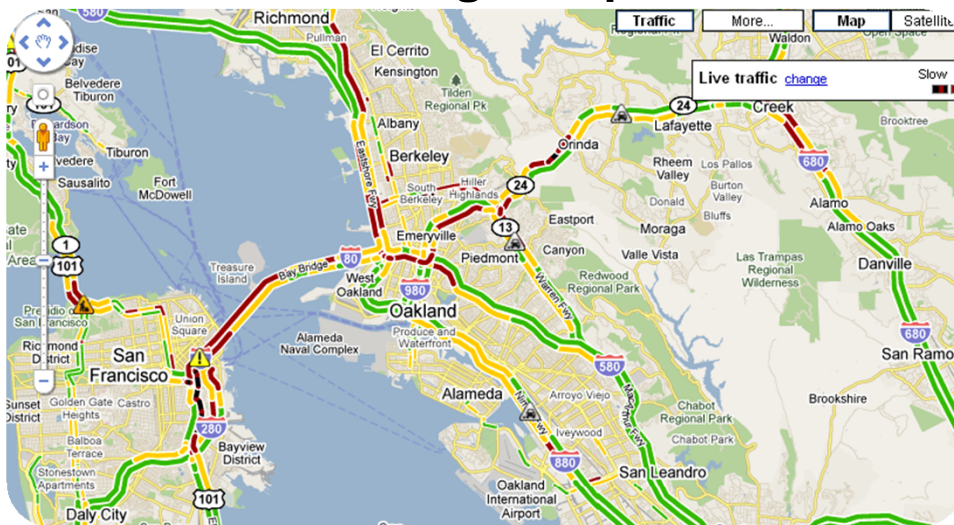


Google Maps vs. model driven estimation

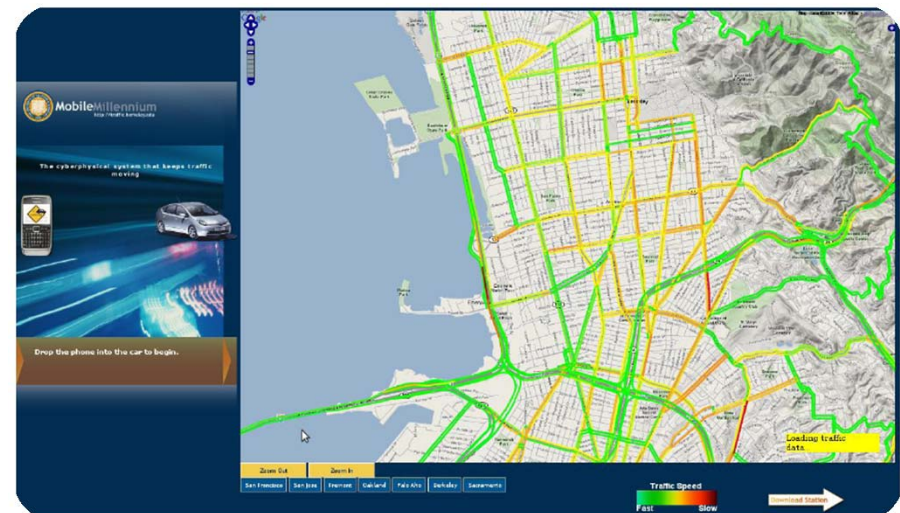
Friday, March 20th, 2009

- 1:30pm (Friday afternoon congestion)
- Acceleration: 1 frame = 30 seconds of physical time
- Movies are synchronized

Google Maps

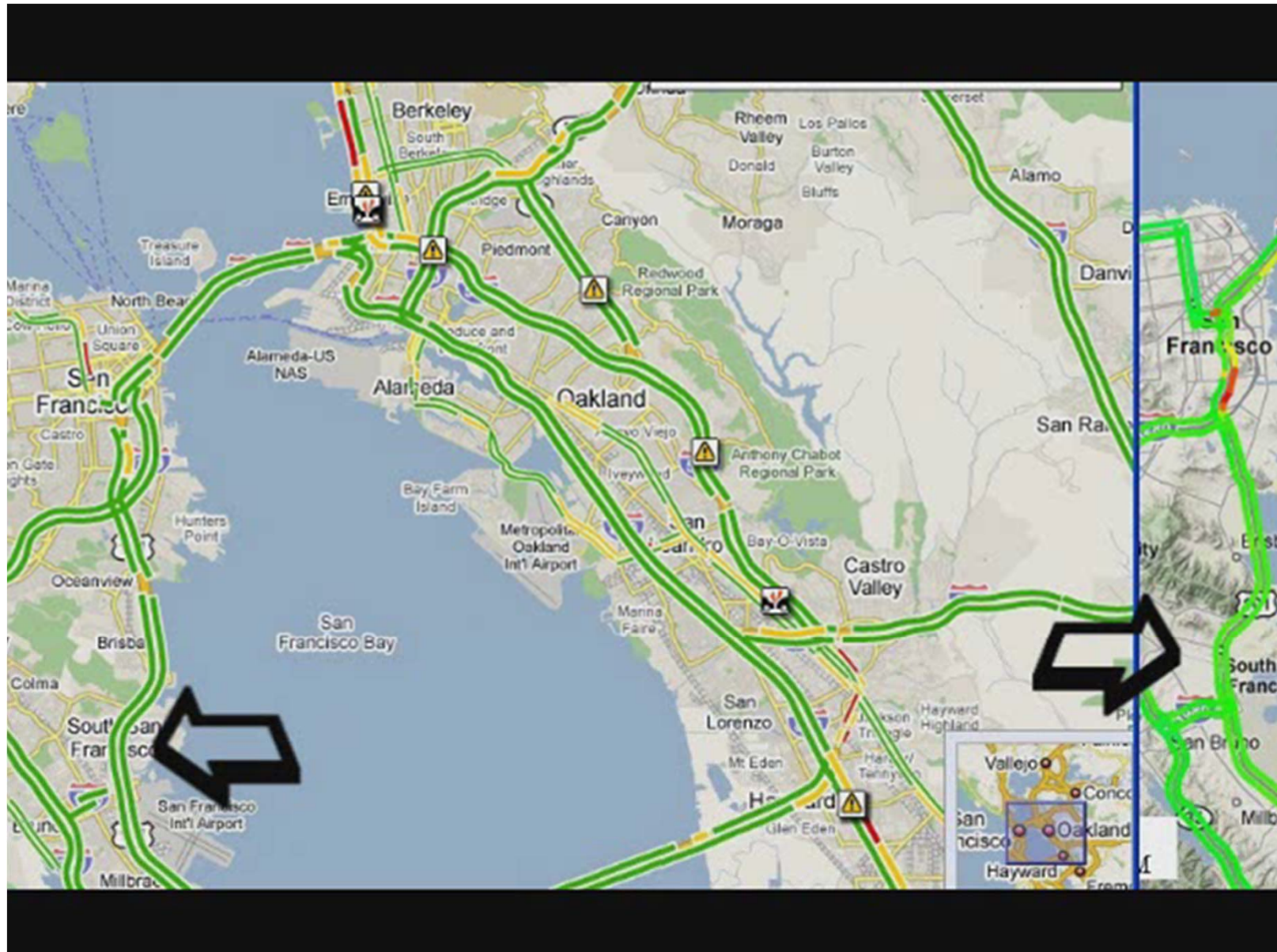


Mobile Millennium



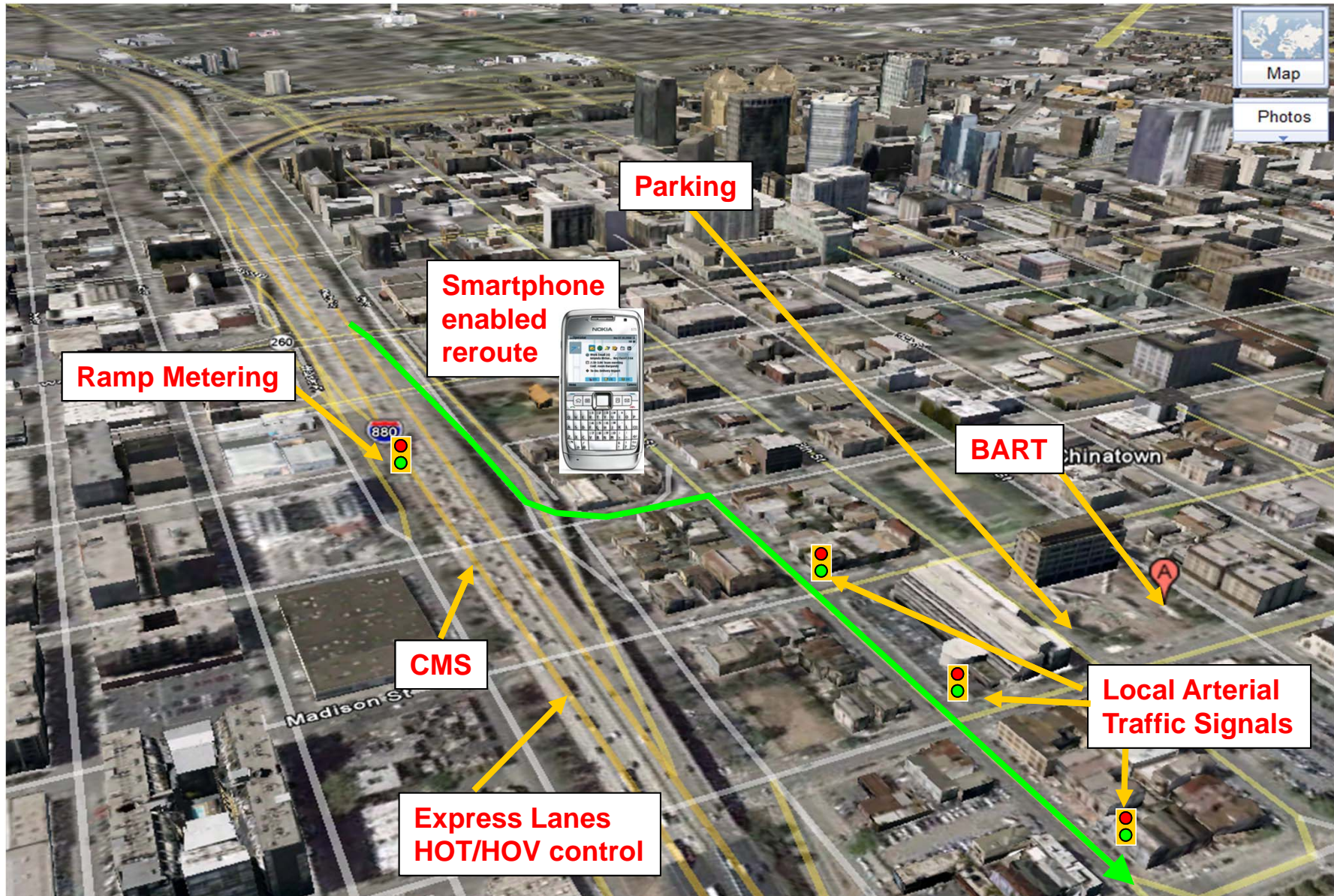


Google Maps vs. model driven estimation



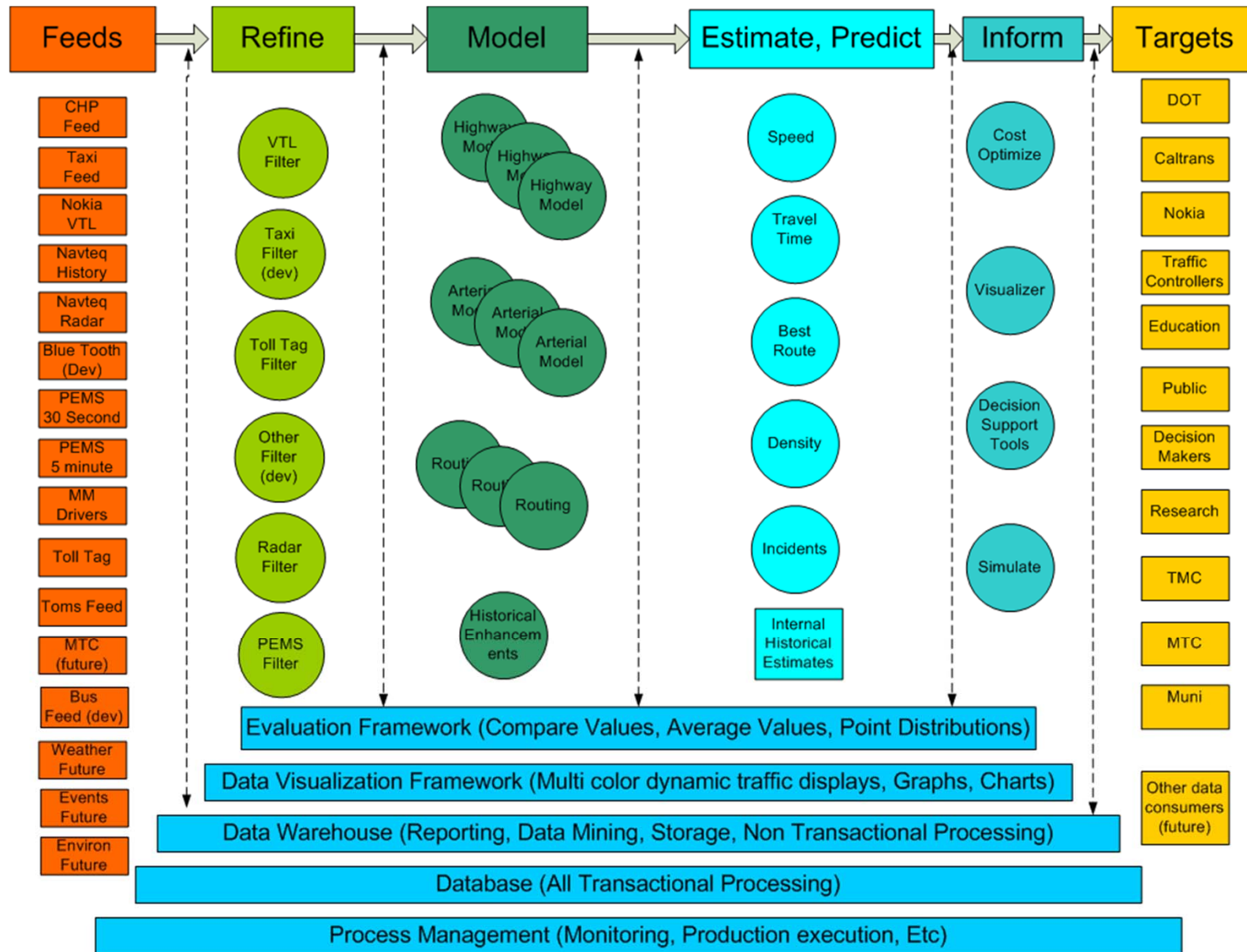


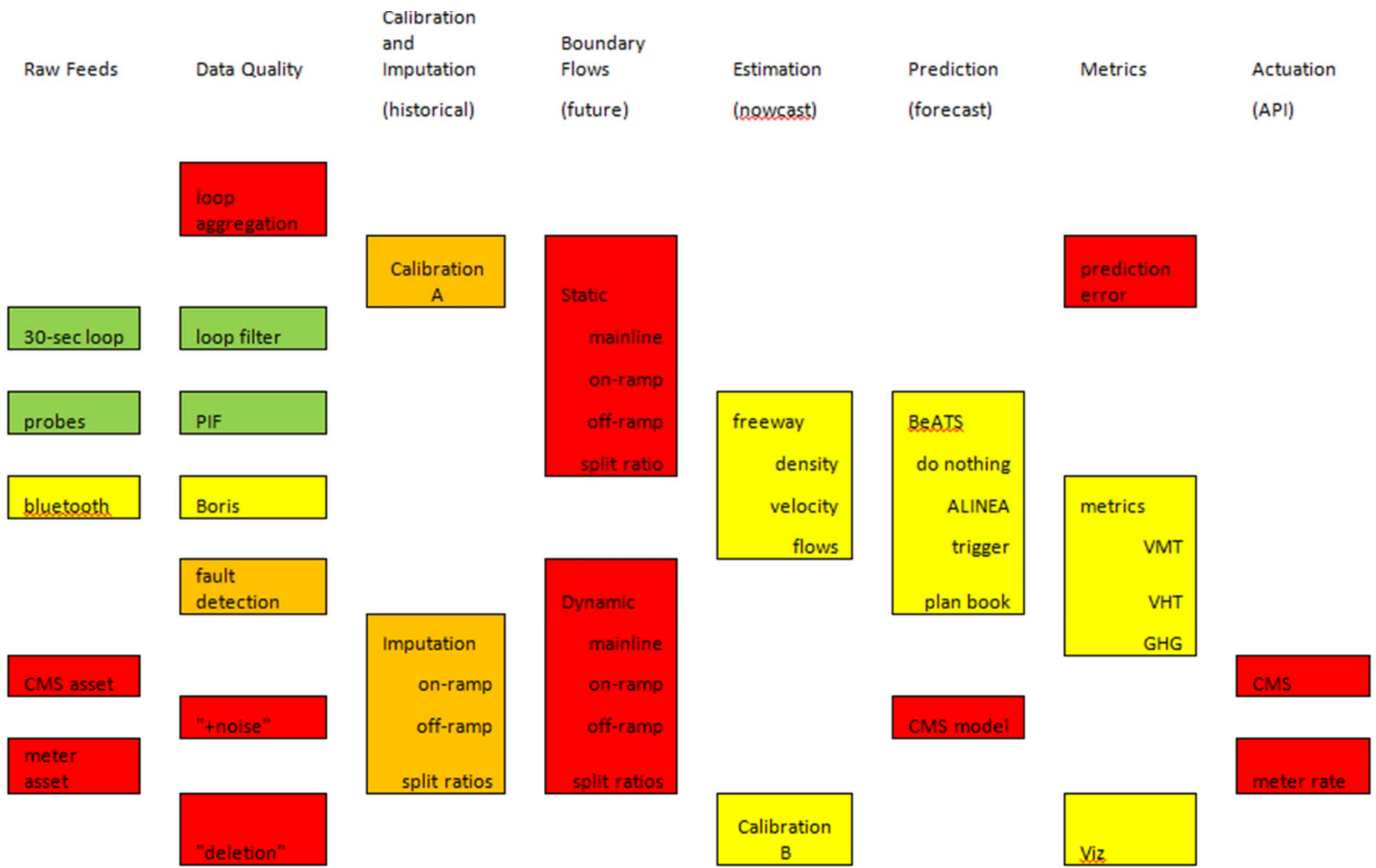
The next big thing in California



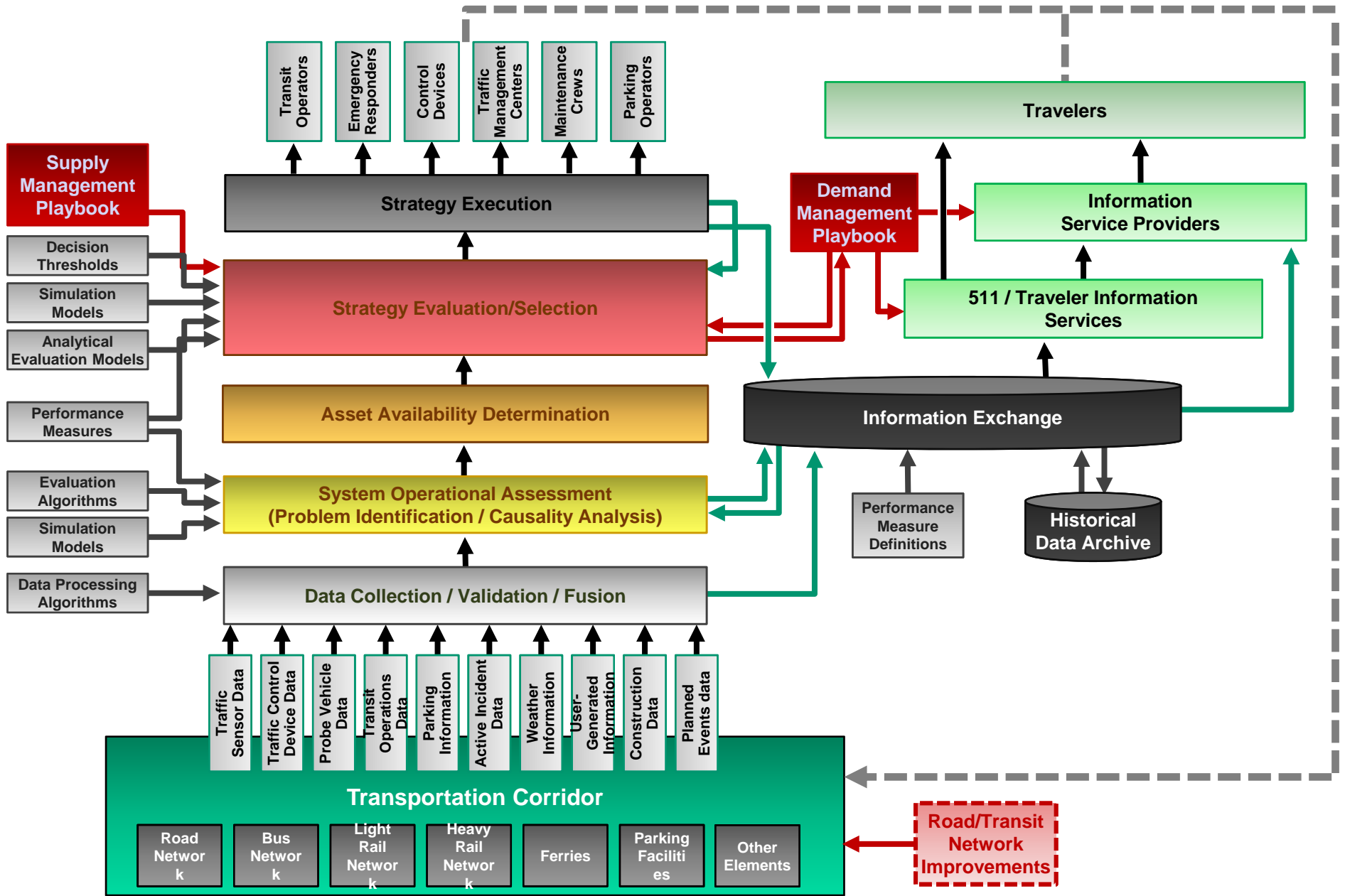


Data flow in the *Mobile Millennium* system



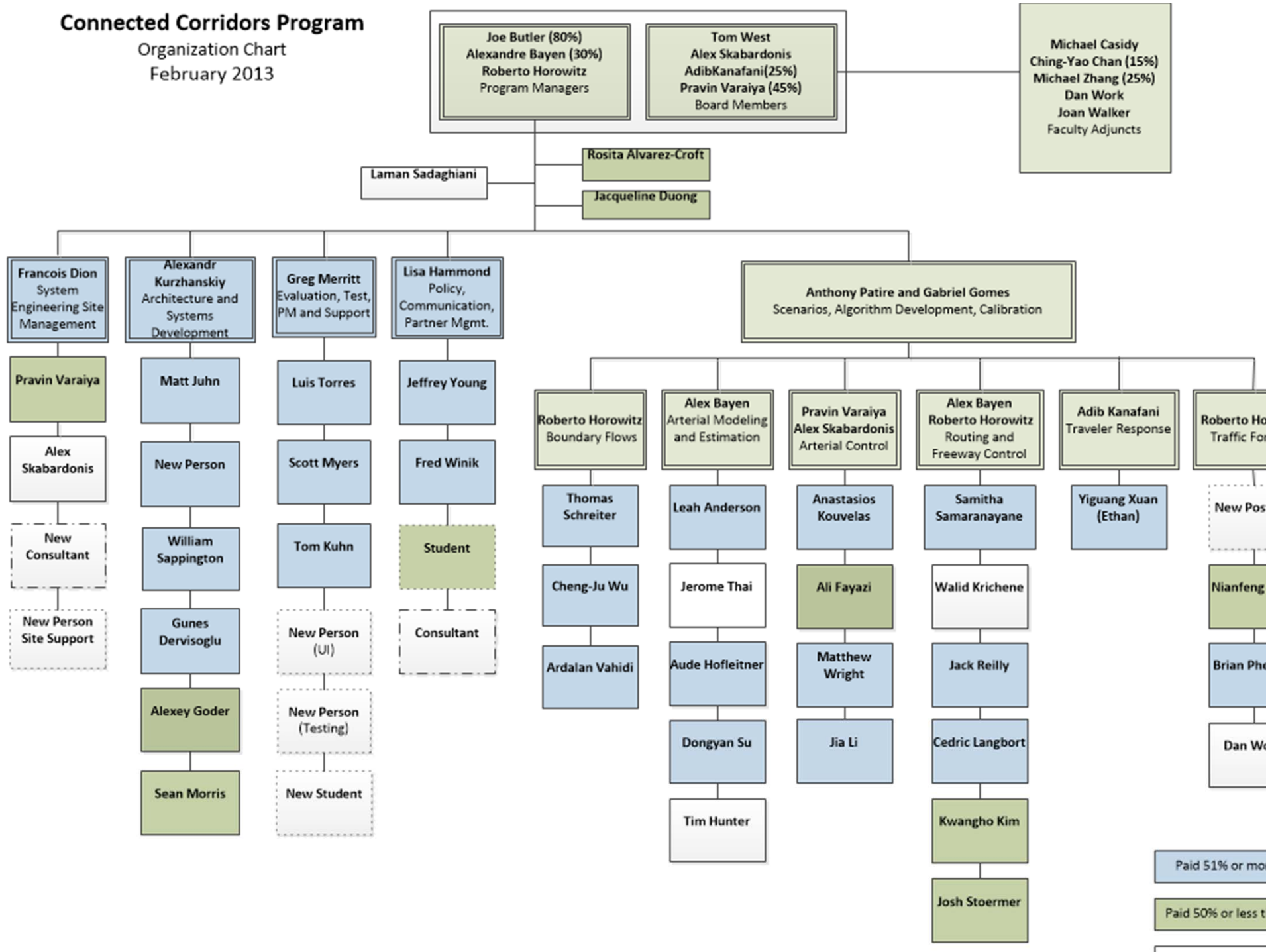


System Functions



Connected Corridors Program

Organization Chart
February 2013





Building a decision support system (2015)

