

Connected Corridors Program MTC Briefing

**Collaborating to improve mobility and
sustainability in California's
transportation corridors**



Mobility Management – A few variables

- ITS, ICM, ATM, ATDM.....
- Delay, Reliability, Safety, Air Quality, Cost, Equity.....
- Caltrans, Districts, CMA, AQB, Local Jurisdictions....
- Pedestrians, Bicycles, Autos, Trucks, Buses, Light Rail ...
- Freeways, arterials, local roads, tracks.....
- Multiple languages, cultures, driving habits, laws

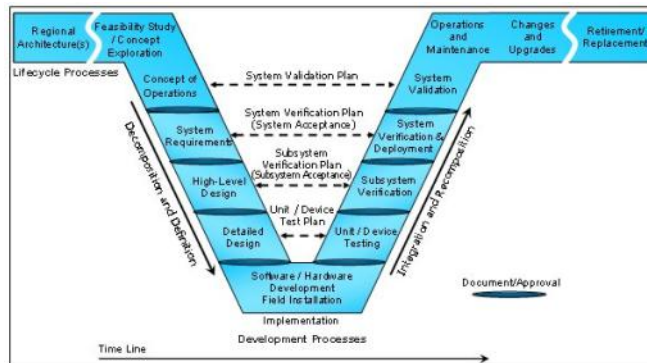
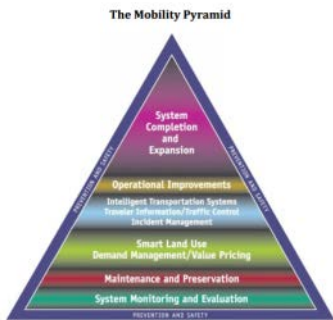
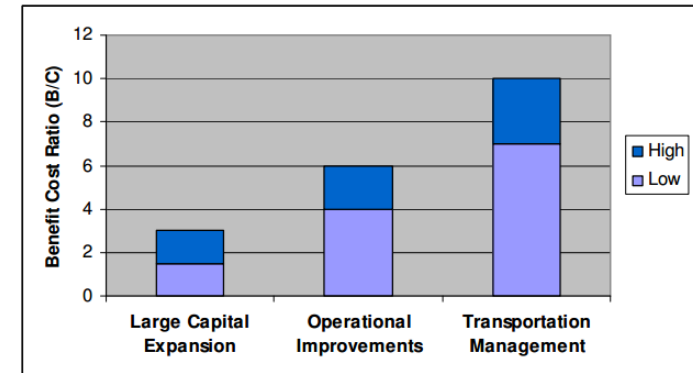


Exhibit 6-17: Benefit-Cost Ratios for Typical Projects



New Technologies, New Possibilities



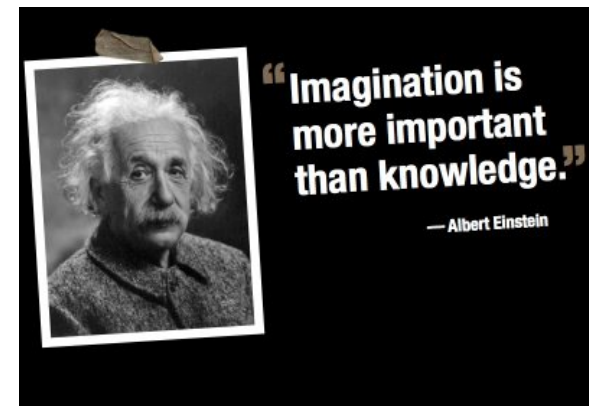
- The intelligent Connected World

- The Social Internet: A connected world where travelers participate in real time demand management and crowd sourcing of information
- Big Data and Cloud Computing: New data sources, new sensors, new fusion methods. Measurement and real time management where never before possible
- Smart Devices: Automobiles and Infrastructure capable of making decisions, improving safety and reducing environmental impacts



- Imagine:

- A mobility management center facilitating active cooperation between travelers, vehicles, infrastructure and organizations
- We could reach 30% of the users of a corridor , 50% of the vehicles, and most of the infrastructure management in real time.
- 40% of the people and organizations who use a corridor helped plan out the commute each day in concert with the corridor managers

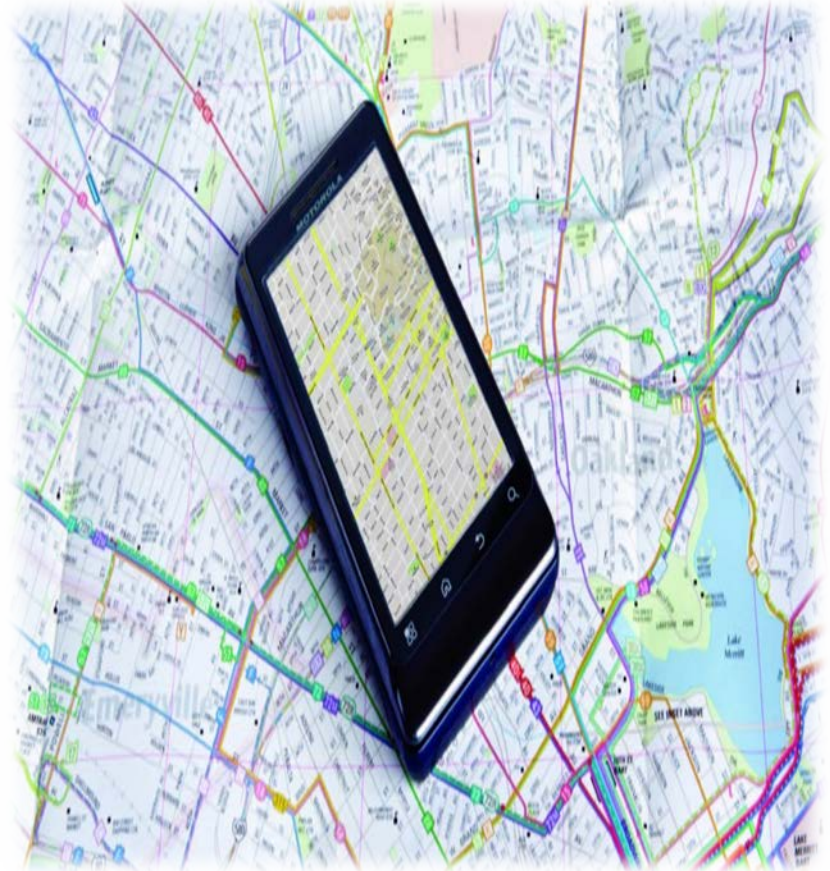




California Connected Corridors

Vehicles, Information & People (CC-VIP) Pilot

- Enable existing transportation infrastructure and vehicles to work together in a highly coordinated manner
- Deliver improved corridor performance (safety and mobility)
- Improve accountability
- Evolve Caltrans to Real-Time operations and management
- Enhance regional , local and private sector partnerships





Corridor Management

- It is possible to manage:
Supply, Demand and Incident/Event Management

- What's Needed is

- Real Time Data
- Coordinated Real Time Decision Support Systems
- Communications with Infrastructure, People and Vehicles

- Supply Management – Non Major Construction
 - Ramp Metering
 - Lane Management
 - Shoulder Usage
 - Speed Harmonization
 - Signal Timing Optimization
 - Signal Plan Coordination
 - Bus Prioritization
 - Transit Capacity
 - Cooperative driving (V to V)
 - Arterial Ramp Coordination
 - Parking Management
- Demand Management – Value Pricing (Tolling), Incentives, Information, Education, Accessibility
 - Mode Shift
 - Rerouting
 - Time Shift
 - Stay Home
- Incident/Event Management – Safer Automobiles, Improved Design, Better Integration
 - Reduce Accidents
 - Reduce Severity of Accidents
 - Better incident/event response



Overall deliverables for PATH/UC

- System Engineering Documents for Ca Corridor Management Strategies
 - Encompassing 10 Year Plan combined with implementation specific plans
 - Reviewed and accepted – Outreach and integration required
 - Recommended new technologies – Probes, Fusion, Crowd Sourcing
 - Policy items – Recommended new laws, skill sets, orgs and MOUs
 - Corridor level performance metrics
- A real time decision support system
 - Corridor level
 - Data fusion, estimation, prediction, control, exploration
 - Interfaces with California TMCs
 - Demand, supply and incident management
 - Micro, meso and macro simulation
- One or more pilot studies
 - In conjunction with Caltrans, local agencies, industry
 - UC/PATH provides vision, legitimacy, preproduction systems, analysis
 - UC/PATH partners for other aspects – Planning, coordination, communication and implementation



UC/PATH Goals for this year

- Mature Organization
- Concept of Operations – 10 Year and first pilot
- Overall Understanding of Ca Transportation landscape
- Research Agendas Fully Supporting Deliverables
- Working Software Platform with Demo capability
- Communications strategy including web site
- Contractual items and funding under control
- Sites and organizations selected for field tests

- Overall building an organization that:
 - Engenders respect
 - Is able to deliver results in a efficient manner
 - Is ready to begin field testing



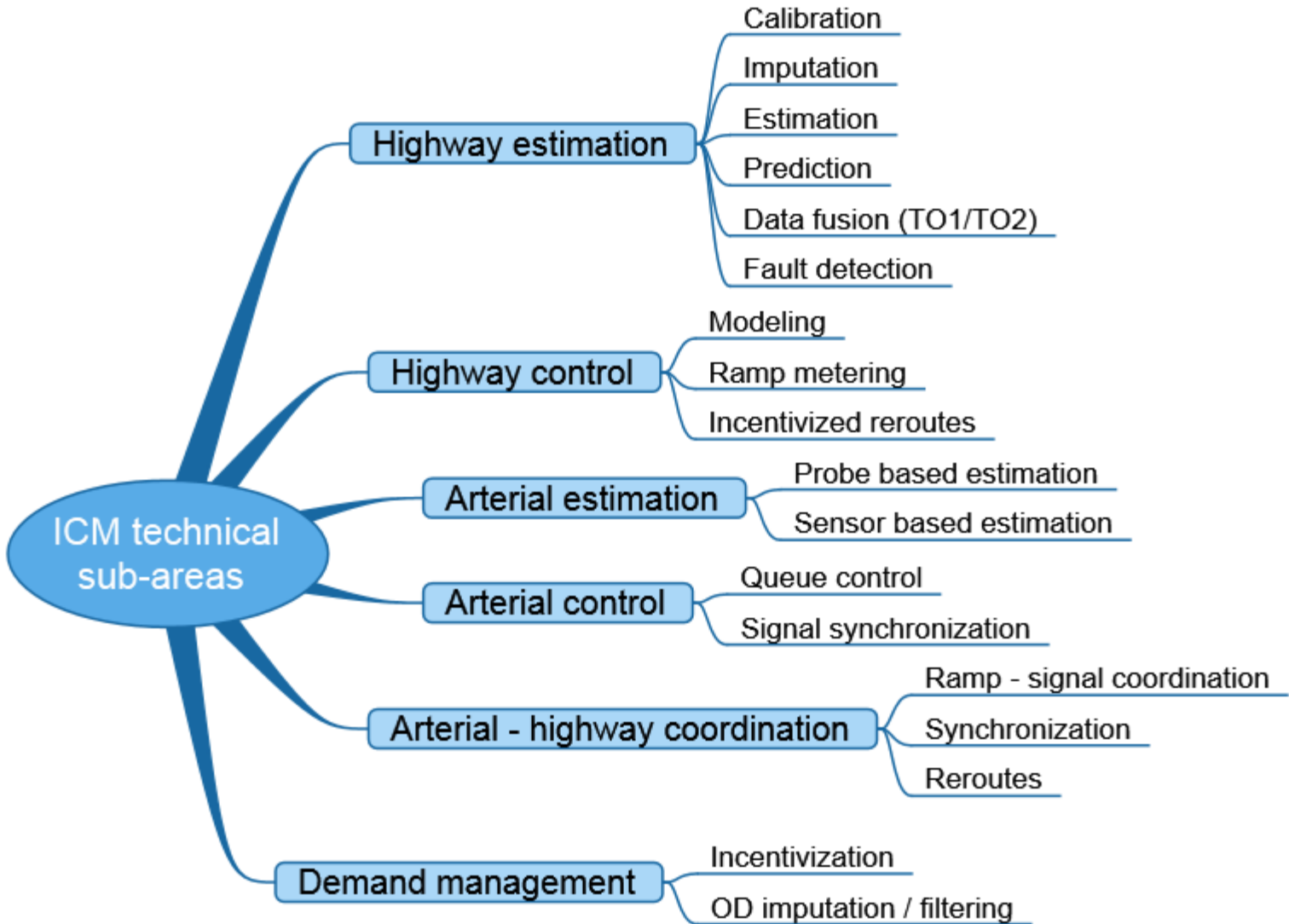
Current organization of teams

Connected Corridors effort has been organized around clusters

- **Clusters have grown from “in residence” expertise**
- **Additional topics which are not represented yet are currently being recruited (mostly internally)**
- **Development effort is organically growing from groups in the following areas of expertise:**
 - **Highway modeling / estimation and control**
 - **Arterial modeling and estimation**
- **Pilot plan aims at leapfrogging initiatives currently ongoing around the world**
 - **The Australia highway traffic control pilot**
 - **Incentivization experiments in the Neatherlands**
- **Pilot aims at extending technologies and approaches beyond classical use of infrastructure (in particular through crowd sourcing, social networks and smartphones).**

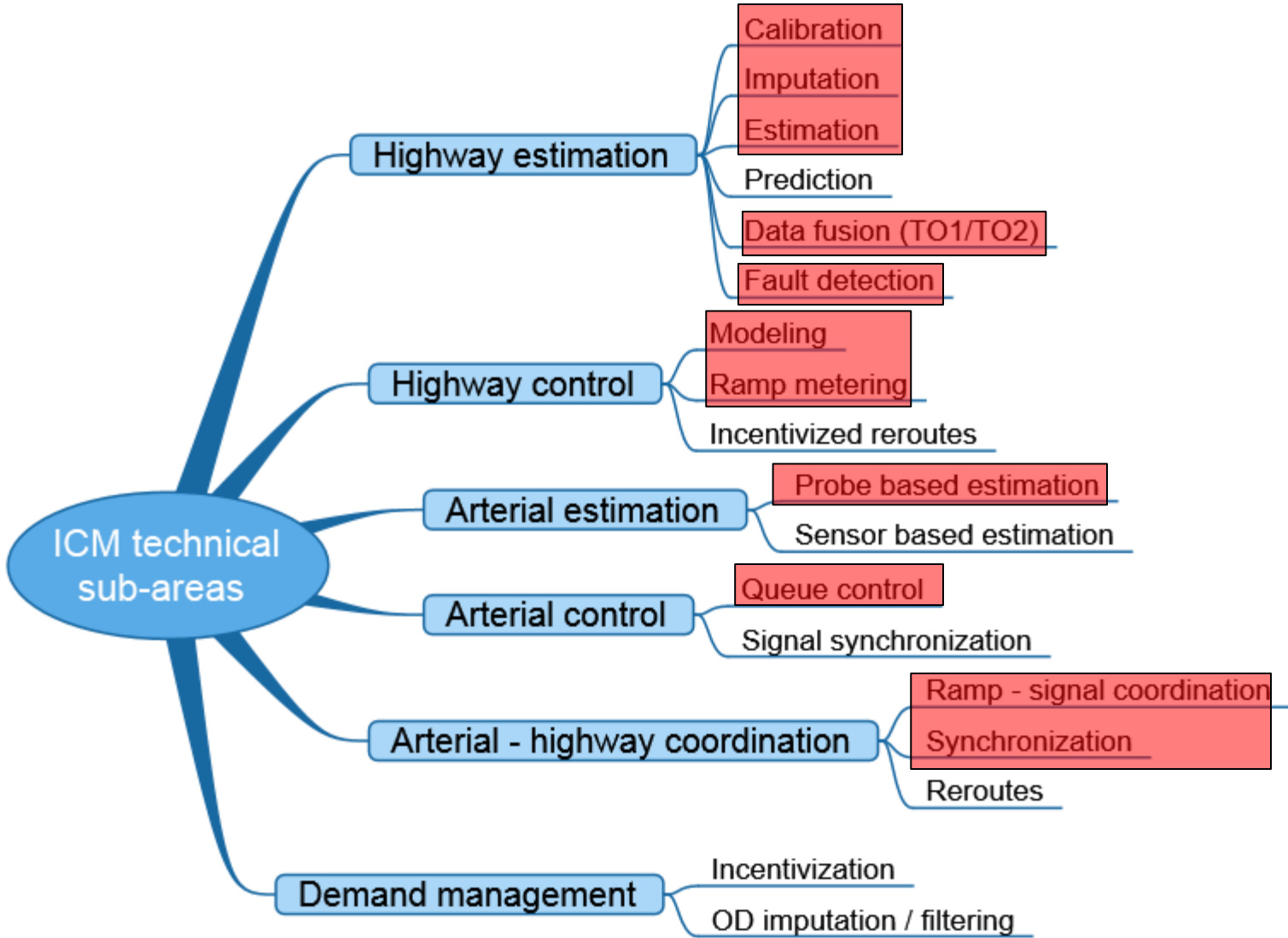


Current organization of teams



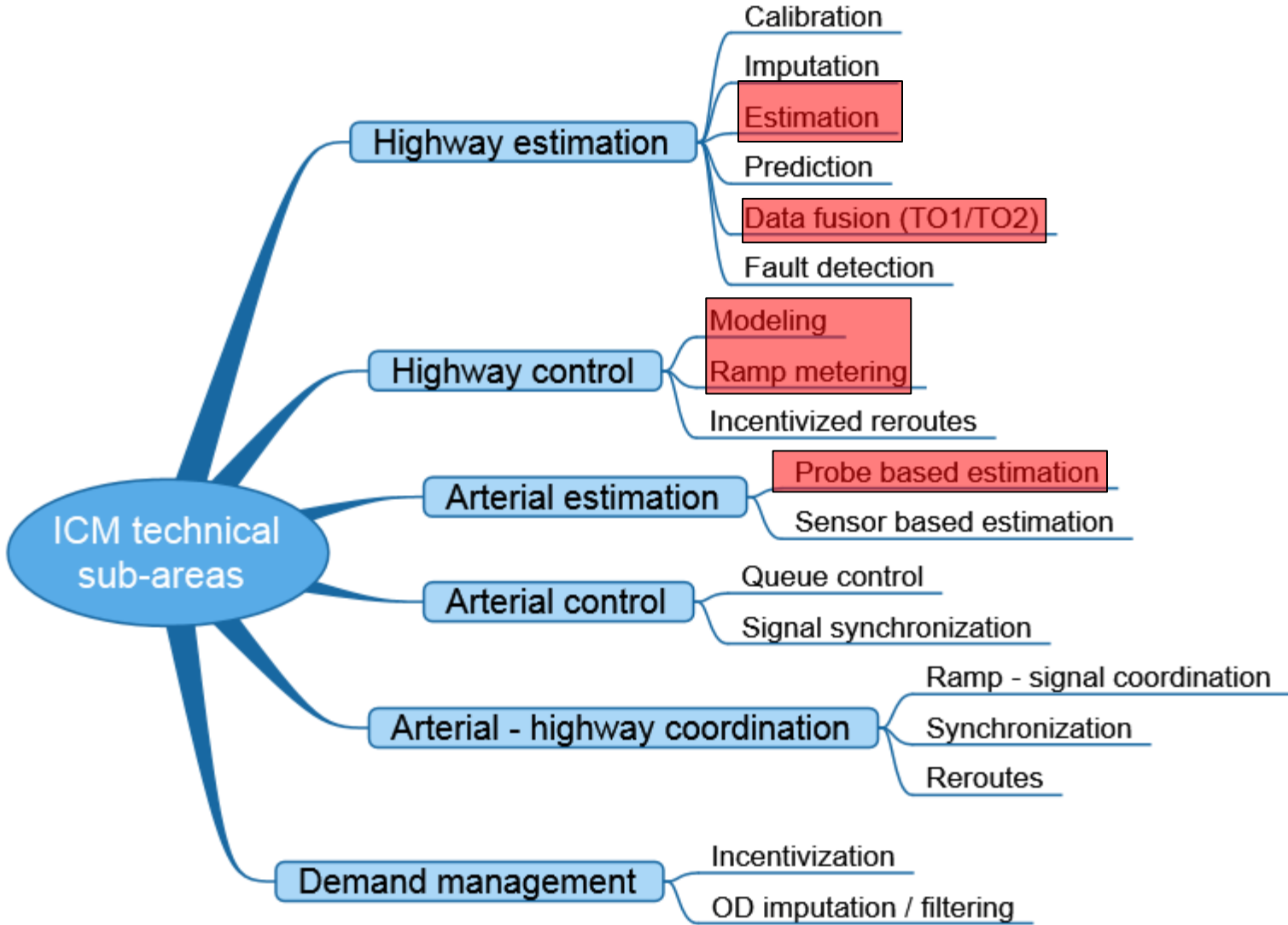


Maturity of the science (incl. simulations)



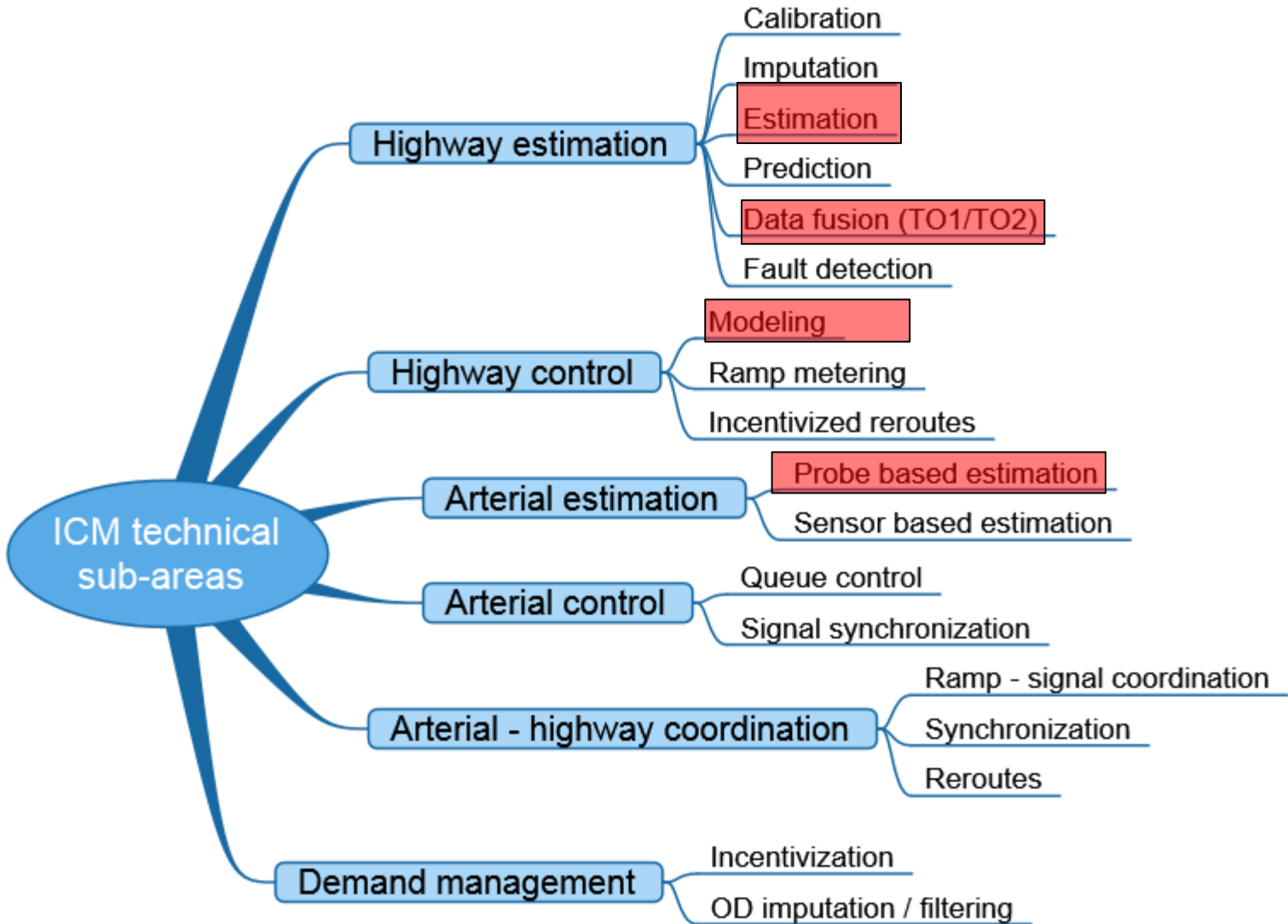


Maturity of production system implementation



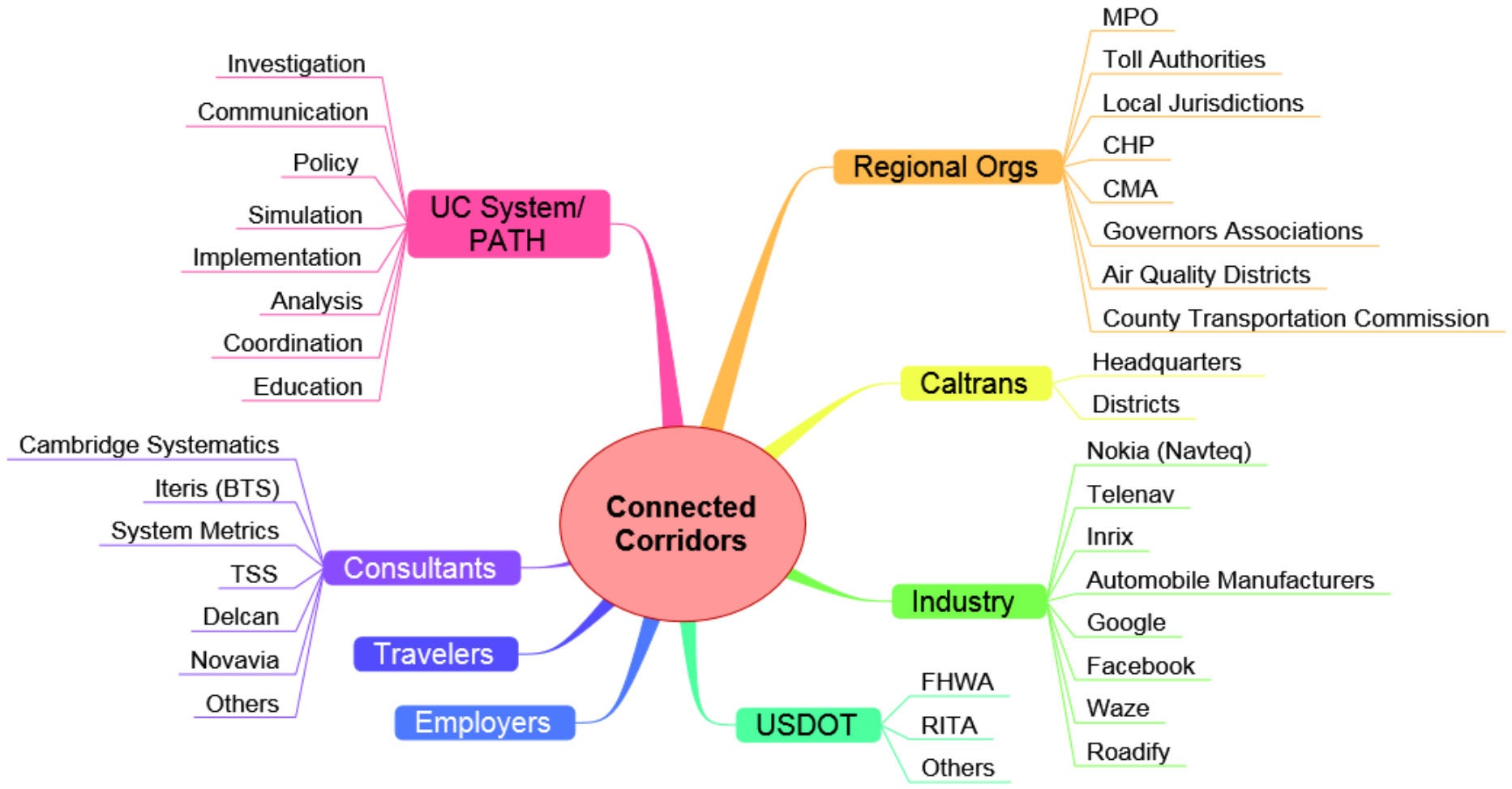


Experience with piloting





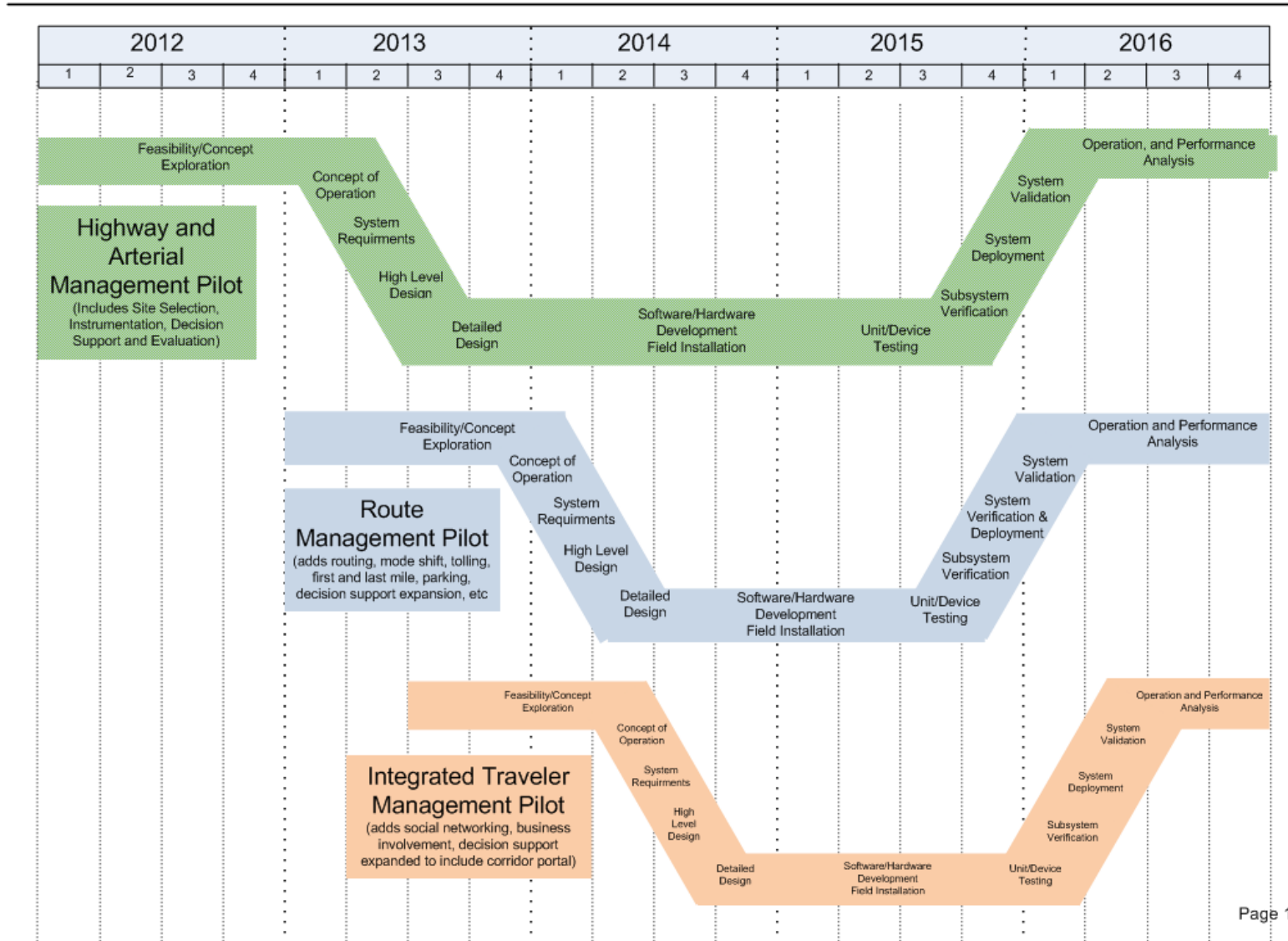
Connected Corridors Ecosystem



Connected Corridors Schedule



Connected Corridors SEMP Implementation Timeline



Connected Corridors – Synergy and Integration



- Intelligent Infrastructure

- Management Mechanisms (Freeway and Arterial Coordination)
- Highway Estimation – Fusion of loop and probe data
- Arterial Estimation – Flow and Machine learning algorithms

- Intelligent Vehicles

- Probe Data from moving vehicles
- Vehicle to server to vehicle
- Automated Vehicle Control

- Intelligent Travelers

- Collaborative Commuting
- Transit Work in LA
- Sentiment Analysis of text messages
- Incentivization Studies
- First and last mile mode shift studies

- Intelligent Systems

- Decision Support for whole corridors over multiple metrics
- Real Time Play Books
- Corridor level management strategies (supply and demand)

- Corridor Management Implementation

- Support for numerous CSMP initiatives
- 680 Planning Studies
- Simulation support and quality assurance

- Safety

- Decision Support to provide safety metrics

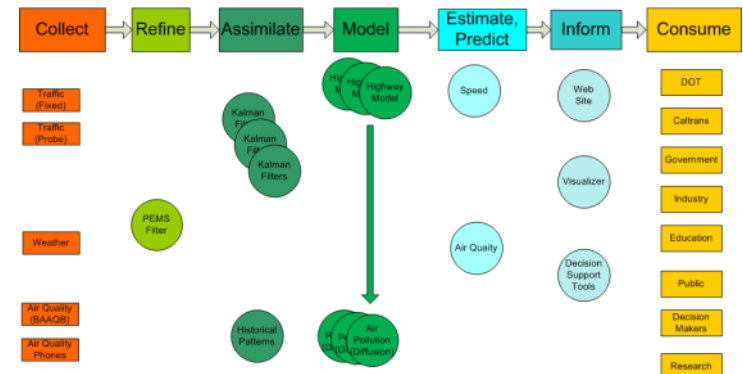
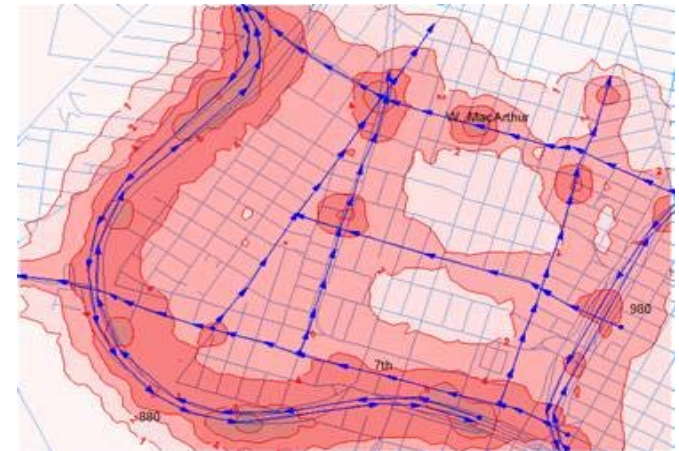
- Data

- Quality Metrics for Probe Data
- Business Case for State Data Purchase

- Education, Outreach, Regulations and Policy Issues

- Monthly newsletter on Corridor Mgmt in Ca
- Sponsoring visiting practioners

Air Quality Decision Support Map (880/980)





Thank You!
Questions?
How might we work together?