Collaborative Science & Technology Network for Sustainability
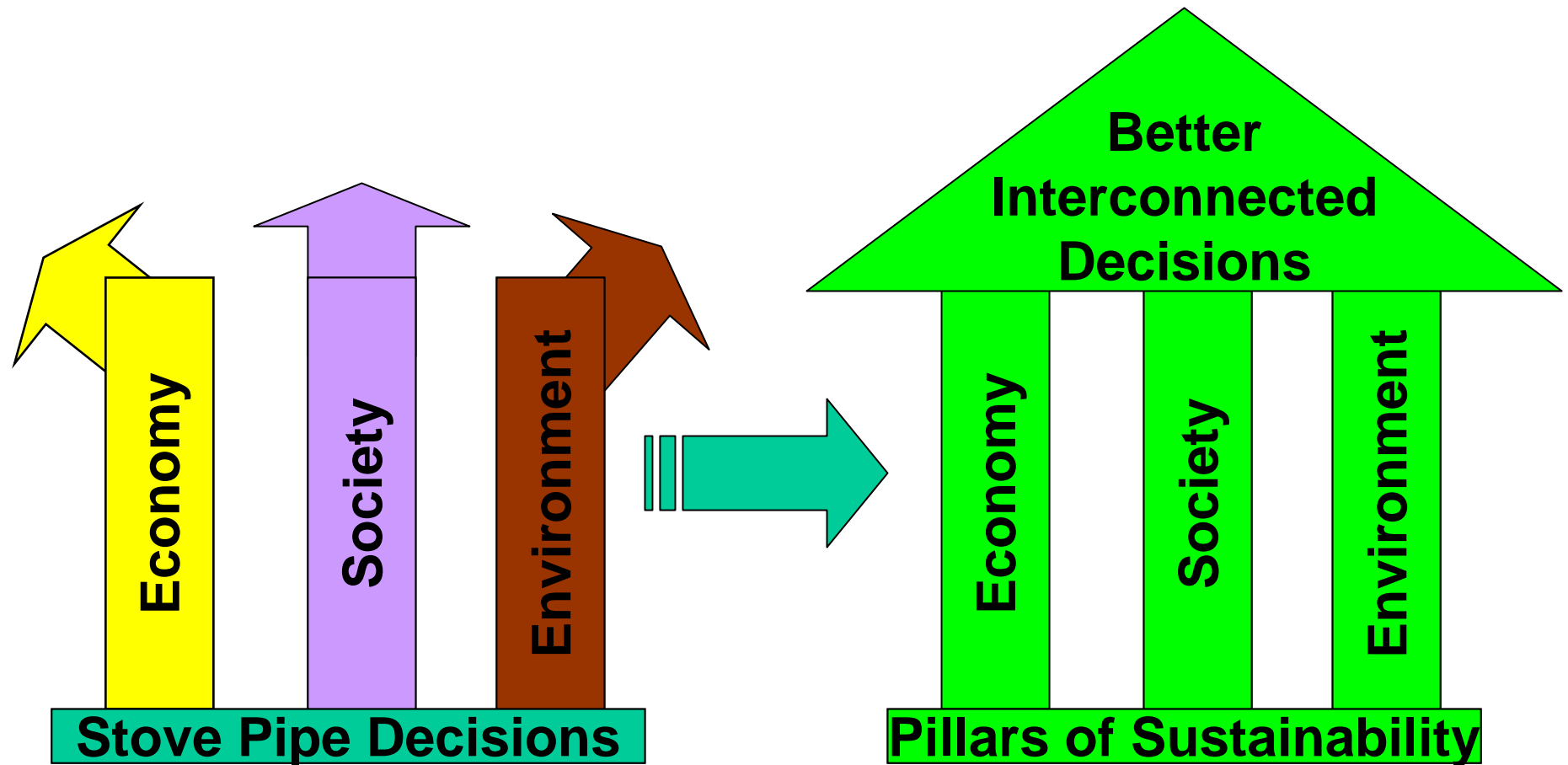
Opening Remarks

Gary J. Foley, Director

National Center for Environmental Research

Office of Research & Development

EPA

The question facing us is:
"How can the U.S.
Environmental Protection
Agency
best use its resources to
advance sustainability?"

Focus on the Decision-making!

Better Interconnected Decisions

Economy · Society · Environment

Stove Pipe Decisions

Pillars of Sustainability

EPA's Guiding Principles
CAMR Rule Development 2005

1. Protect children and pregnant women
2. Stimulate and encourage early adopters of new technology
3. Reduce total emissions by leveraging co-benefits from CAIR
4. Maintain America's competitiveness (electricity and energy)
5. One component of overall effort to reduce mercury emissions

Administrator Johnson's Four Priorities for EPA

These priorities will help us meet the goals of our strategic plan: cleaner air and water, land preservation and restoration, healthier communities and ecosystems, and increased environmental stewardship.

Administrator Johnson's Four Priorities for EPA

1. **Accelerate the pace of environmental progress. By supporting legislation over regulation, results over methods, and partnerships over conflicts, we can help usher in a new era of environmental protection. *[Environment]***

Administrator Johnson's Four Priorities for EPA

2. *Environmental protection can be a driver for economic growth. Through efforts like Brownfields that not only reduce pollution, but also revitalize valuable land, we can achieve this dual goal of protecting our environment while strengthening our economy. [Economy]*

Administrator Johnson's Four Priorities for EPA

3. *Focus on using partnerships and other innovative methods to promote environmental stewardship. Collaboration, voluntary programs, environmental education and outreach are proven tools of today and tomorrow. [Society]*
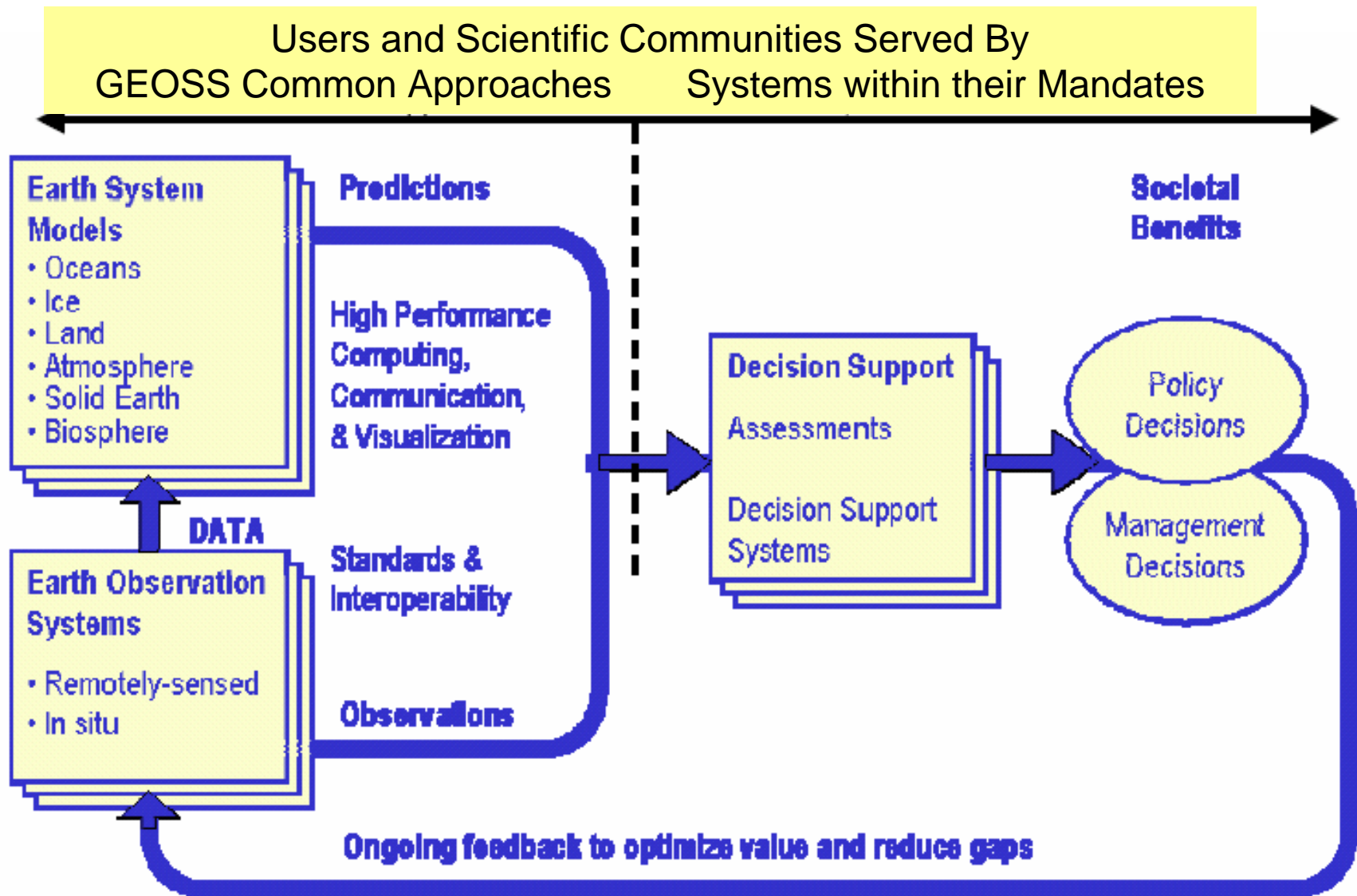
Administrator Johnson's Four Priorities for EPA

4. *Enthusiastically approach these new challenges while maintaining our vigilance in enforcing existing laws and regulations. [Environment]*

The GEOSS Architecture

Users and Scientific Communities Served By
GEOSS Common Approaches   Systems within their Mandates

Earth System Models
- Oceans
- Ice
- Land
- Atmosphere
- Solid Earth
- Biosphere

Predictions

High Performance Computing, Communication, & Visualization

DATA

Standards & Interoperability

Earth Observation Systems
- Remotely-sensed
- In situ

Observations

Decision Support
Assessments

Decision Support Systems

Societal Benefits

Policy Decisions

Management Decisions

Ongoing feedback to optimize value and reduce gaps

Building a scientific foundation for sound environmental decisions

Nine GEOSS Societal Benefits

1. **Improve Weather Forecasting**

2. **Reduce Loss of Life and Property from Disasters**

3. **Protect and Monitor Our Ocean Resource**

4. **Understand, Assess, Predict, Mitigate, and Adapt to Climate Variability and Change**

5. **Support Sustainable Agriculture and Forestry, and Combat Land Degradation**

6. **Understand the Effect of Environmental Factors on Human Health and Well-Being**

7. **Develop the Capacity to Make Ecological Forecasts**

8. **Protect and Monitor Water Resources**
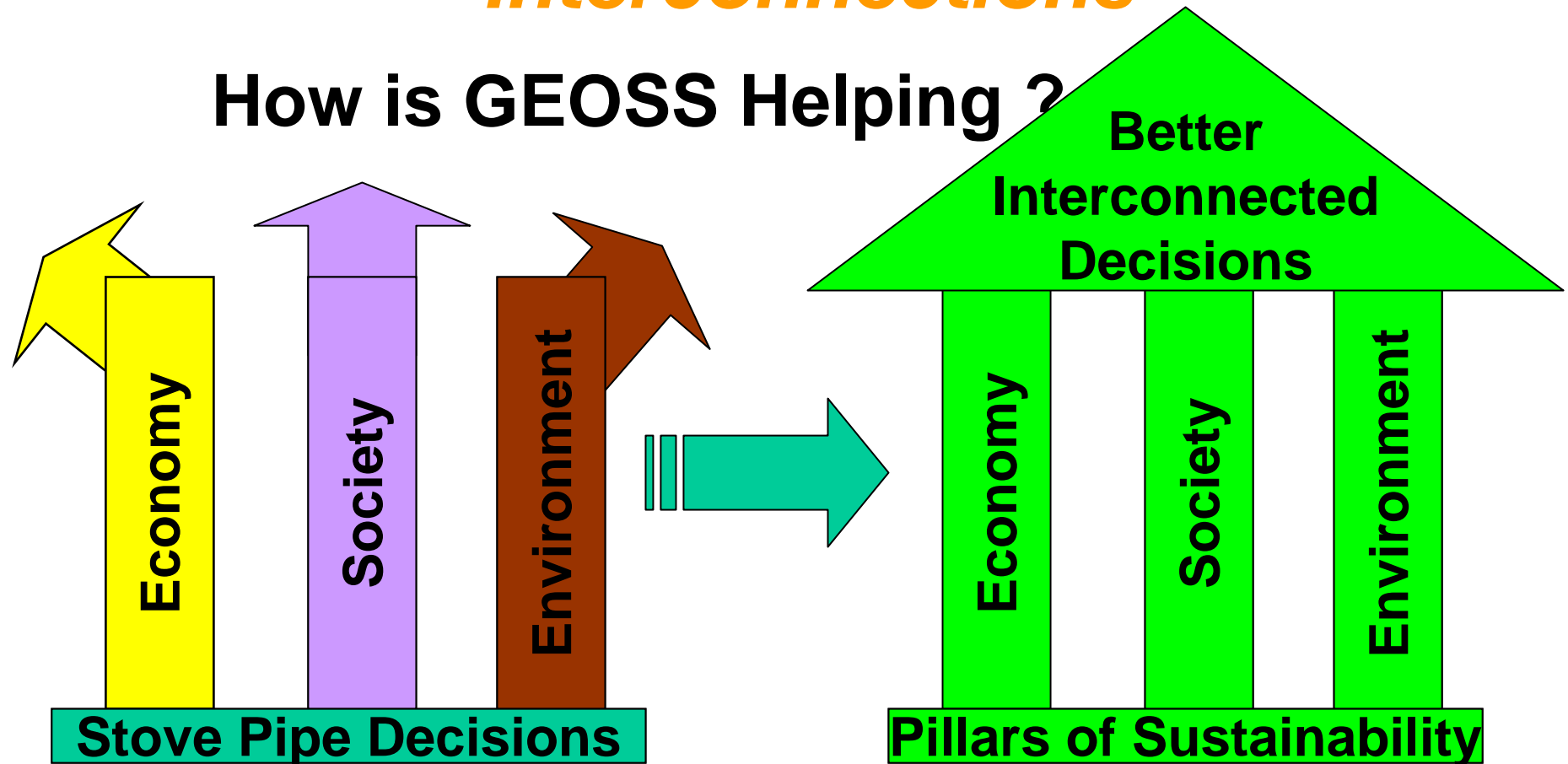
9. **Monitor and Manage Energy Resources**

Vision Statement

• Enable a healthy public, economy, and planet through an integrated, comprehensive, and sustained Earth observation system.
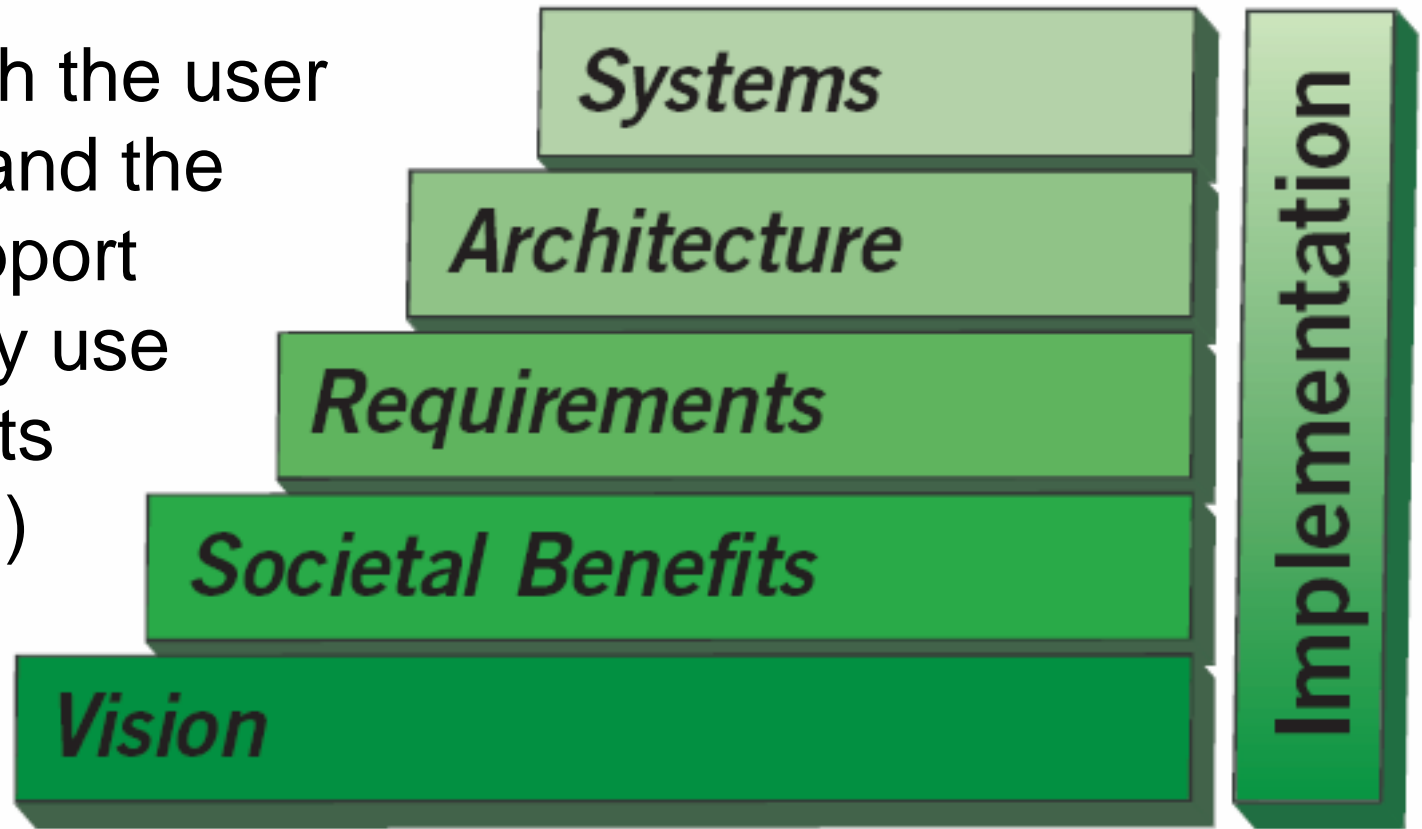
Approach to Implementing the U.S. Integrated Earth Observation System

Interface with the user community and the decision support systems they use (requirements specification)

Systems

Architecture

Requirements

Societal Benefits

Vision

Implementation

THE SPECTRUM OF USERS

From observations

Earth observations & earth system models

Data-to-Information archiving & services

Decision support tool development

Decision making

Assessment of benefits

Earth system scientists and modelers

Earth system service providers

Environmental process modelers & researchers

Enviromental managers

Public officials, advocacy groups and the Public

To societal benefits

User Requirements for Earth Observations

Generally well documented

Earth observations & earth system models	Earth system scientists and modelers
Data-to-Information archiving & services	Earth system service providers
Decision support tool development	Environmental process modelers & researchers
Decision making	Policy Makers & Environmental managers
Assessment of benefits	Public officials, advocacy groups and the Public

Less able to document needs

A Generic Community of Practice

The Public & Public Officials

Approach to Implementing the U.S. Integrated Earth Observation System
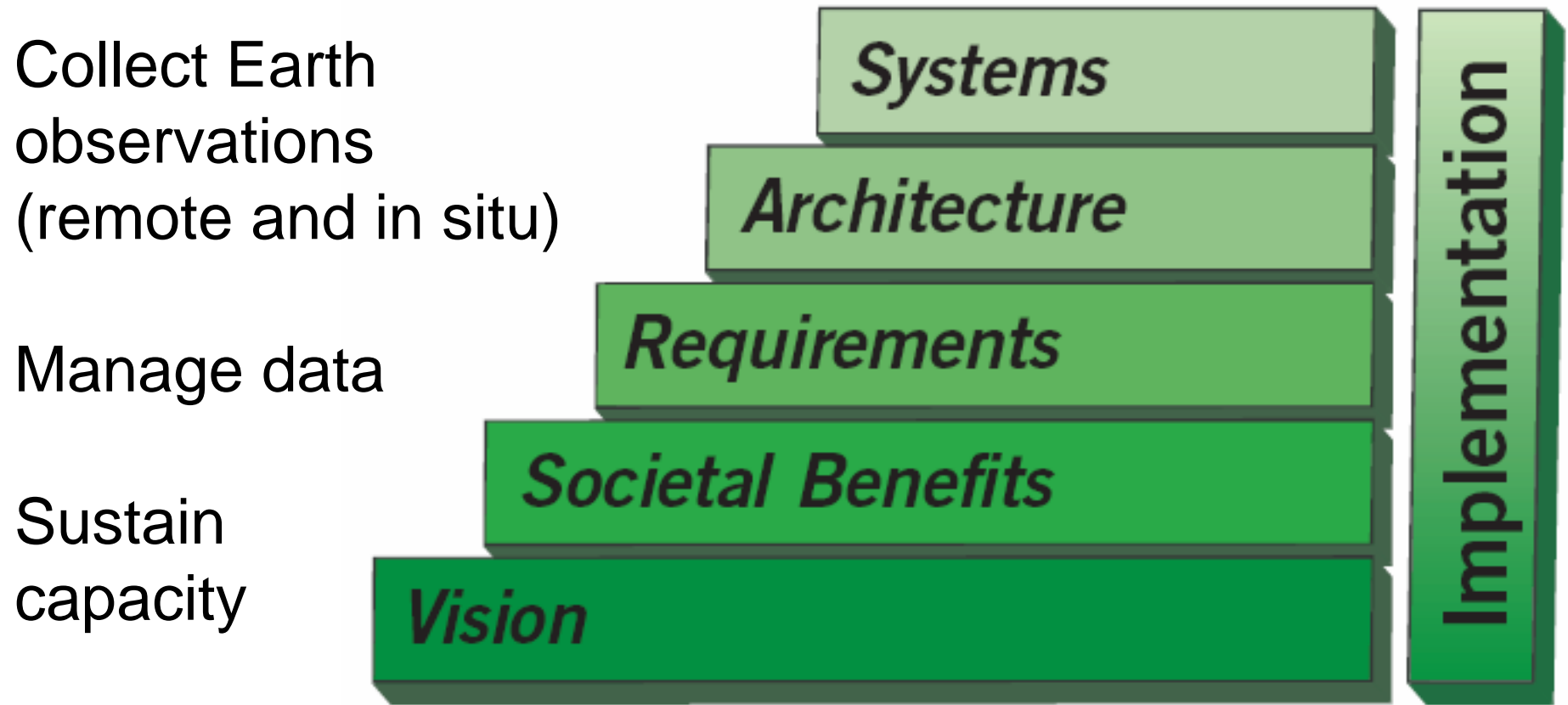
Collect Earth observations (remote and in situ)

Manage data

Sustain capacity

**Focus on the Decision Support Tools
In Each of the Pillars**

**Get the DST Developers
And Users to Identify
Unfilled Data and
Information Needs**

**Get All User Com-
munities To Specify
Their Needs**

**Build Partnerships
To Create Decision
Support Systems for
The Whole Community of Practice**

**Better
Interconnected
Decisions**

Economy

Society

Environment

Pillars of Sustainability