Knowledge and Information Management Framework using GIS: An integrated Approach

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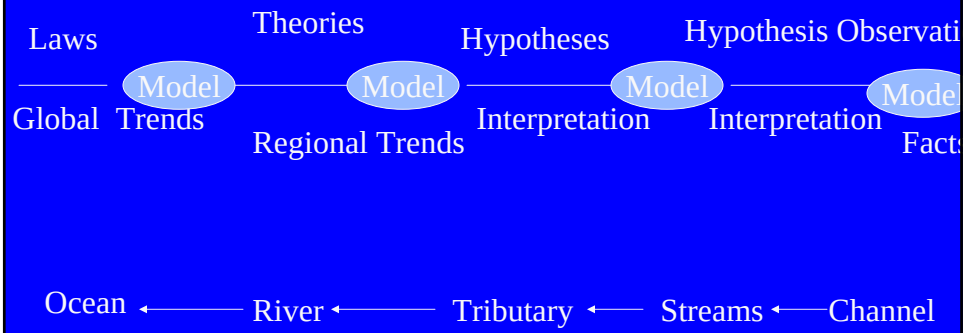
Presentation Plan

- Introduction
- Basic Elements of the Approach
- Spatial Domain
- Temporal Domain
- Integrated Logical Framework
- Guiding and Operational principles
- How to start and Act

1. Introduction:

Knowledge is like an ocean fed by rivers, tributaries, Streams, Channels



The Context

- General context
  - Sustainability and stewardship as long-term goals
  - Natural processes and human influence as driving forces
  - Science must reorient as societal priorities change

GIS Application Context

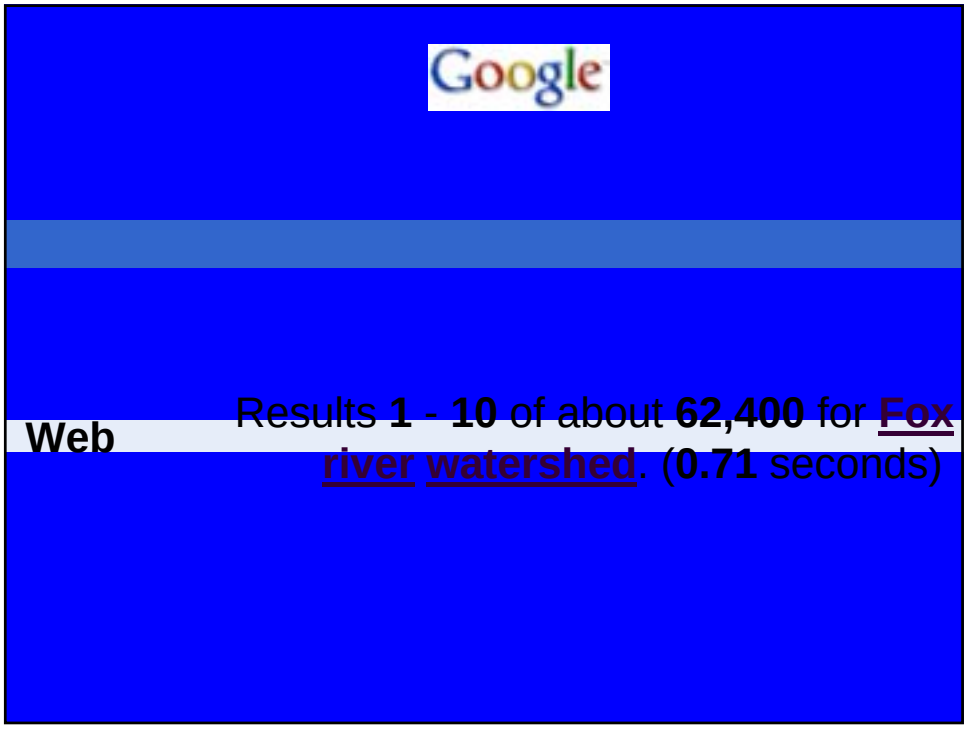
- GIS application Context
  - Building on existing facilities
  - Can be a platform for better connectivity and ownership among stakeholders
  - Identify networking and coordination opportunities
  - We can bring several perspectives together
  - Initiate long-term perspective on managing environmental change

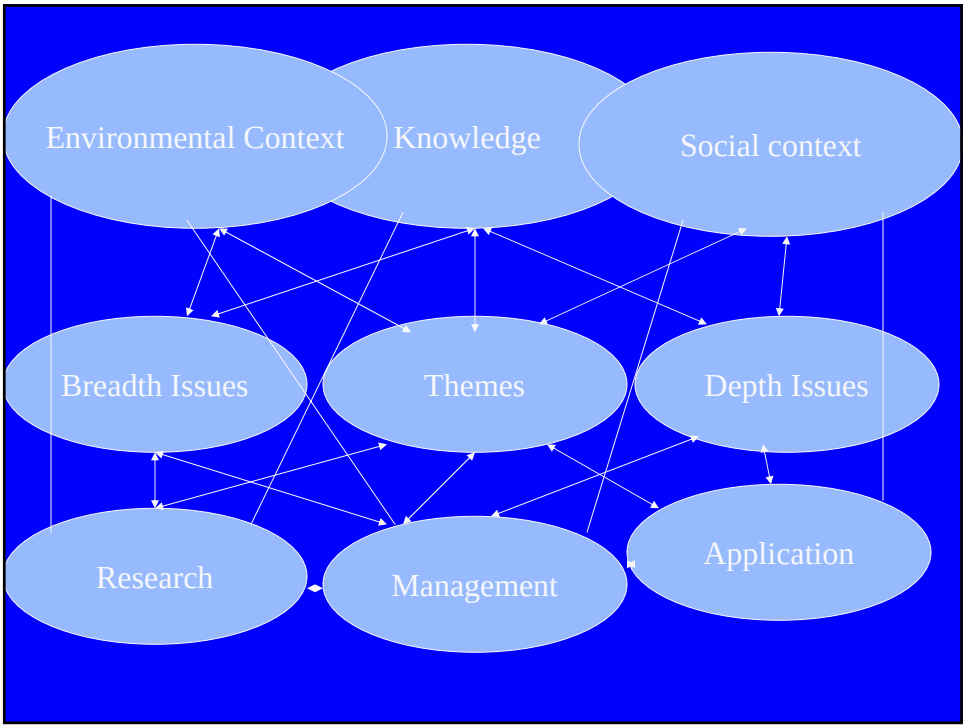
Stakeholders: Partners/Interest Groups

- Great Lakes Commission and Agencies
- Educational Institutions
  - Schools
  - Colleges
  - Universities
- Farmers
- Ranchers
- Youth and adults
- NGO/ PVO
- Natural resource Managers
- Teachers,
- Students
- Agri-businesses
- Govt. Agencies
- General Public

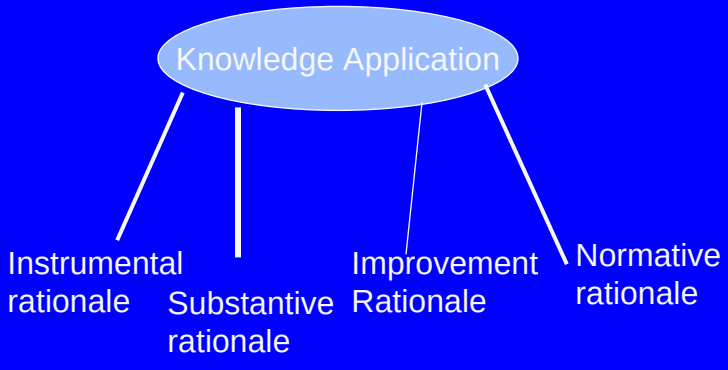
Environmental and Social Context

- GIS as a problem solving science and technology
- Solving complex problems involves people-resources-process interactions also
- Participation for strong connectivity and common ownership among stakeholders
- Social context for technical, scientific and political activities
- Transforming know-how into societal benefits through people





Knowledge Management Rationales



Focus: Watershed Management

- Main focus: Watershed as an integrated system consisting of 4 basic issue elements
  - Adaptive ecosystem function management
  - Linking Goals, purpose, outputs and activities in an hierarchical fashion
  - Facilitation of stake holders
  - People-Resource Interaction Management
- Problem focus
- Cause-effect relationship
- Adaptive management
- Need for a paradigm shift based on 4 elements

2. Basic Organizational approach for Basic Issues

- System Basis
- Problem Focus
- Improvement Orientation

System Basis

- Watersheds at Different Scales
- Critical Watersheds or watersheds at risks
- Ecosystem Utilization Types
- A System of Regional, Municipal and Community Watersheds

Problem Focus

- Water quality Management
- TMDL
- Hazardous Waste Management
- Flood Control

Improvement Areas

- Integrated Water Resource Management
- Watershed Management Information System
- Watershed Planning and Monitoring
- Use of Analytical Tools

3. Spatial Domain

- A nested continuum of
  - Sub-watershed
  - Watershed
  - Basin
  - Region

4. Temporal Domain

- Long-term Social Learning Framework
- Management and planning
  - Indicative Perspective
  - Periodic Perspective
  - Annual Perspective
  - Operational Perspective

5. Integrated Logical Framework

- Linking System Basis, Problem Focus and Improvement needs
- Stakeholder collaboration
- Logical Inter-linkages of
  - Goal,
  - Purpose,
  - Results, and
  - Activities

Output: Program Planning Matrix

Project Planning Matrix	Hierarchical Goals	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Development Hypothesis	Overall Goal	Quality, quality, Space, time		For sustainability of Overall Goal
	Project Purpose	Quality, quality, Space, time		For achievement of overall Goal
Manageable Factors	Results or Outputs	Quality, quality, Space, time		For achievement of purpose
	Activities/ sub-activities	Specifications		For obtaining the results

6.1 Guiding Principles

- GIS-Based Application tool
- Embrace people - resources interaction
- Focus on what matters most in managing change in using GIS
- Adopt Knowledge application Strategies
- Put people together with Knowledge and information
- Address public issues and management concerns through participatory process
  - Extend opportunities
  - Reduce risks
  - Build trust among stakeholders

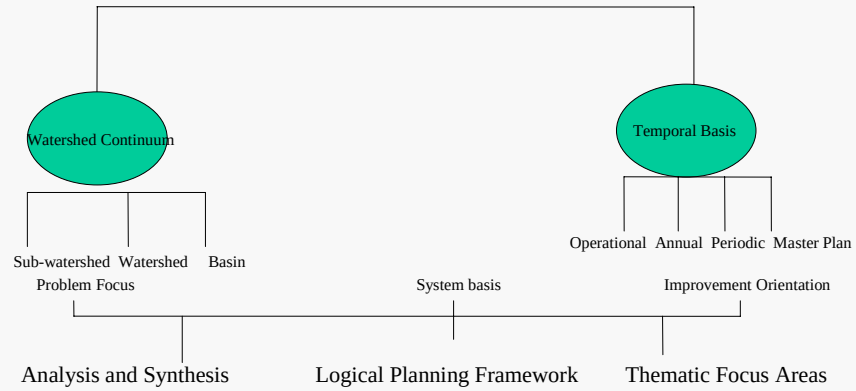
6.2 Operational Principles

- Other Pilot programs
- On-going programs
  - R and D programs in NRM
  - Successful networks/Success stories
  - Case studies
  - Ecosentinel TM
- Participatory Community Management
  - Integrating Watershed Planning and Management with Local Organization Building

Additional Perspectives

- System Characterization
  - Bench marks and changes
  - Indicators of Integrity and system Equilibrium
  - Trends in improvement
- Sustainability
- Use of Advanced Techniques and Modeling
- Choices and Risks
- Interdisciplinary approach
- Managing Nested Continuum of Watersheds

Watershed Management Framework



Analysis and Synthesis

* What is out there?
* How did it get there?
* How is it being managed
* What alternatives formanagmentexist
* What thematic Resources and Processes are of interest
* What is the Composite picture and Scenario

Logical Planning Framework

* Purpose
*Goals
*Results/Outputs
*Activities

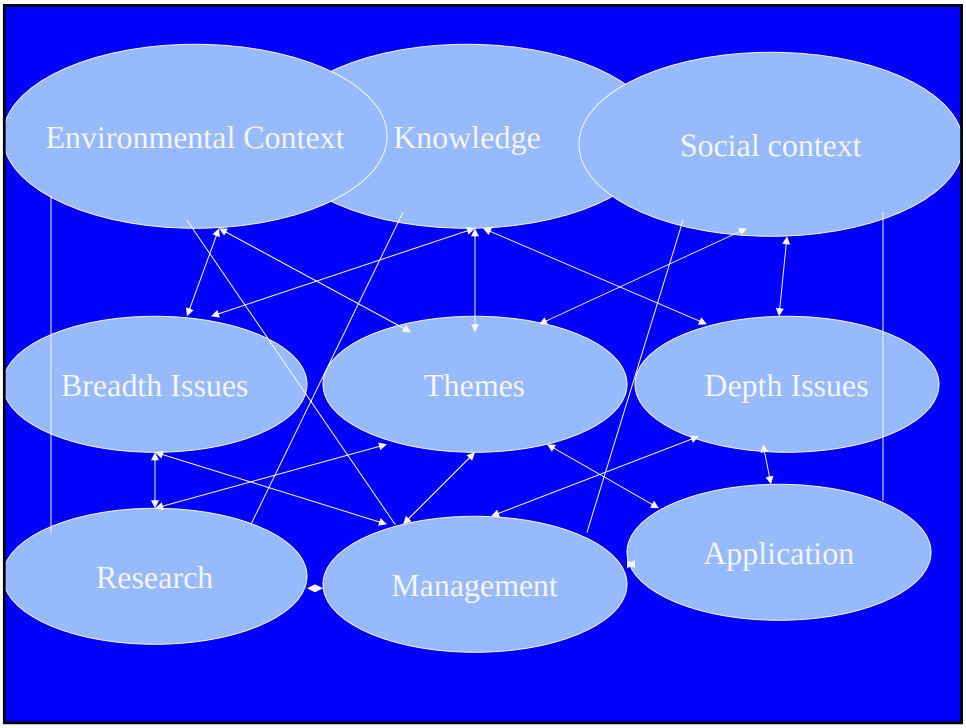
Thematic Focus Areas

* Local Level Planning
* Indigenous Systems
* Vegetation and Land Use Analysis
* Hydrologic and Watershed analysis
* Biodiversity Conservation Analysis
* Geo-morphological Analysis

* Facilitation Analysis

How to Start and Act

- **Starting points**
  - Use GIS as a integrating tool. Use GIS as a common platform.
  - Put people and partnership together with Knowledge management
  - Use an institutional strategy. Make a context specific system-based action plan.
- **Potential Action Plan Activities**
  - GIS-based Research planning
  - Participatory GIS Curriculum design
  - Participatory Database development
  - GIS-based Technology transfer
  - Academic and Policy dialogue in GIS-based Knowledge management



Interaction

- Clarifications
- Comments
- Suggestions