Maui Kickoff Meeting
Statewide ITS Architecture

An Overview of ITS and Architecture Development

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February 23, 2015

Agenda

- Introductions and Welcome
- ITS Architecture Overview
  - Why Develop an ITS Architecture
  - ITS Systems, Elements, Etc.
  - Purpose & Limits
- Process & Stakeholders
- Schedule

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ITS Architecture Overview

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A Definition of Intelligent Transportation Systems

- ITS is a collection of technologies, systems and transportation management concepts that collectively aim to make surface transportation systems safer and more efficient

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History of ITS Architecture

- Broad FHWA funding for regional ITS in early 1990s
- Many systems deployed but data collected was proprietary and systems could not talk to each other
- In 1996, National ITS Architecture established
- In 2001, FHWA issued Rule 940 requiring that ITS architectures be developed for 'regionally significant' ITS projects to be eligible for federal funding

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What an ITS Architecture is….

- It provides:
  - A blue print on how ITS systems will work together to satisfy surface transportation needs
  - Identifies the ITS stakeholders in a region and their elements
  - Identifies the information to be exchanged between stakeholder elements
  - Selects standards for information exchange
- It does not:
  - Define select specific technologies or design
  - Determine how projects are selected or funded

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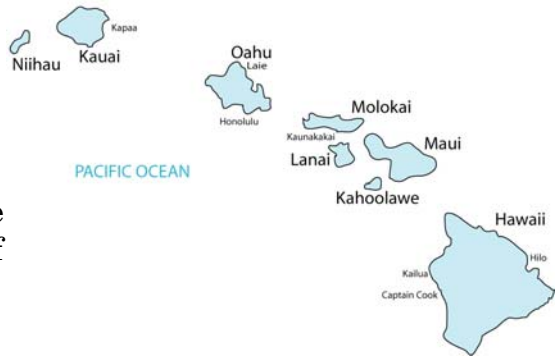
A Regional ITS Architecture is…

- A regional framework for ensuring institutional agreement and technical integration for the implementation of ITS projects in a region



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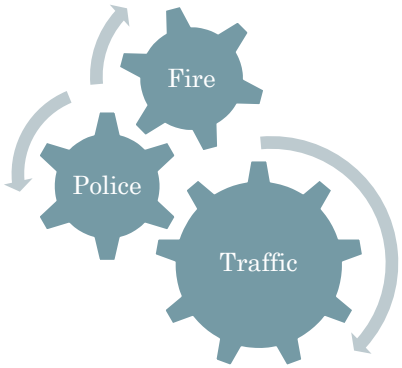
The National ITS Architecture

- National ITS Architecture was developed so that every region would have the same 'language'
- Process is based on a typical planning process



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How the National ITS Architecture relates to Regional ITS Architecture

- National ITS Architecture (the cookie cutter)
  - A Framework or Template
  - A menu of possibilities
- Regional ITS Architecture (the cookies)
  - Specific instances, associated with local stakeholders and projects
  - Current inventory + future projects
  - Only use the pieces you need
  - Put together based on local needs
  - Extensions, where necessary

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Look Beyond Current Set of Projects

- How will your systems evolve?
  - What new or enhanced services will you provide?
  - What systems will you connect to and what information will you share?
  - What agreements need to be in place to make it happen
- The regional ITS architectures will provide the framework and plan for the evolution of your systems over the next 10 to 20 years.

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Why Develop an ITS Architecture

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Benefits of a Regional ITS Architecture

- Transportation planning tool
  - Understand where we are going with our Intelligent Transportation System
- Find opportunities to work together across multiple jurisdictions and agencies

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More Benefits

- Regional information sharing opportunities
  - The problem: patchwork deployments that make sharing information difficult
  - Regional ITS Architecture: Get early insight into what ITS information others have that can help you do your job better (or you can provide to others)
  - Identify open ITS standards: reduce long term risk/cost

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Still more Benefits

- Institutional Agreement:
  - The problem: Time consuming when information crosses institutional boundaries
  - Regional ITS Architecture: Establish consensus based foundation for agreements – to get the process started

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AND FINALLY….

- Addresses FHWA Rule/FTA Policy on ITS Architecture and Standards
  - Requires development of a Regional ITS Architecture if using Highway Trust Fund money to fund deployment of projects containing ITS elements
  - Intended to foster integration of ITS
  - Defines requirements for ITS projects

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FHWA RULE / FTA POLICY

1. Description of the region (scope)
2. Identification of participating agencies and their systems (inventory)
3. Operational concept
4. Agreements required for implementation
5. System functional requirements
6. Interface requirements
7. Identification of ITS standards
8. Sequence of projects required for implementation
9. Process for maintaining your ITS Architecture

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ITS Projects

- Regional ITS Architecture partially satisfies the systems engineering requirements for FHWA Rule / FTA Policy on ITS Architectures and Standards
- Part 940.11 Requirements
  - Portion of the regional ITS architecture
  - Roles and responsibilities
  - High-level requirements
  - Alternative communications infrastructure
  - Applicable ITS Standards
  - Procurement options
  - Operations and Maintenance

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In Summary…

- To ensure investments in ITS can be leveraged
  - Primary purpose of ITS is for daily traffic operations and safety
  - Provide additional services based on primary purpose
- To be eligible for FHWA funding

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Limits of ITS Architecture

- The development of an ITS architecture does **NOT** result in project commitments – just possibilities
  - There is **NO** federal mandate to implement projects identified in an ITS architecture
  - The ITS architecture **IS** required to receive Federal funds for ITS projects

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ITS: Systems, Elements, Etc.

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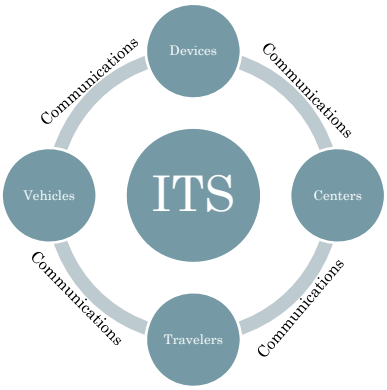
Architecture Elements: Subsystems thru Communications with Each Other

- Field Devices
  - Cameras
  - Electronic Signs
  - Speed Sensors
- Centers
  - Traffic Mgmt Center
  - 911 Dispatch
- Vehicles
  - Vehicle Location & Tracking
- Travelers
  - Smart phones
  - Computers



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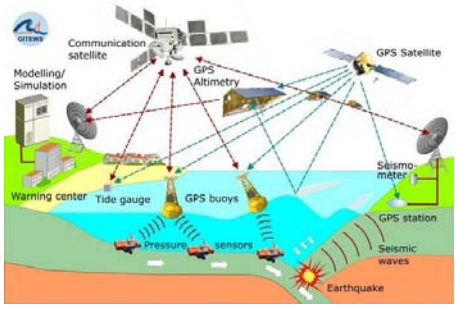
Different Systems Talking to One Another: Connections



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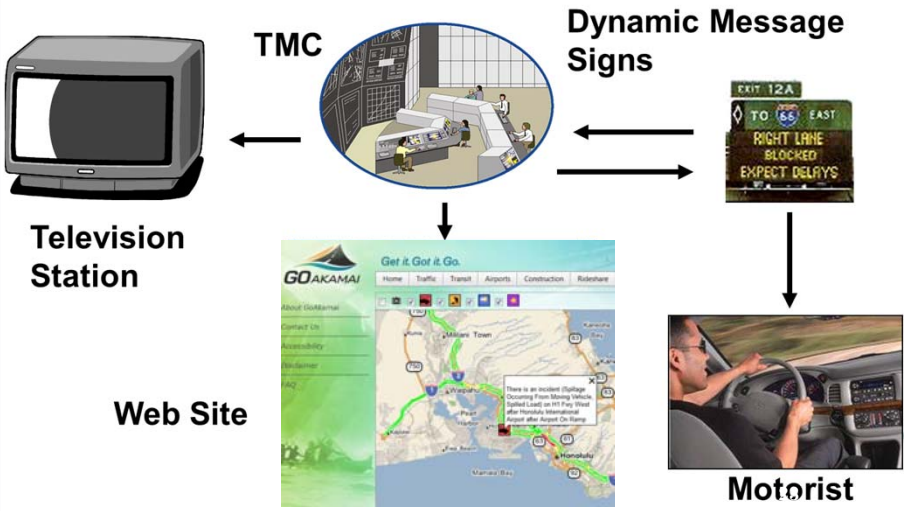
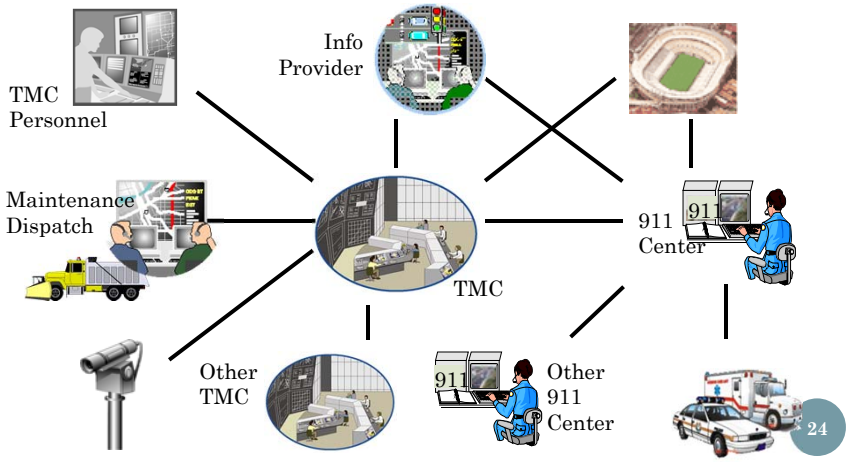
ITS Service: Traffic Information Dissemination



ITS Service: Incident Management



Process & Stakeholders

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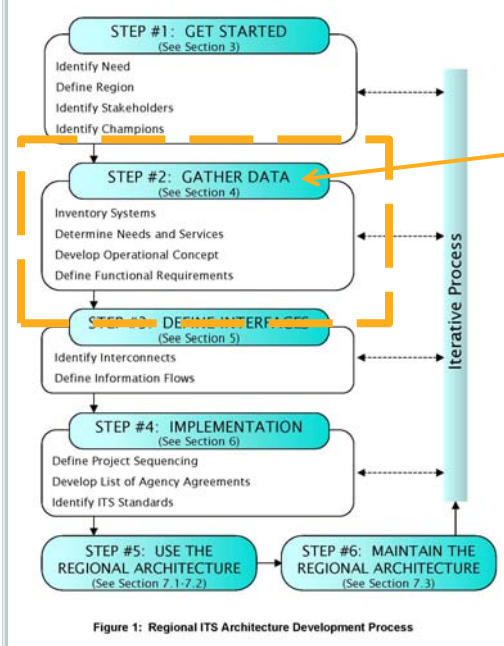

Figure 1: Regional ITS Architecture Development Process

Process Summary

- Step 2:
  - Data gathering for Maui starts this week
  - Come back in a couple of months (late April or May) to review Operational Concept

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Task 1: Identify Stakeholders

- This week's meetings:
  - Maui County Agencies:
    - Dept. of Public Works
    - Dept. of Transportation
    - Police
    - Fire
    - EMS
    - Civil Defense
    - Dept. of Management
  - State Agencies: Highways, Airports, Harb
- Did we miss anyone?

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Task 2: Gather Data

- Up to a week-long effort
- Starts with a 'Kickoff Meeting' on each island
  - Invite agency stakeholders to be interviewed
  - Provide an Overview of ITS & ITS Architecture
  - 1-2 Hours in Length
- Conduct interviews with each agency
  - What ITS systems are currently operated?
  - What are agency needs?
  - What ITS projects are currently planned?

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Stakeholder Interview

- What we'll be asking you:
  1. What is your agency mission statement?
  2. What are your agency's transportation-related goals and objectives?
  3. What ITS systems or infrastructure are in place today?
     - Traffic signal systems
     - Signal pre-emption (fire engines, ambulances)
     - Incident command system (as it applies to on-scene traffic investigation)
     - Etc.

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Stakeholder Interview

- More questions
  4. Projects: What are your future plans for ITS-related projects?
  5. Do you have any agreements with other agencies:
     - Sharing equipment
     - Sharing communication
     - Sharing costs
     - Operations and maintenance

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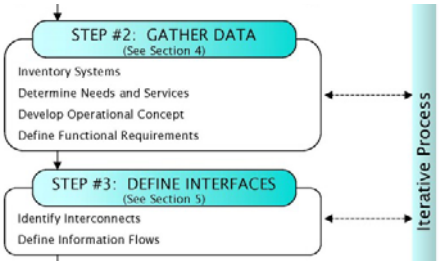
TASK 3: COMPILE INVENTORY & SERVICES

- Develop an ITS inventory
  - List of centers, field equipment, vehicles, etc.
  - Mapped to stakeholders
- Develop draft 'service packages'
  - First cut at a comprehensive picture of ITS on each island, then statewide



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TASK 4: STAKEHOLDER WORKSHOP

- Stakeholders meet to review draft ITS services and inventory
  - Check accuracy of inventory
  - Accuracy of interfaces
    - Within agencies
    - Between agencies
  - Review ITS projects identified
  - Gather additional information
  - Document roles and responsibilities
  - Identify memoranda of understanding/agreements
    - Collect agreements already in place
    - Recommend agreements that may be required

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Task 5: Draft ITS Architecture

- Update inventory and services according to inputs from ITS architecture workshop
- Develop
  - Operational Concepts
  - Roles and Responsibilities
  - Functional Requirements
  - Map ITS Standards to Architecture Flows
  - Gather and Input Institutional Agreements
  - Project Architectures
- Stakeholders can review the Draft ITS Architecture via a website

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Task 6: Final ITS Architecture

- Incorporate stakeholder comments
  - Address comments not incorporated
- Final ITS Architecture Outputs
  - Executive summary
  - ITS architecture document
  - ITS architecture website

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OUTCOMES: 3 ARCHITECTURES

- State of Hawaii Regional ITS Architecture
- Maui Island Regional ITS Architecture
- Kauai Island Regional ITS Architecture

- *Note: Hawaii County & Oahu ITS Architectures, developed in 2012 and 2003, respectively, will be incorporated into the Statewide ITS Architecture*

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SCHEDULE

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SCHEDULE

- Jan. 2015: Identify stakeholders
- Feb – April 2015: Maui
  - This week: Stakeholder Interviews
  - March: Consultant develops Operational Concept
  - Late April or Early May: Maui Stakeholder Workshop
- June – Aug 2015: Kauai Stakeholder Meetings
- Sept. – Dec. 2015: Hawaii & Oahu Statewide Mtgs.
- Jan – April 2016: Draft ITS Architecture
- May – Aug 2016: Final ITS Architecture

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STAKEHOLDER INTERVIEWS

- Today: HDOT, Highways Division, Maui District
- Tuesday:
  - HDOT Airports Division, Maui District
  - Police
  - Dept. of Transportation (Transit)
  - Dept. of Public Works
- Wednesday:
  - HDOT Harbors Division, Maui District
  - Civil Defense
- Thursday:
  - EMS/AMR
  - Fire
  - Dept. of Management

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Stakeholder Workshop

- One-day workshop, held on a Tuesday, Wednesday or Thursday, in one of these three weeks:
  - Week of April 27, 2015
  - Week of May 4, 2015
  - Week of May 11, 2015

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Open

- Questions?
- Comments?

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THANK YOU!!!!