Integrated Water Resources Science and Services (IWRSS)

US Army Corps of Engineers®

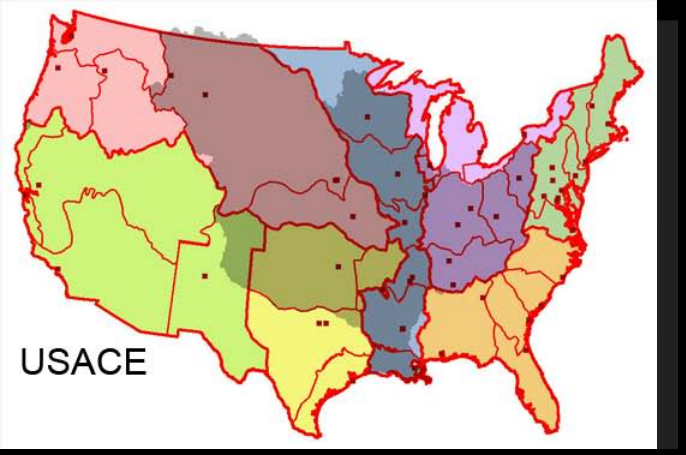
Protect Life and Property

- Floods and droughts cause more U.S. economic losses than any other type of natural disaster.

- Water resource challenges are significant and getting bigger.

- Decision-makers in all water management sectors need new and improved water resource information and forecasts.

Integrated Water Resources Science and Services (IWRSS)



Why IWRSS?

Mississippi Basin

250 Entities

- 31 States
- 6 NOAA Regions
- 4 NWS Regions
- 5 NWS River Forecast Centers
- 65 NWS Weather Forecast Offices
- 5 USACE Divisions
- 20 USACE Districts
- 2 USGS Regions
- 6 USGS Sub-regions
- 92 USGS Water Science Centers and field offices.
- A handful of national centers, laboratories and headquarters offices.

IWRSS Roadmap

- Purpose, Scope, Vision and Goals
- Cross-Cutting Themes
- National and Regional
- Operations and Business Concepts

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Leap Ahead

Implement a broad and integrative system to serve as a reliable and authoritative basis for next-generation adaptive water resources planning, preparedness and response.

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National Water Resources Information System

- Interoperability between major decision support systems and tools
- Seamless data exchange
- Collaborative workflow
- Common Operating Picture
- One-stop shopping
- Integrated water resources science and services

Leap Ahead

Implement a broad and integrative system to serve as a reliable and authoritative basis for next-generation adaptive water-resources planning, preparedness and response.

National Water Resources Information System

Goals

3 Provide new Summit-to-Sea high-resolution water resources information and forecasts

2 Increase accuracy and timeliness of water information

1 Integrate information delivery and simplify access

IWRSS Operational Goal #1

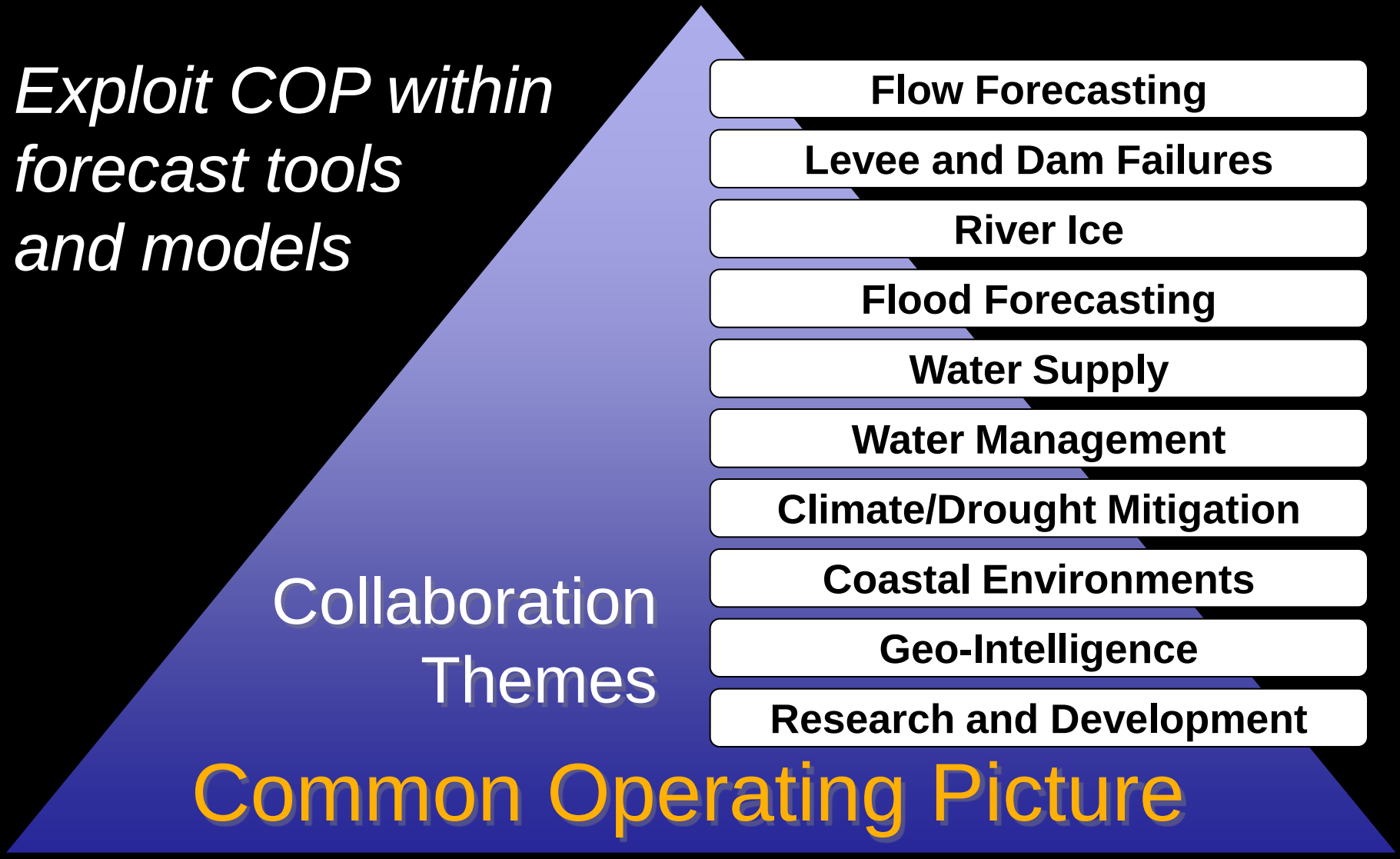
Integrate information and simplify access.

- Common Operating Picture (COP)
  - System Interoperability
  - Data Exchange and Synchronization
  - Leap-ahead in Geospatial Information
- "One-stop Shopping"
  - COP-like experience for stakeholders
  - Transparent front for water resources information

IWRSS Operational Goal #2

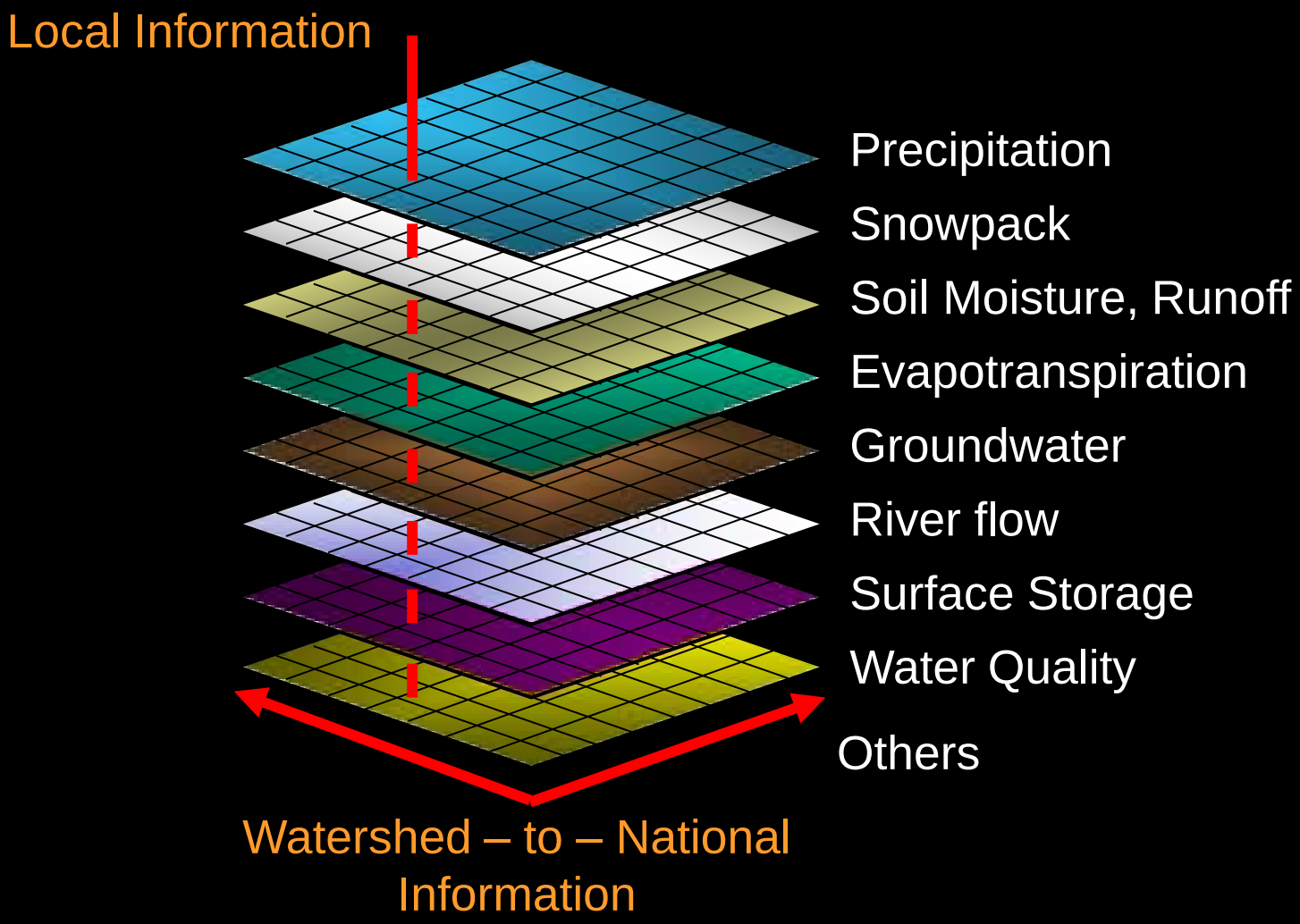
Increase accuracy and timeliness of water information.

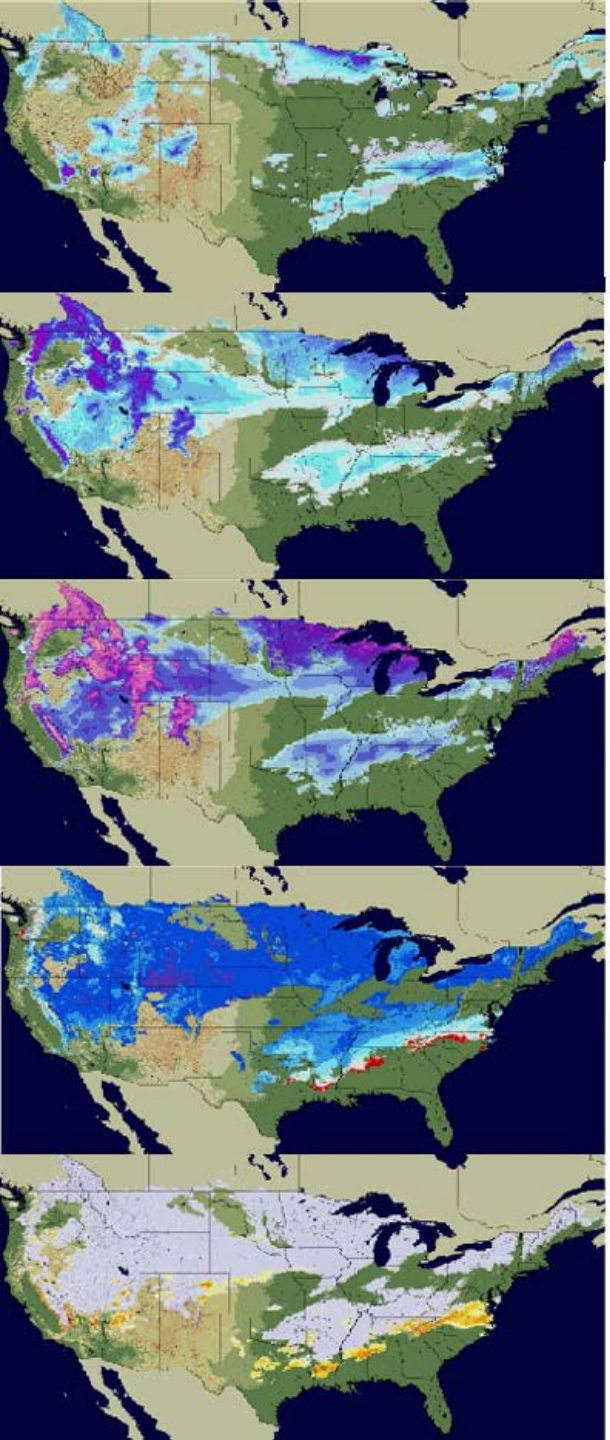
Exploit COP within forecast tools and models

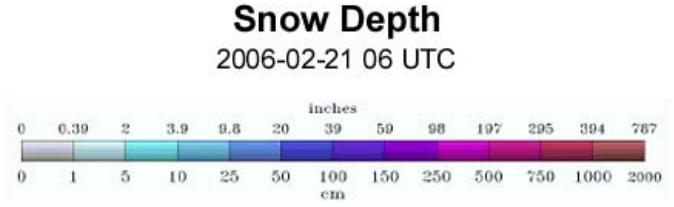


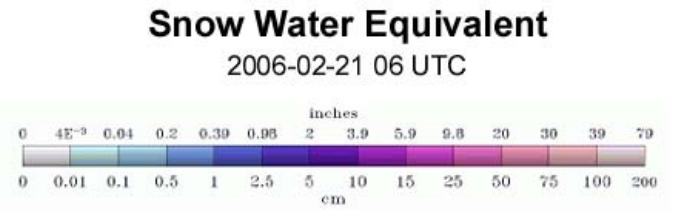
IWRSS Operational Goal #3

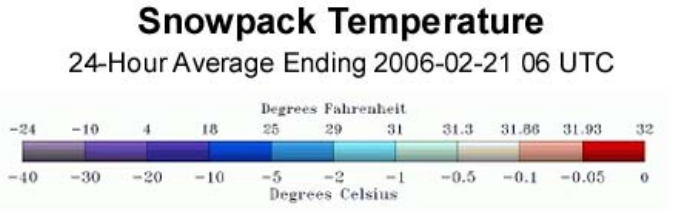
Provide new “summit-to-sea” high-resolution water resources information and forecasts.

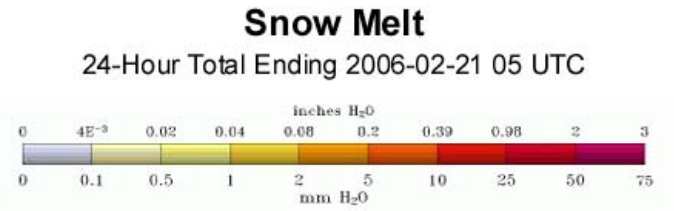












- **PRODUCTS**
  - Hourly and Daily
  - 1 km^2 Resolution
- **INTERNET**
  - Interactive Maps
  - 3D Visualization
    - e.g. Google Earth
  - Time-series loops
  - National/Regional Discussions
  - Text summaries by watershed
  - Point Queries
- **DIRECT FEED**
  - Push or Pull
  - Gridded Data
  - Flat Binary or GIS-ready

IWRSS Operational Goal #3

Provide new “summit-to-sea” high-resolution water resources information and forecasts.

IWRSS Roadmap

- Purpose, Scope, Vision and Goals
- Cross-Cutting Themes
- National and Regional
- Operations and Business Concepts

Implementation Themes

- Emphasizing participatory processes to facilitate integrative and adaptive water resources management

Purpose, Scope, Vision and Goals

Cross-Cutting Themes

National and Regional

Operations and Business Concepts

IWRSS Roadmap

National Operational Water Resources Support Center

- **Role**
  - Operations
    - National (centralized) operational tasks
      - Data processing, modeling, prediction, and archive
  - Operational Support
    - National coordination and integration
    - National synthesis and reporting
    - Shared data services and regional support
    - Training
  - Research and Development
    - Operational implementation of existing/emerging tools

Purpose, Scope, Vision and Goals

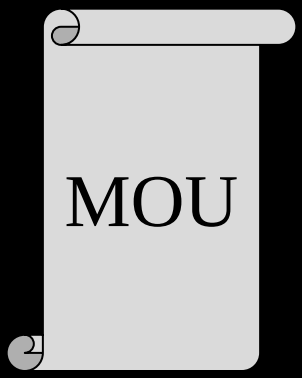
Cross-Cutting Themes

National and Regional

Operations and Business Concepts

IWRSS Roadmap

IWRSS Governance



Executive Steering Committee

Consortium Senior Leadership

Design and Management Team

Interagency Chiefs, Program Leads

ACWI

Cross-cutting Theme Team

Human Dimensions

Stakeholder Interactions

Cross-cutting Theme Team

Technical

Information Services

Cross-cutting Theme Team

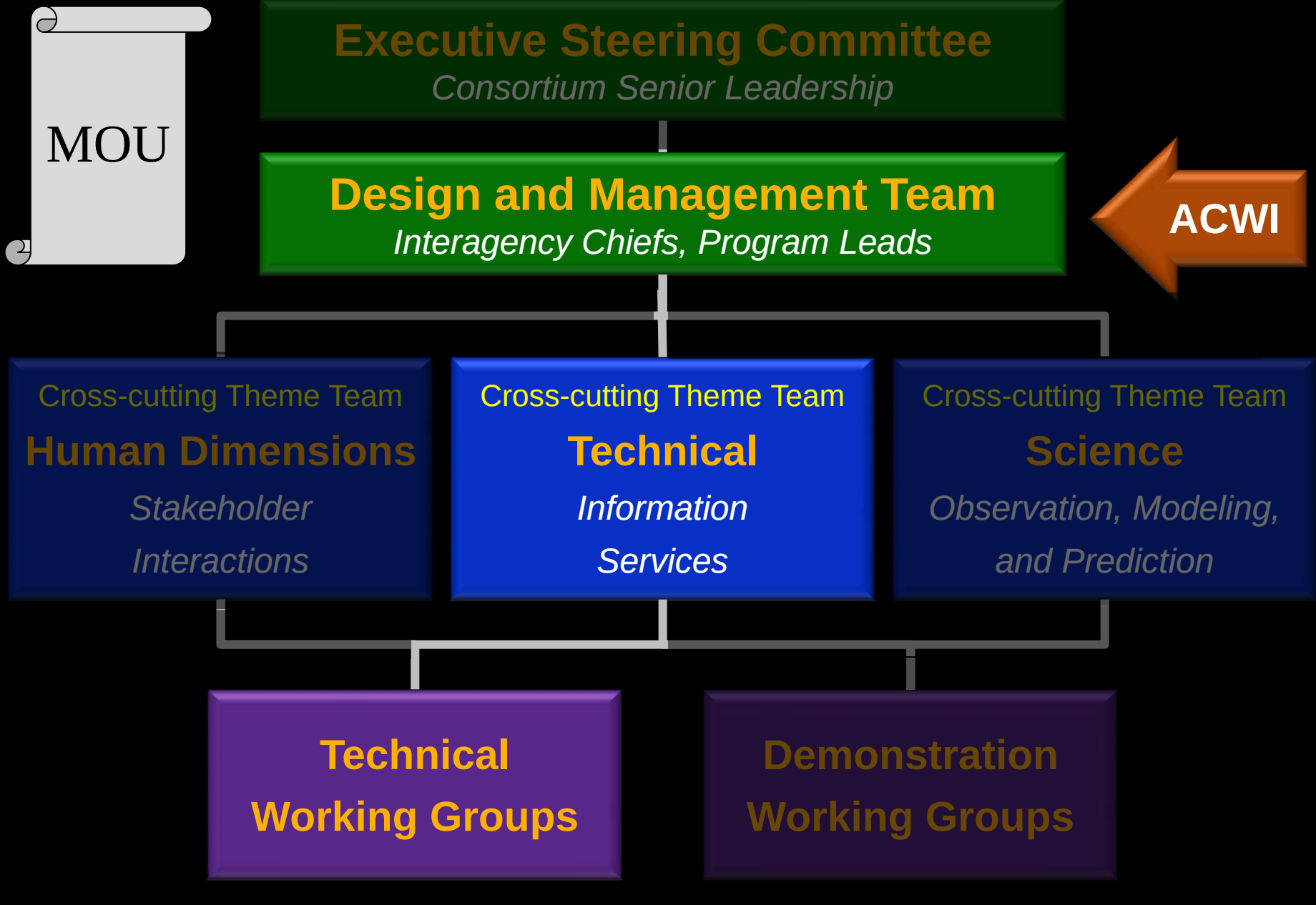
Science

Observation, Modeling, and Prediction

Technical Working Groups

Demonstration Working Groups

IWRSS Governance



NOAA's Integrated Water Forecasting Program

The three business areas are aimed at producing a seamless suite of water forecast information, covering:

Floods ⟷ **Droughts**

Summit ⟷ **Sea**

Short-term Warnings ⟷ **Seasonal Outlooks**

with increased emphasis on climate-related impacts for arid and coastal watersheds.

NOAA's Role:

Provide accurate and reliable water forecasts

Rivers and Floods	Coasts, Lakes and Estuaries	Water Resources
Advance Hydrologic Prediction Service (AHPS)	**Coast, Estuary, River Information Services (CERIS)**	**Integrated Water Resources Science and Services (IWRSS)**

Community Hydrologic Prediction System (CHPS)

1. Reduce 1-7 day river forecast errors by 50% and quantify uncertainty

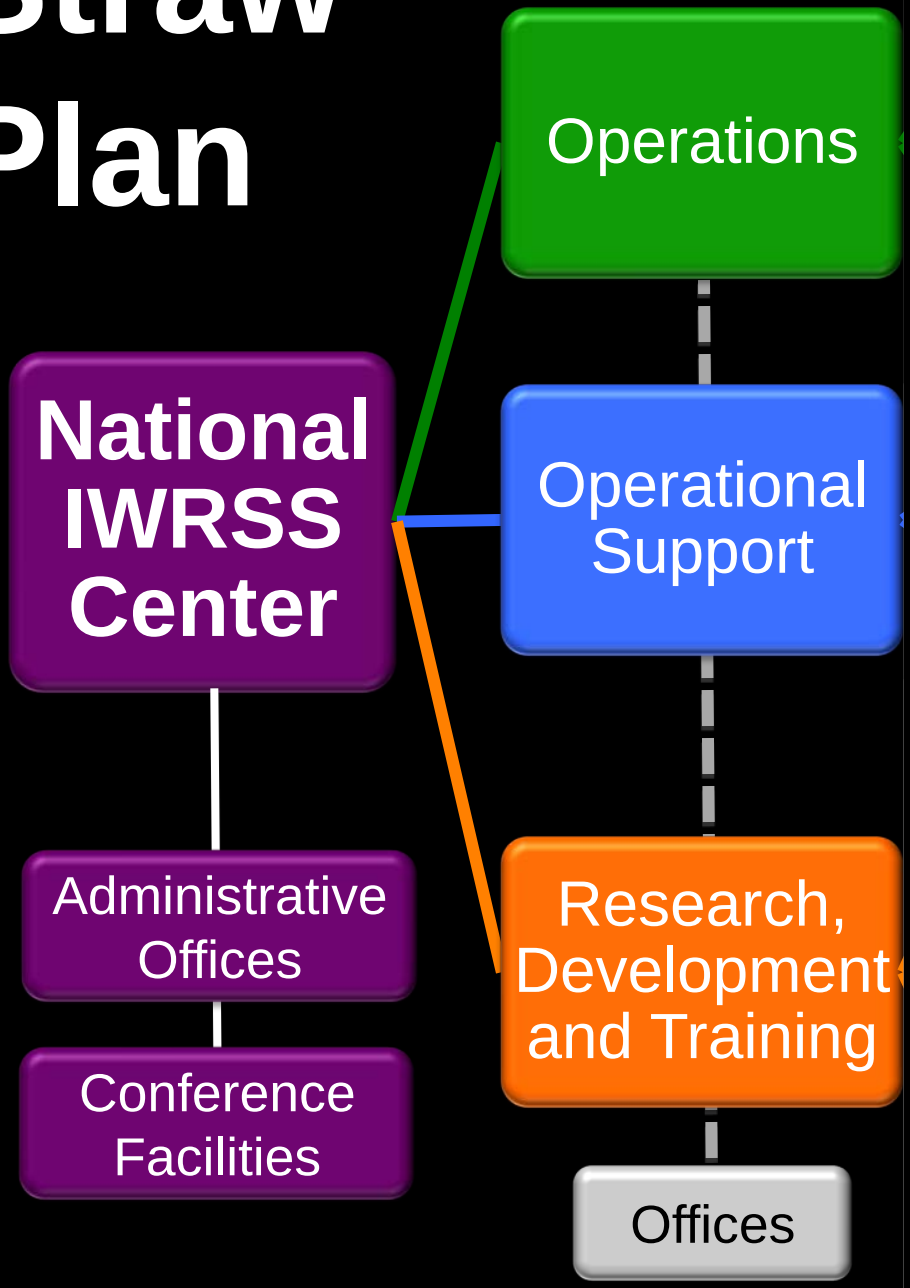
2. Couple modeling systems for rivers, lakes and estuaries

4. Provide seamless suite of summit-to-sea high resolution forecasts

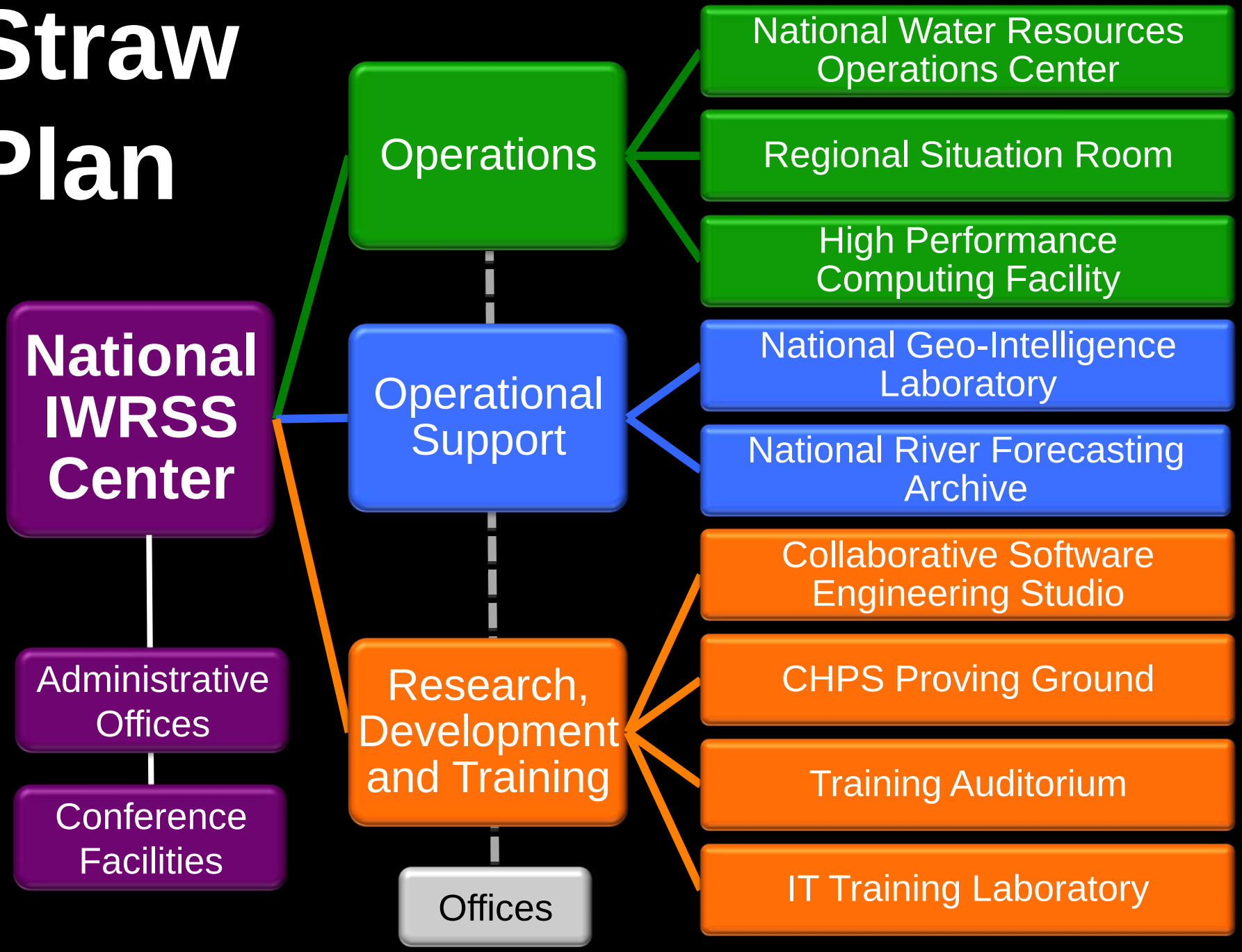
3. Provide flood inundation forecast maps for 100% of high-impact river and coastal communities

5. Advance and integrate observing systems for water resources

Straw Plan


National IWRSS Center
Operations
Operational Support
Research, Development and Training
Offices
Administrative Offices
Conference Facilities

Straw Plan


National IWRSS Center
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National Water Resources Operations Center
Regional Situation Room
High Performance Computing Facility
National Geo-Intelligence Laboratory
National River Forecasting Archive
Collaborative Software Engineering Studio
CHPS Proving Ground
Training Auditorium
IT Training Laboratory

Purpose, Scope, Vision and Goals

Cross-Cutting Themes

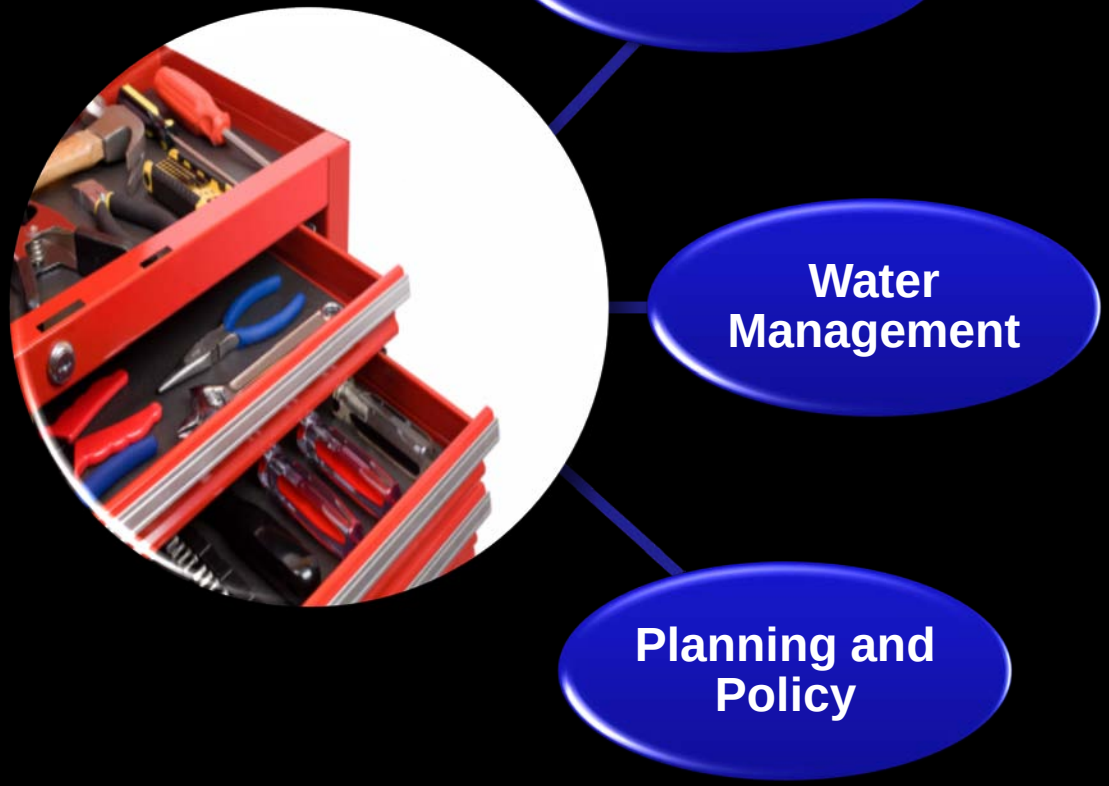
National and Regional

Operations and Business Concepts

Federal Toolbox
WaterSMART Census

US Army Corps of Engineers®

Federal Agency Assessment 2009



Revealed broad need:

- Integrate and improve access to information
- Share technology, information, models best practices
- Leverage resources
- Enable improved collaboration
- Establish a common operating picture

US Army Corps of Engineers®

Federal Agency Assessment 2009

Components

- **Data, Forecasts, and Services**
  - integrated at all scales
- **Models and Tools**
  - catalog and guidance to help users
- **Information**
  - agency programs, authorities, policies, and best practices

Characteristics

- Interoperability between decision support systems and tools
- Seamless data exchange
- Flexible and extensible design
- One stop shopping

IWRSS is recommended prototype

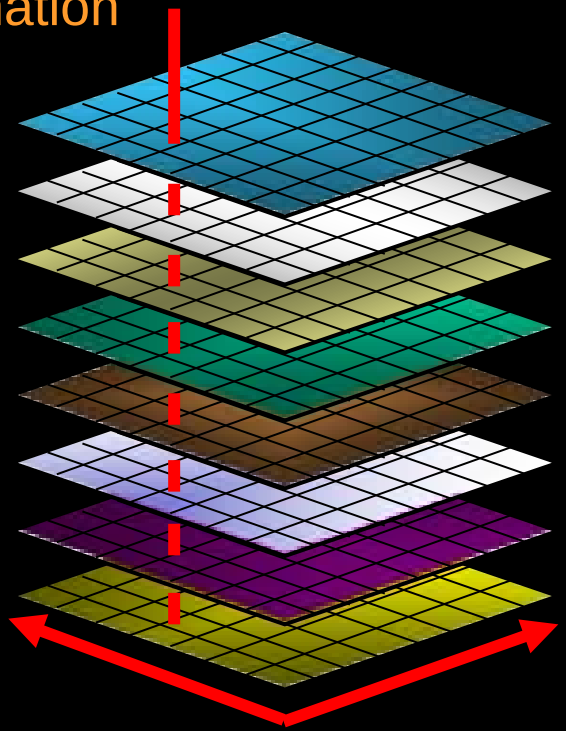
WaterSMART
Water Census

IWRSS

Past Present Future

TIME

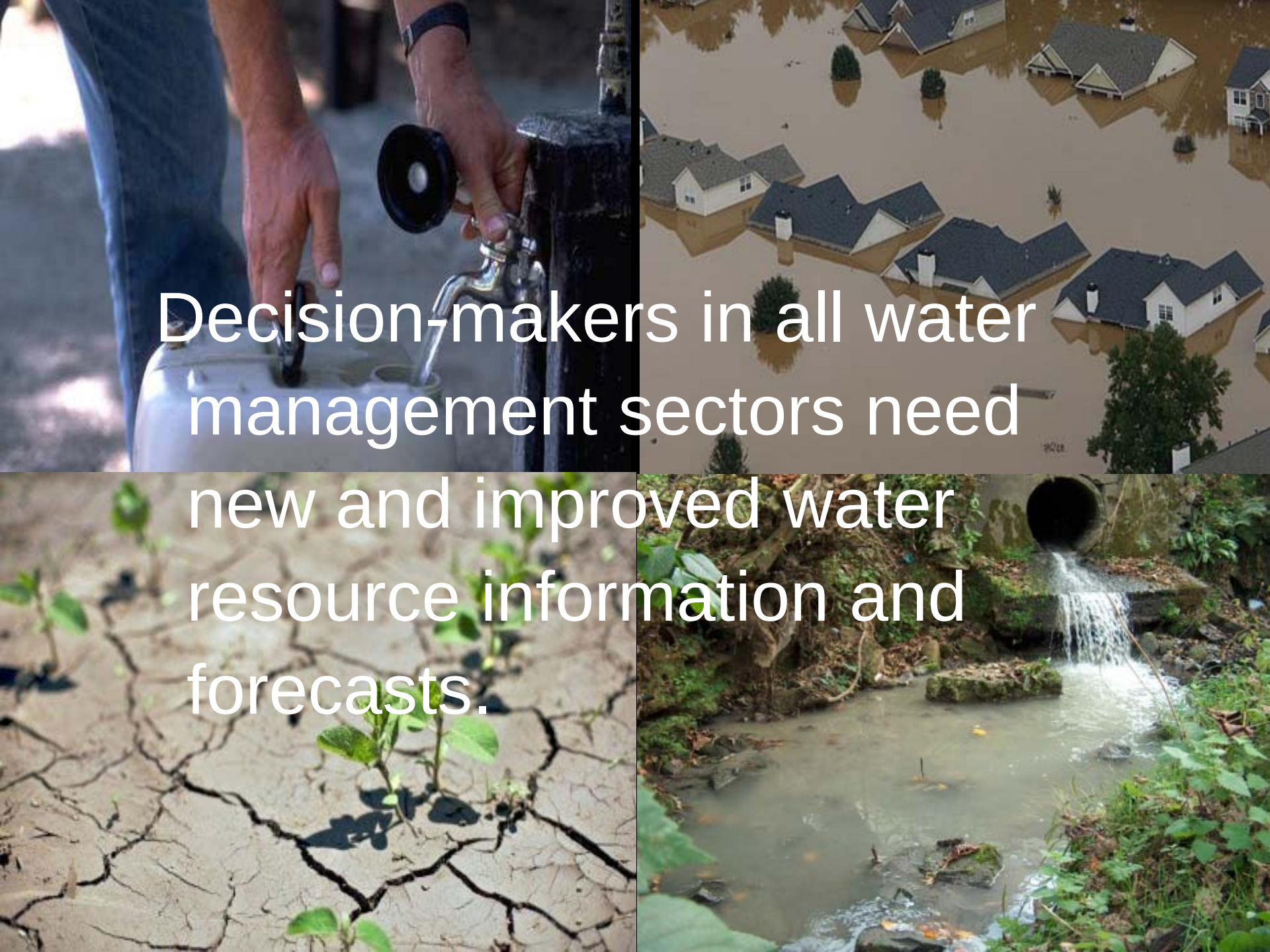
Local Information



Precipitation
Snowpack
Soil Moisture, Runoff
Evapotranspiration
Groundwater
River flow
Surface Storage
Water Quality
Water Use

Watershed – to – National Information

Questions?



Decision-makers in all water management sectors need new and improved water resource information and forecasts.

Schedule

Design

- Complete Spring 2011

Documentation

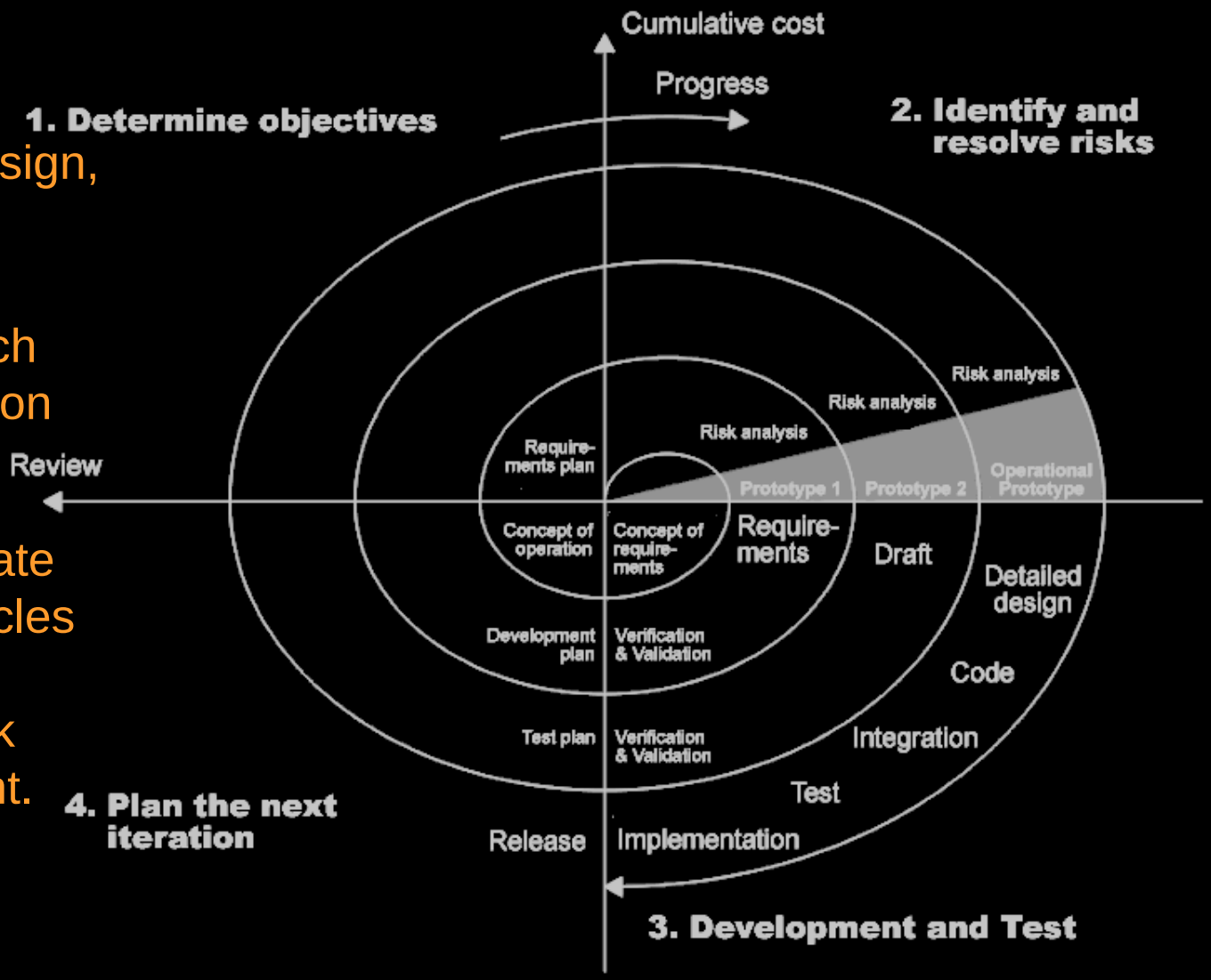
- Complete Fall 2011

Construction

- Complete Fall 2013

Spiral Implementation Strategy

- Consortium, project management and design, implementation
- Evolutionary approach to capability acquisition
- Initial desired end-state is refined through cycles of demonstration, stakeholder feedback and risk management.



Federal Agency Assessment 2009

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Agencies

- U.S. Forest Service
- Natural Resources Conservation Service
- National Oceanic and Atmospheric Administration
- Army Corps of Engineers
- Environmental Protection Agency
- Federal Emergency Management Agency
- Bureau of Land Management
- Bureau of Reclamation
- Fish and Wildlife Service
- National Park Service
- U.S. Geological Survey
- Tennessee Valley Authority

Roles

- Science
- Monitoring
- Prediction
- Management
- Conservation
- Regulation
- Restoration
- Protection
- Mitigation
- Response
- Recovery