

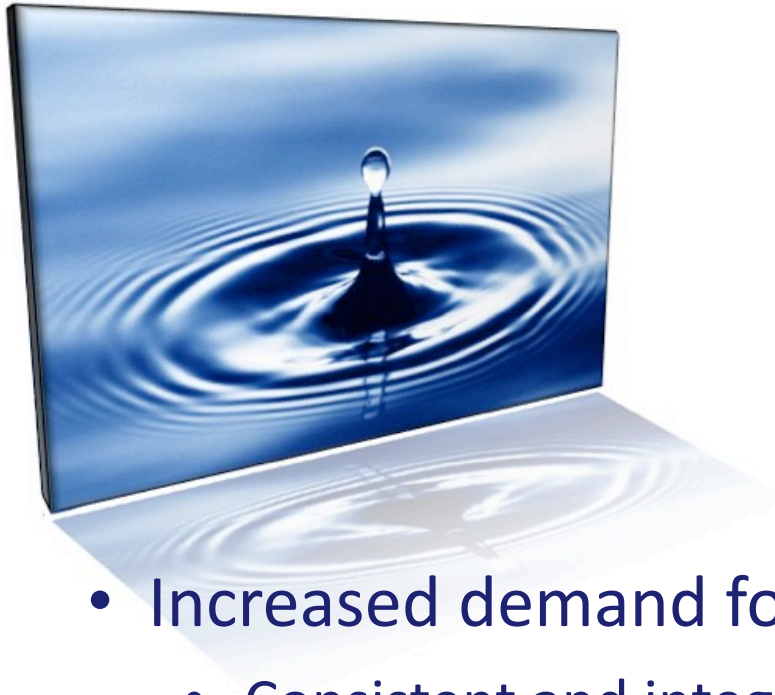
Integrated Water Resources Science and Services (IWRSS)

A high-speed photograph of a single water droplet falling into a pool of water. The droplet is captured mid-fall, just above the surface, creating a series of concentric ripples that spread outwards. The background is a soft, out-of-focus blue gradient.

*An Integrated and Adaptive Roadmap for
Operational Implementation*

Rob Hartman, HIC NWS California-Nevada River Forecast Center, Sacramento, CA

Blue Gold, The New Oil



The new economics of water – what does this mean to us?

- Increased demand for new and more information
 - Consistent and integrated decision support
- Broader audience, more stakeholders
- Increased awareness, expectations and scrutiny
- Greater consequences

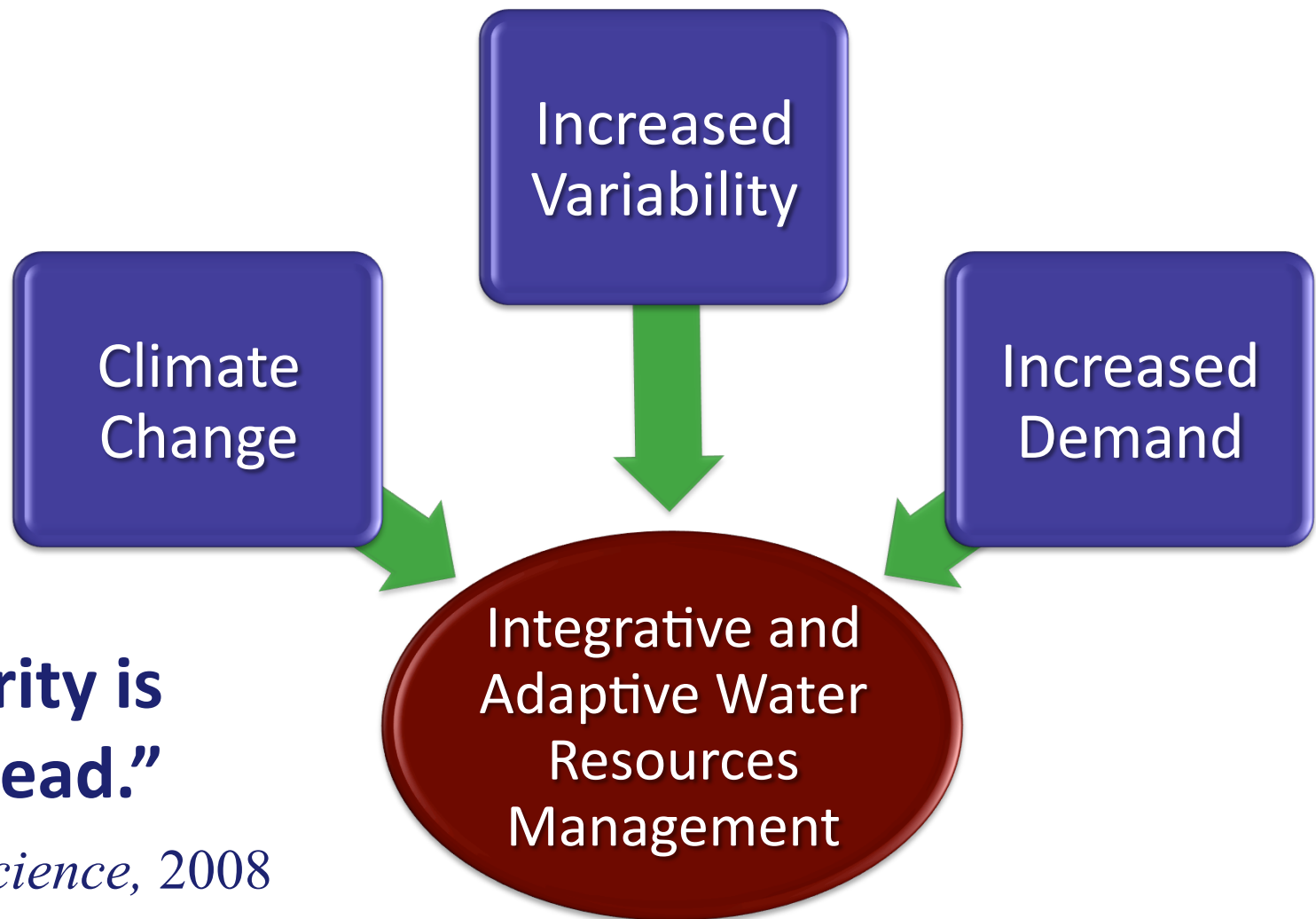
IWRSS Drivers



“A stakeholder is anybody who wants to be.”

- Water Manipulators
- Resource Managers
- Information Consumers

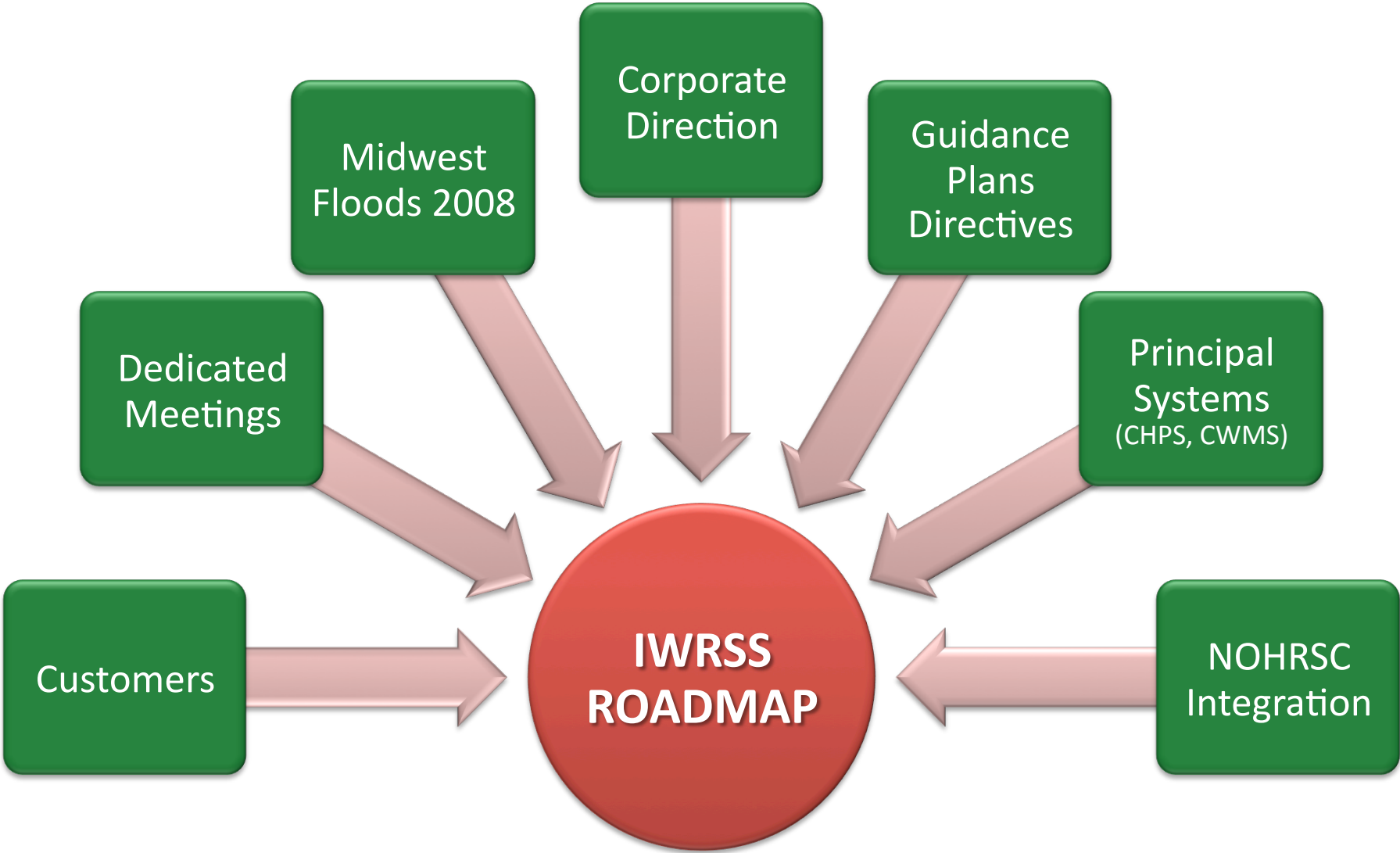
IWRSS Drivers



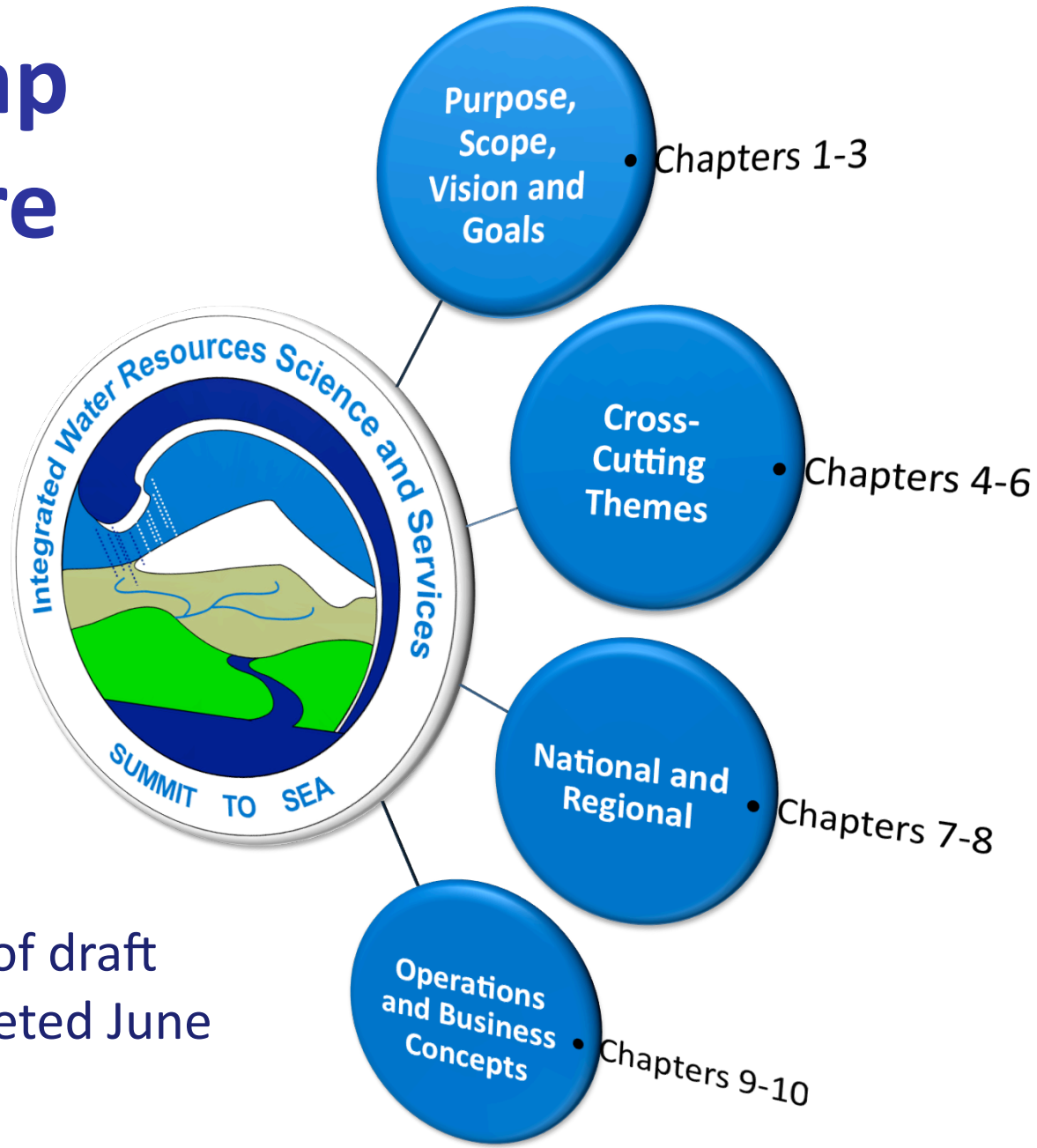
“Stationarity is dead.”

Science, 2008

Shared Vision Planning



Roadmap Structure



Internal review of draft roadmap completed June 2009

Leap Ahead:

National Water Resources Information System

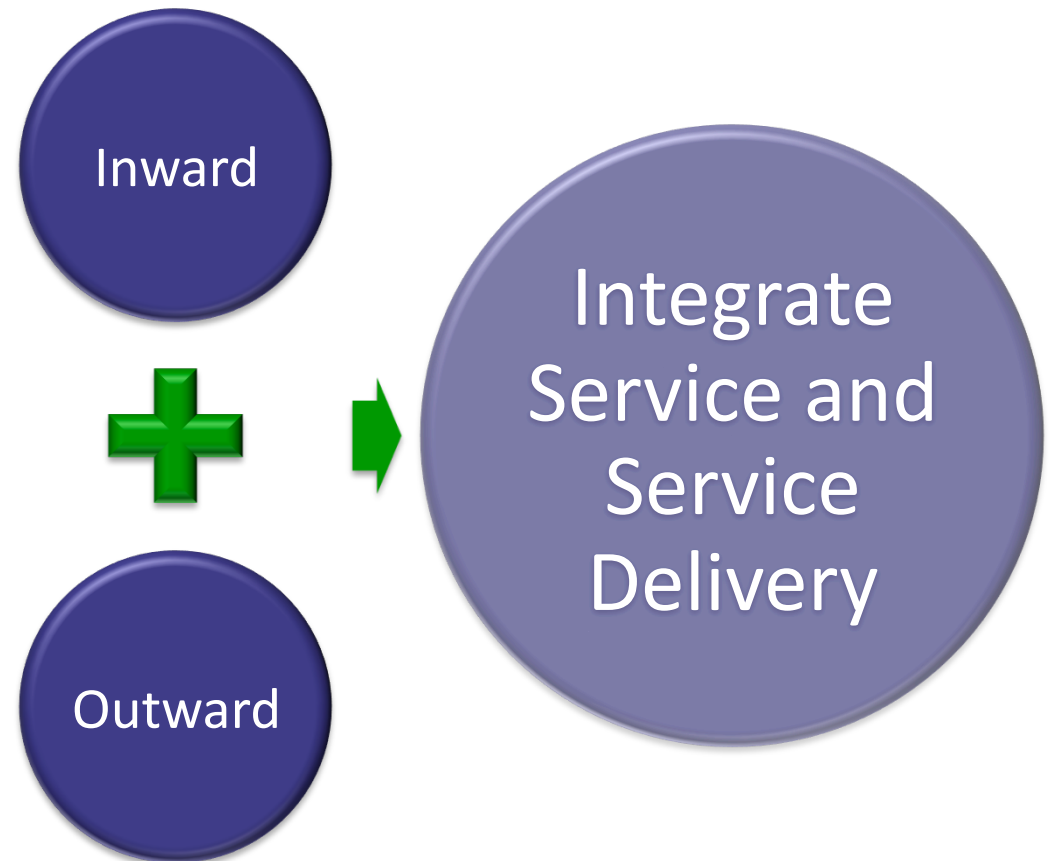
- Implement a broad and integrative system to serve as a reliable and authoritative basis for next-generation adaptive water-related planning, preparedness and response activities from local to national levels.*



Goal 1

Integrate Services and Service Delivery

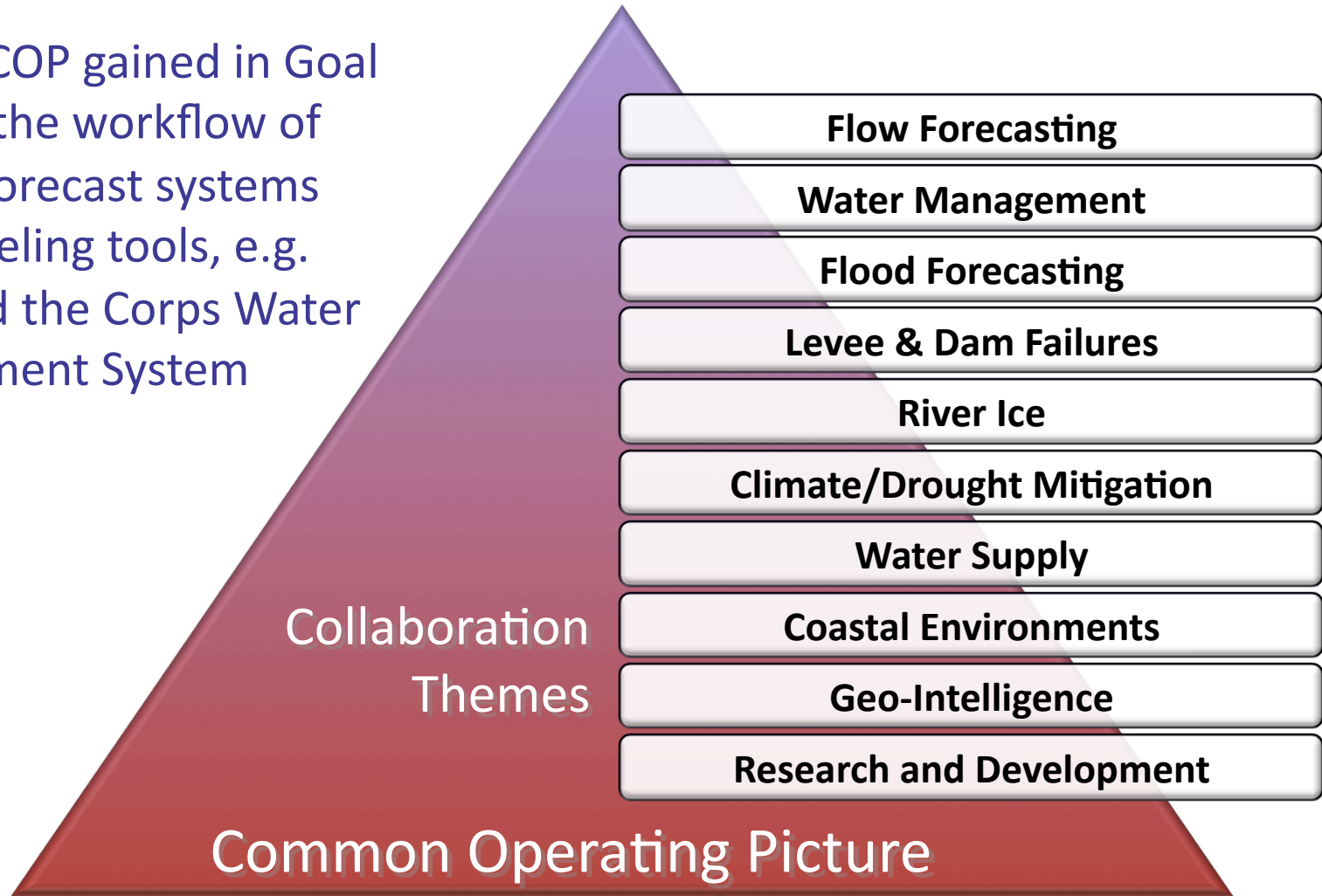
- Common Operating Picture (COP)
 - System Interoperability
 - Data Exchange and Synchronization
 - Leap-ahead in Geospatial Information
- “One-stop Shopping”
 - COP-like experience for stakeholders
 - Transparent front for water resources information



Goal 2

Improve Accuracy and Lead Time of River Forecasts

Exploits COP gained in Goal 1 within the workflow of specific forecast systems and modeling tools, e.g. CHPS and the Corps Water Management System (CWMS).



Goal 3

Provide New “Summit-to-Sea” High-Resolution Water Resources Information and Forecasts




Integration: Cross-cutting Themes



Human Dimensions

- Stakeholder Interactions and Communications


Establishing and maintaining a strong participatory process for IWRSS, and building the social capital necessary for success.



Technical

- Information Services

Implementing sound IT engineering practices to promote the coordination, integration and facilitation of interagency activities to pursue common goals.



Operational Science

- Summit-to-Sea Modeling and Prediction Framework

Developing physical and social science aspects of a well-integrated national water resources information system that is responsive to the needs of stakeholders.

Integration: Cross-cutting Themes



- National, Regional and Local
- Internal and External Communications Strategies
- Outreach
- Development and implementation of social science strategies for stakeholder engagement

Integration: Cross-cutting Themes

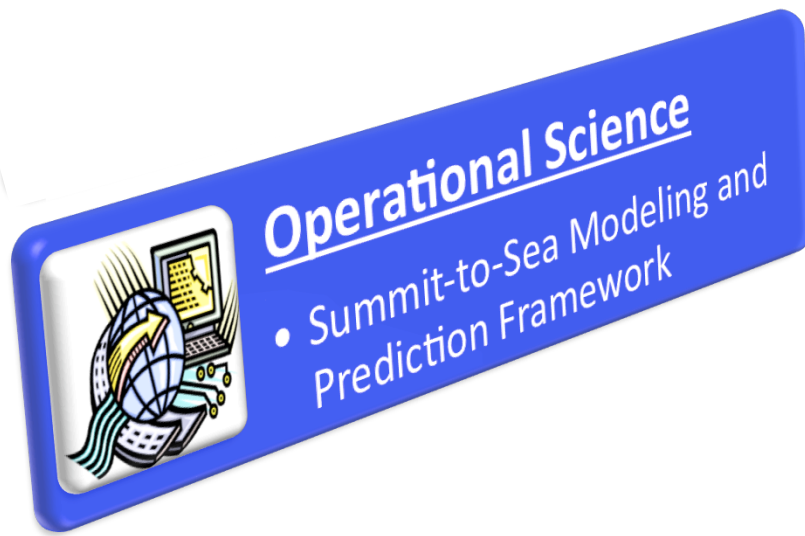
- System interoperability and data synchronization
- eGIS and geo-Intelligence
- Integrated information delivery



- Acquisition and management of observations and surveillance
- Technological research and development

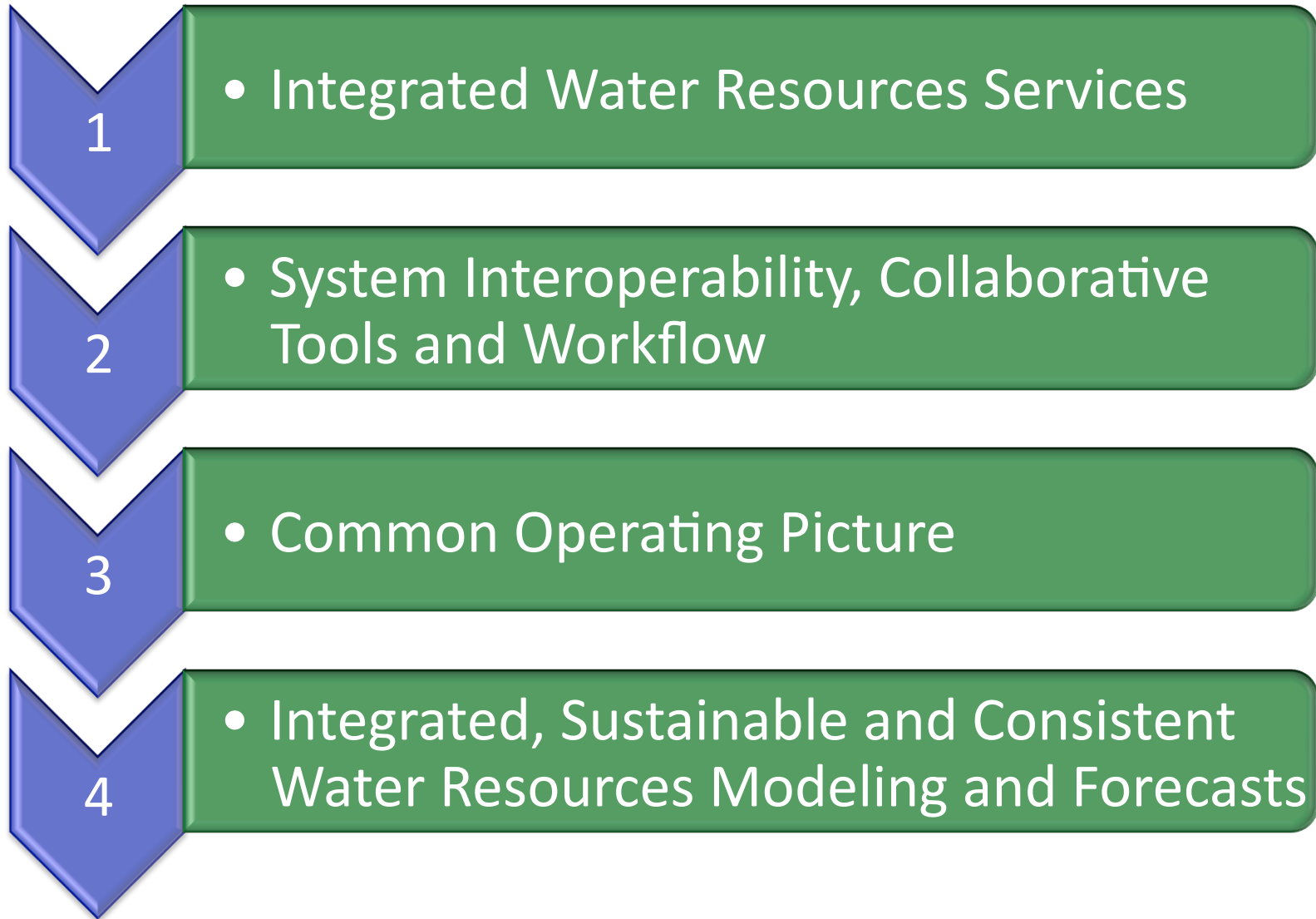
Integration: Cross-cutting Themes

- Develop and implement the summit-to-sea modeling and prediction framework.
- Provide historical context and trend information necessary to understand the present and the future.
- Advance water flow prediction and management capabilities.
- Improve the use of observations.
- Quantify uncertainties and validate analyses and forecasts.



- Develop the social science aspects necessary to identify and understand specific information needs, relate these to the design and function of operational tools, and communicate information back to stakeholder.

Four Expected Outcomes



Four Outcomes of Design



• Integrated Water Resources Services

- Improved internal and external communication and better, more productive engagement with stakeholders.
- Delivery of water resources data, services and products will be more integrated to provide stakeholders with an experience that appears to be one-stop shopping.
- Improved communications of risks and uncertainties

Four Outcomes of Design



- System Interoperability, Collaborative Tools and Workflow

- Major systems in use across multiple agencies will be made interoperable, meaning:
 - data and information will be able to flow between them more seamlessly, and
 - Models, tools and other applications will be cross functional across systems.
- Models used nationally will be made available regionally, and new models will be made accessible.
- Toolkits will be provided to improve access and analysis of information and improve collaborative workflow.

Four Outcomes of Design



• Common Operating Picture

- Several elements of the IWRSS project will work in combination to provide a common operating picture across multiple agencies,
 - Enabling river forecasters in one agency using their system to see the same information as river managers in another agency using a different system,
 - External stakeholders to see much of the same information through common web services.
- The COP will be dominantly geospatial, meaning enterprise GIS and geo-Intelligence will be ubiquitous within agency systems.

Four Outcomes of Design

4

- Integrated, Sustainable and Consistent Water Resources Modeling and Forecasts

- For IWRSS stakeholders, the centerpiece will be a new national suite of integrated high-resolution water resources analyses and forecasts.
- Analyses will include historical water budget studies, current conditions for immediate situational awareness, and forecasts of future water budget conditions:
 - Basic short-term ensemble water budget forecasts at 1 km² resolution for U.S.
 - Advanced modeling in selected regional demonstration areas
 - Advanced regional river and flood forecasting and management models with cross-disciplinary linkages

Integrated Water Resources Science and Services

- Work in progress; still informal and unofficial
- Only three agencies thus far – NOAA, USACE, USGS
- FY 2010 – 12 goals include:
 - Establish formal agreements and proposed governance model
 - Conduct pilots to demonstrate interoperable infrastructure and deploy new science and technology
 - Develop integrated data, tools and services
- More information
 - www.weather.gov/oh/docs/IWRSS_1p_summary.pdf

Integrated Water Resources Science and Services (IWRSS)

A high-speed photograph of a single water droplet falling into a pool of water. The droplet is captured mid-fall, just above the surface, creating a sharp, vertical column of water. Below the droplet, a series of concentric ripples spread outwards across the surface of the water. The background is a soft, out-of-focus blue gradient, suggesting a sky or a large body of water. The overall image has a clean, scientific aesthetic.

*An Integrated and Adaptive Roadmap for
Operational Implementation*