KAUAI KICKOFF MEETING
STATEWIDE ITS ARCHITECTURE

An Overview of ITS and Architecture Development

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June 22, 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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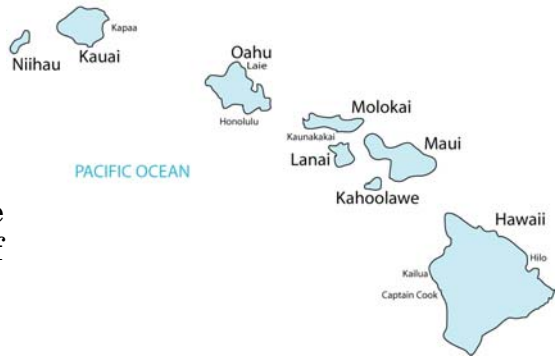
A Regional ITS Architecture is…

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



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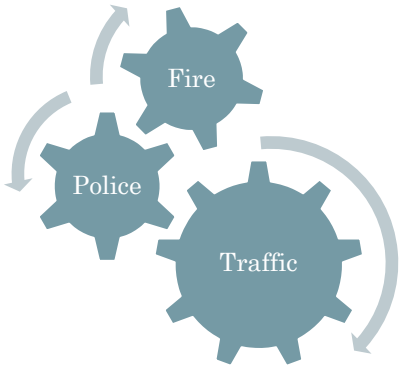
The National ITS Architecture

- 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 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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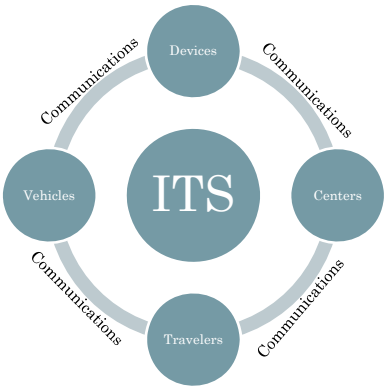
Architecture Elements: Systems that Communicate with Each Other

- 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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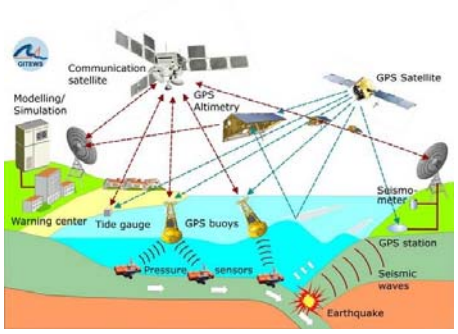
Different Systems Talking to One Another: Connections



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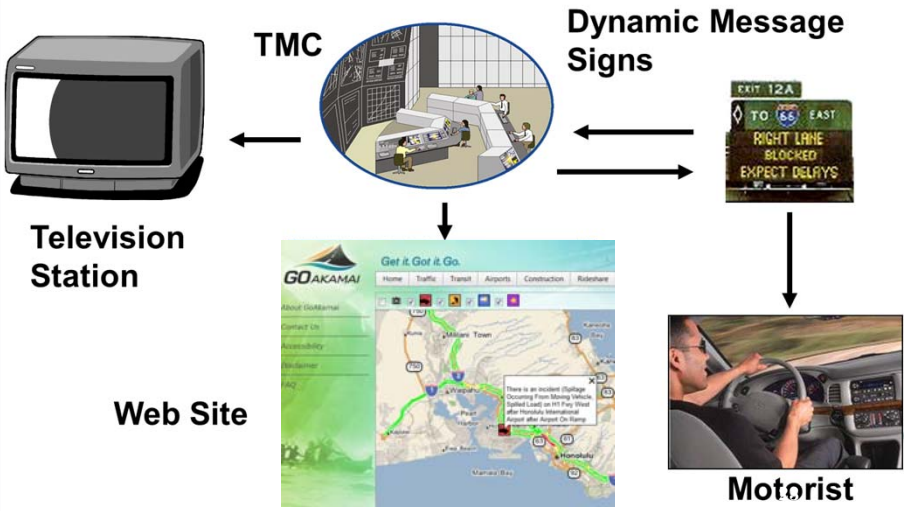
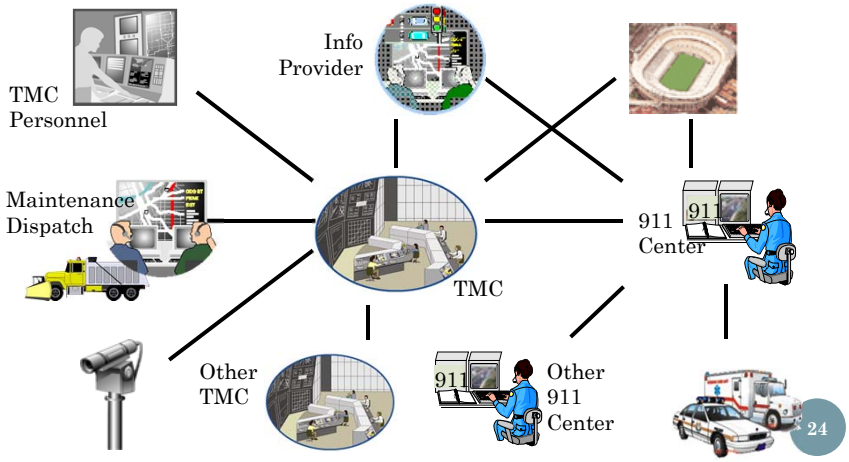
ITS Service: Traffic Information Dissemination



ITS Service: Incident Management



Process & Stakeholders

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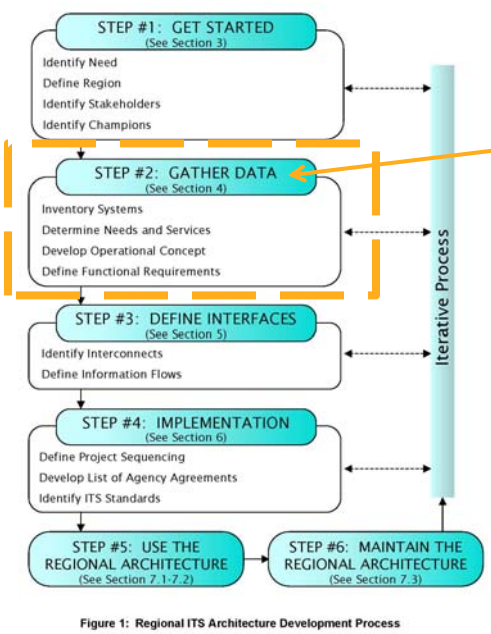

Figure 1: Regional ITS Architecture Development Process

Process Summary

- Step 2:
  - Data gathering for Kauai starts this week
  - Come back in a couple of months to review Operational Concept

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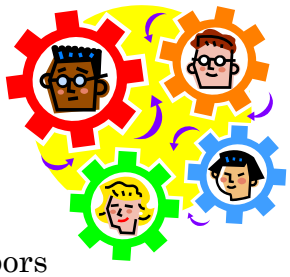
Task 1: Identify Stakeholders

- Kauai County Agencies:
  - Dept. of Public Works
  - Transportation Agency (Transit)
  - Planning Dept.
  - Police
  - Fire
  - EMS (contracted thru AMR)
  - Civil Defense
  - Dept. of Finance (IT Services)
- HDOT: Highways, Airports, Harbors
- Federal: PMRF
- Have we missed anyone?



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Task 2: Gather Data Through Agency Interviews

- What we'll be asking you:
  1. What is your agency's mission goals and objectives?
  2. What are your agency's transportation-related roles and responsibilities?
  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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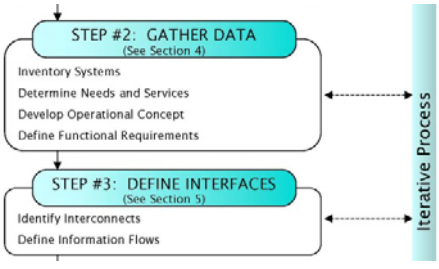
Task 3: Compile Inventory & Services

- 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
  - Document roles and responsibilities
  - Check accuracy of inventory
  - Accuracy of interfaces
    - Within agencies
    - Between agencies
  - Review ITS projects identified
  - Gather additional information
  - 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 – May 2015: Maui
- June – Oct 2015: Kauai
  - This week: Stakeholder Meetings
  - July: Consultant develops Operational Concept
  - Sept: Kauai Stakeholder Workshop
  - Oct: Draft Architecture for review
- 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, Kauai District
  - Fire
- Tuesday:
  - Civil Defense
  - Police
  - Airports
  - Public Works, Transportation & Planning Departments
- Wednesday:
  - EMS/AMR
  - Dept. of Finance (Information Technology)
  - Harbors
- TBD: PMRF

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STAKEHOLDER WORKSHOP

- One-day workshop, held on a Tuesday, Wednesday or Thursday, in one of these two weeks:
  - Week of September 7, 2015
  - Week of September 14, 2015

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OPEN

- Questions?
- Comments?

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THANK YOU!!!!

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