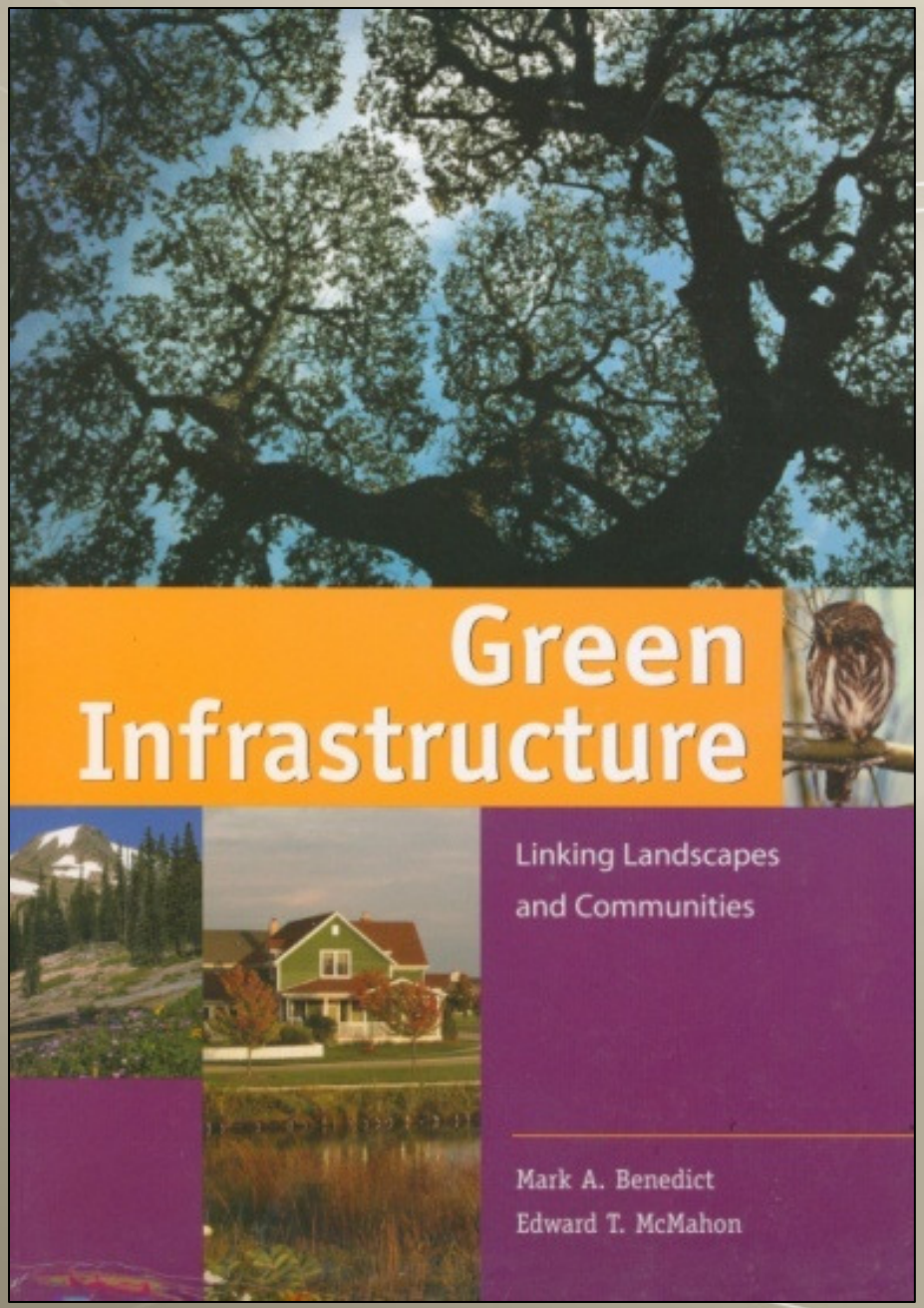


Linking Landscapes and Communities

Part 1: Introduction

Ed Macie

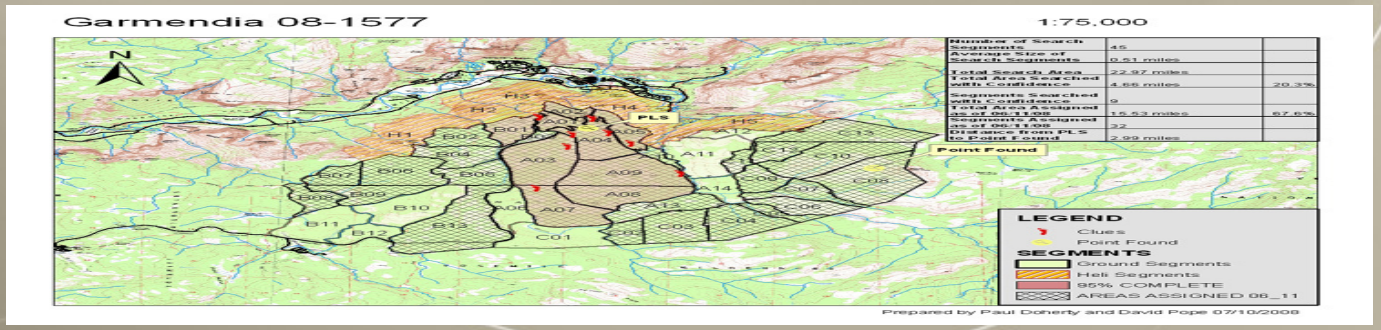
USFS Southern Region

March 27, 2009

Community Challenges

A Framework to Integrate and Inform

- How can we be more proactive?
- What to conserve?
- What values
  - Landscape
  - Ecologic
  - Cultural
- Where to develop?
- Balance growth with quality of life?

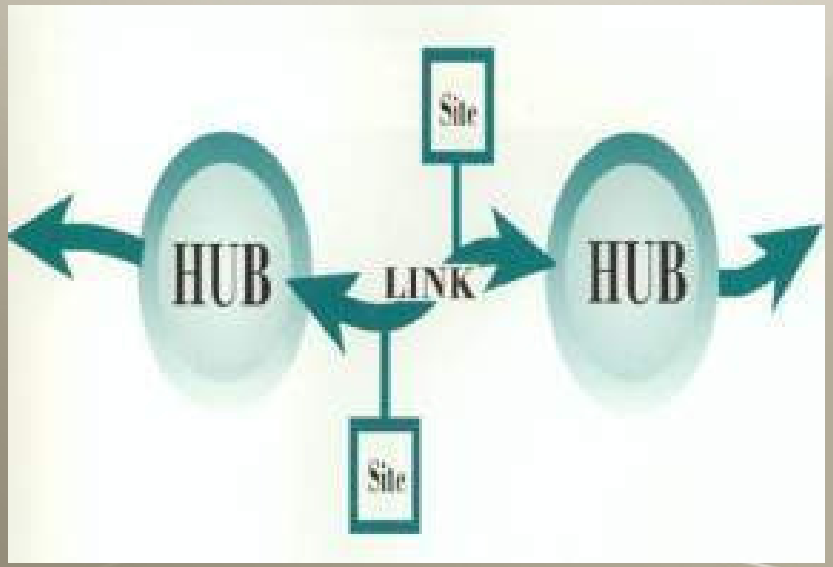


Green Infrastructure

- A strategically planned and managed network of natural lands, working landscapes, and other open spaces that conserves ecosystem values and functions and provides associated benefits to human populations.

What is Green Infrastructure? (WIGI)

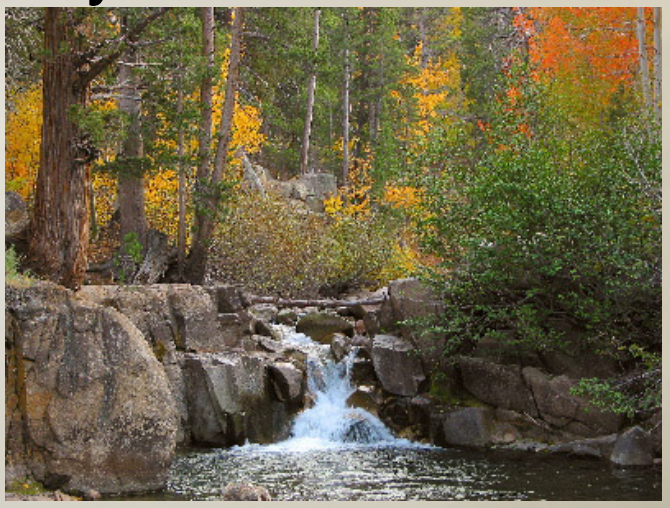
- A Network
  - Hubs, anchor the network
  - Links, tie the network together
  - Sites, smaller areas that may not be attached



- A Framework
  - Lands, public, private and non profit
  - Scales, multi state, state, regional, community
  - Landscapes, urban rural gradient

WIGI

Lands and Water that Support Natural Ecosystem Values and Functions

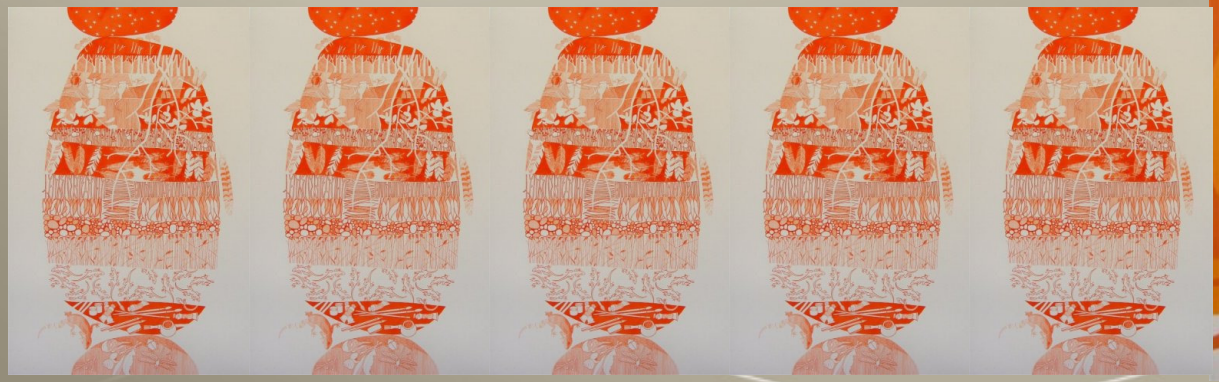


- Ecological communities with natural or restored features.
- Fish and wildlife resources.
- Watersheds, water resources, aquifers, floodplain.
- Working landscape with ecological values such as forests and farms.

WIGI

Lands that Provide Associated Benefits to Humans

- Recreation and health.
- Cultural resources and historic sites.
- Community character, local vernacular, sense of place
- Working lands with economic values



WIGI
A Process Which Convenes

- Natural Resource, land planning and built (grey) infrastructure professionals.
- Elected and appointed officials.
- Engaged and interested public.

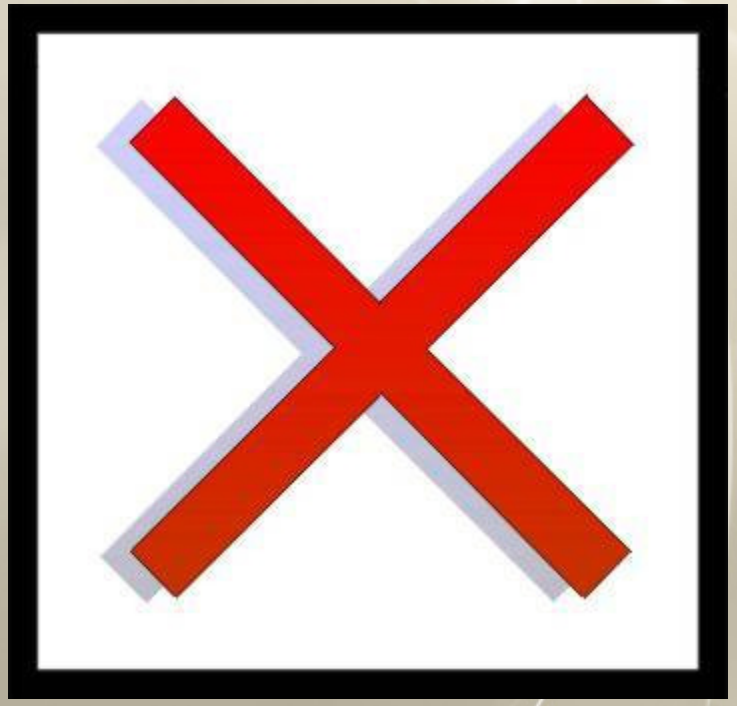
Relating Green to Grey

Green Infrastructure and Grey Infrastructure

- **Both Require:**
  - Strategic planning to insure optimal functional systems.
  - Financing for design and maintenance.
  - Management to maintain services and maximize benefits.
- **Ideally Are:**
  - Planned simultaneously before development.
  - Given equal priority in the planning process.
  - Planned as complimentary systems.
  - Given equal attention in the funding process.

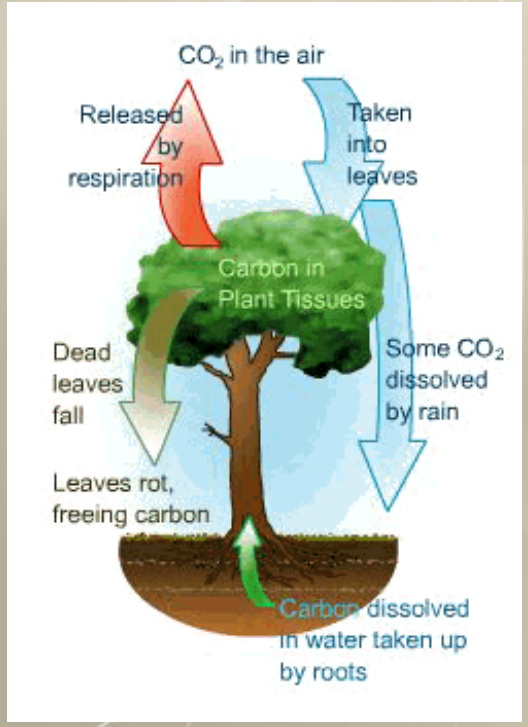
What GI is NOT

- A Program
- A Panacea
- A Short Term Solution
- A Isolated Effort
- A Government Program
- An Anti-Growth Tool
- Elitist



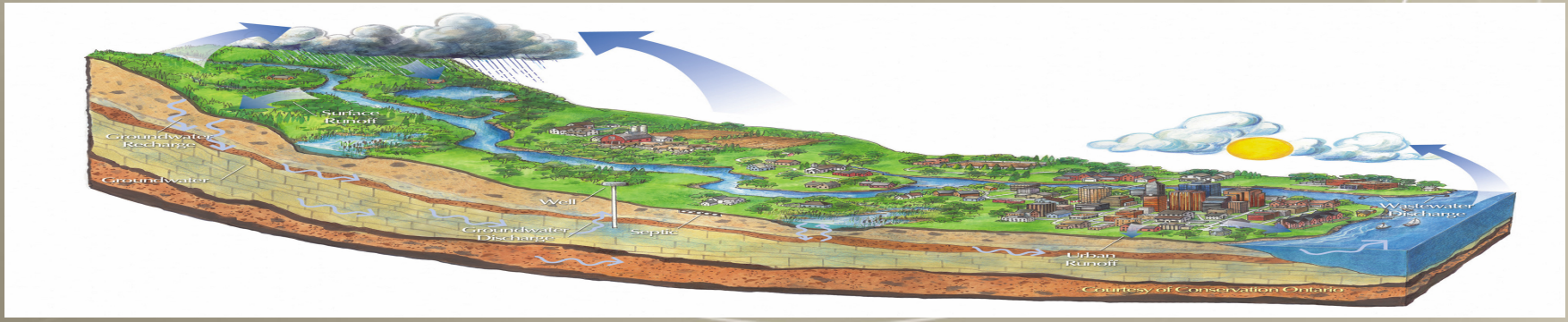
Green Infrastructure
Ecological Benefits

- **Natural ecosystem values and functions**
  - Carbon sequestration, climate regulation
  - Energy conservation
  - Soil conservation and generation
  - Storing and cycling nutrients
  - Filtering and cooling water
  - Wildlife habitat
  - Maintaining a genetic library



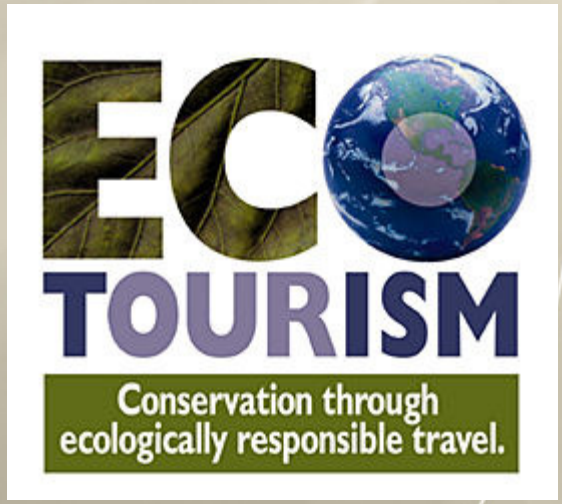
Green Infrastructure
Social Benefits

- **Benefits to human populations**
  - Water flow and storage
  - Recreation and scenery
  - Human health
  - Pollinating crops and other plants
  - Providing forest products, fish and game for human consumption
  - Hazard mitigation, flood control



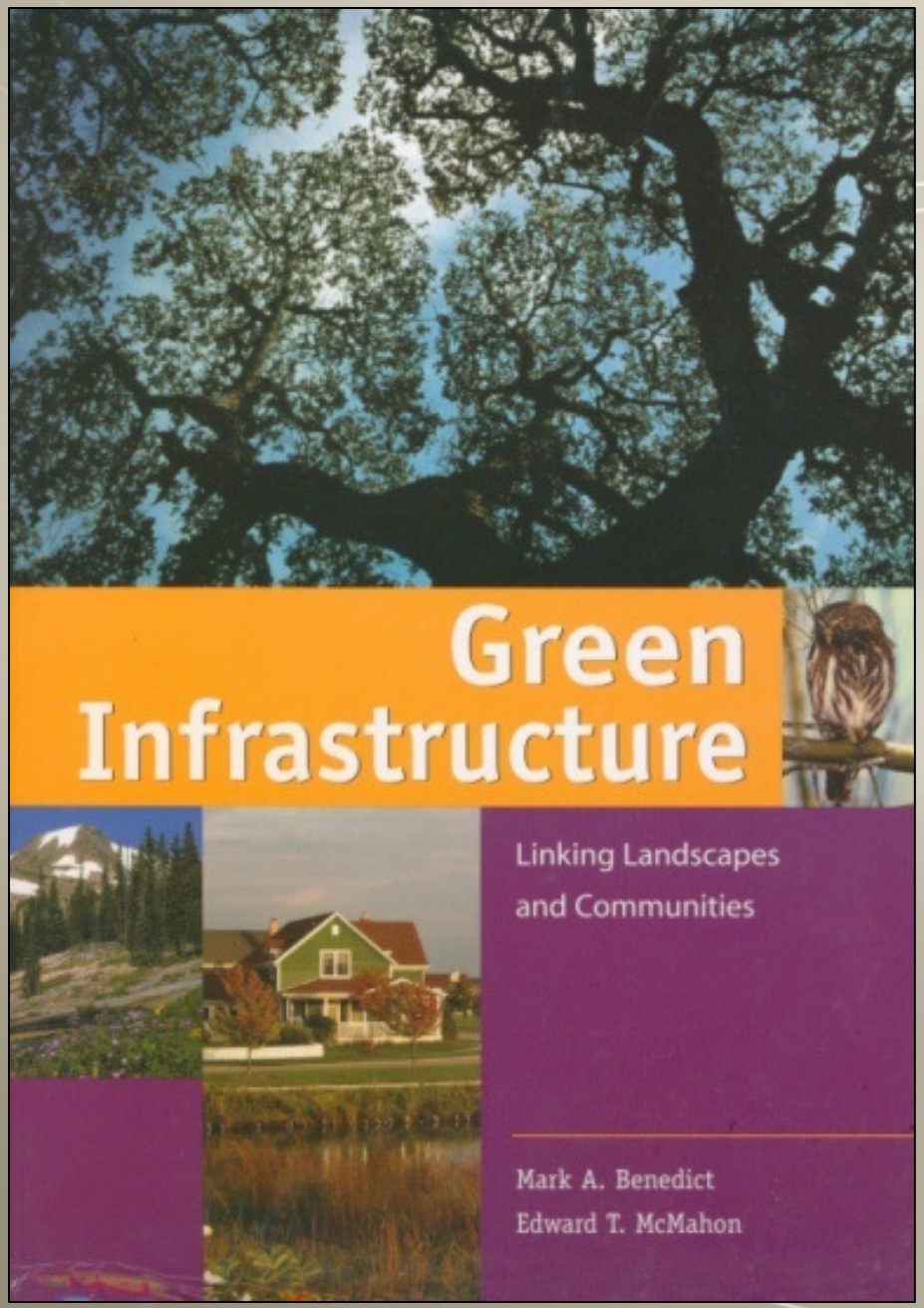
Green Infrastructure
Economic Benefits

- **Examples of the Value of Natural Systems and Other Open Spaces**
  - Functioning Natural Systems
  - Working Lands
  - Nature – Based Tourism / Recreation
  - Real Estate
  - Quality of Life – Existence Value
  - Predictability and Certainty
  - Human Health



Your Turn!

- Identify Edmond's five most important ecological, environmental, social, or cultural considerations (issues) that would benefit or be enhanced with implementation of a green infrastructure plan.



Linking Landscapes and Communities

Part 2: Principles

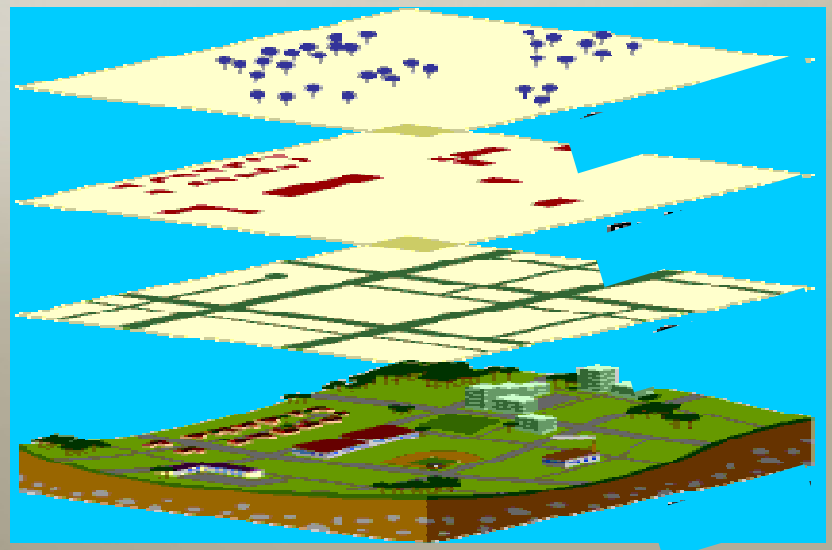
Ed Macie

USFS Southern Region

March 27, 2009

Outline

- Principles of Green Infrastructure
- Network Design
- Assigning Value to your Network



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“A” Set Principles

Benedict and McMahon, 2006

- Connectivity is key.
- Context matters.
- Grounded in sound science and land use planning theory and practice.
- Should function as framework for conservation and development
- Should be planned and protected before development.
- Is a critical public investment that should be funded up front.
- Affords benefits to people and nature.
- Respects the needs and desires of stakeholders and landowners.
- Requires making connections to activities within and beyond the community.
- Requires long term commitment.

“B” Set Principles

Glenn Eugster, APA, 2000

Recognize the Social and Natural Ecosystem/Watershed Context

- Describes and defines the natural resource values and functions of interconnected networks.
- Takes a holistic or systems based approach.
- Links systems and actions across multiple scales (project, community, landscape).

Multifunctional Framework for Development, Conservation, Protection, Restoration and Recreation

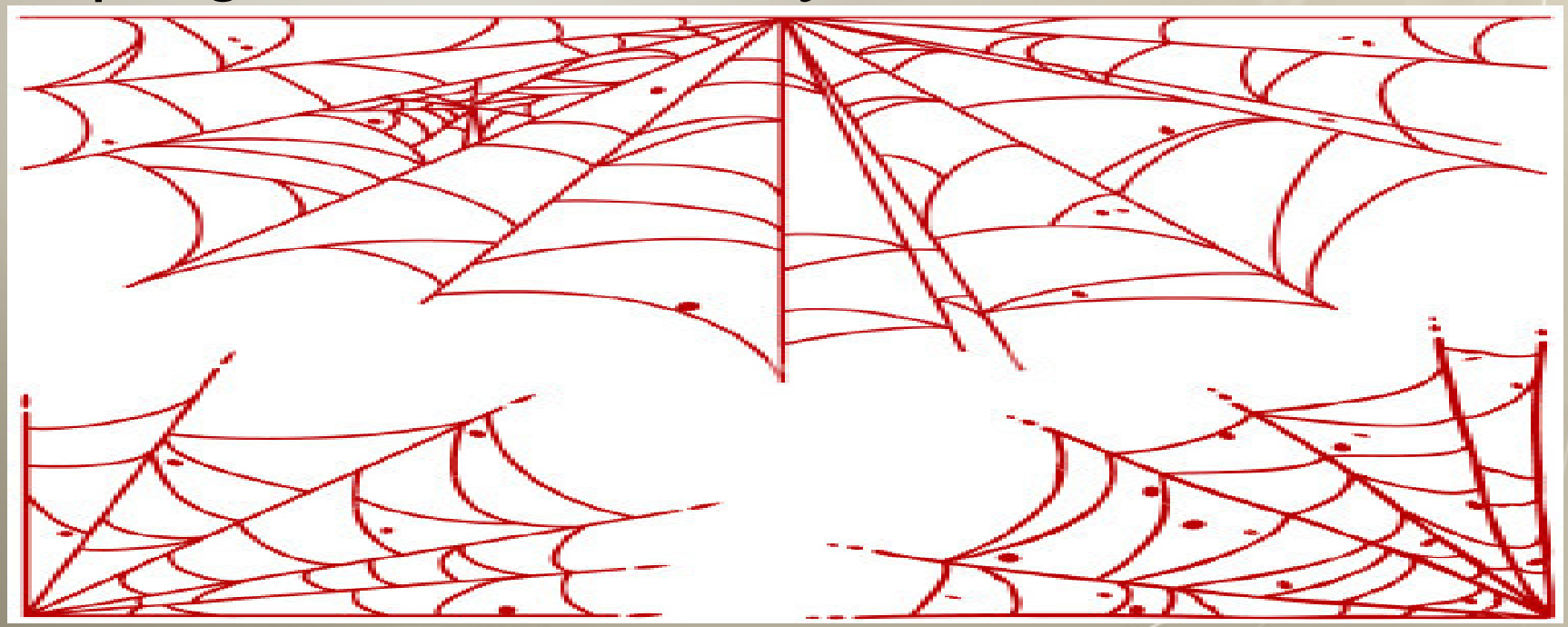
- Provides a hierarchy of green spaces at a variety of scale.
- Development and conservation certainty

Protect and Regenerate Health and Biodiversity

- Nature provides benefits, values, goods and services essential for individual and community health, and these processes should be conserved over space and time.

Create Natural, Social, and Economic Linkages

- Interrelationships and balance between, resources, ecosystem processes, tools, programs, community action.



Improve the Visual Quality and Sense of Place

- Both communities and landscape.
- Green infrastructure boundaries can define growth areas, and create design and management schemes.

Involve and Engage the Community

- Planning, implementation, management, and monitoring.
- GI is best developed and managed at the community level.

Multi-Functional Framework for Funding, Acquisition, Restoration, Management, and Development

- Will benefit from involvement of other local, state, and federal agencies.
- Uses a spectrum of approachs
  - Voluntary methods
  - Incentives
  - Sensitivity to landowner rights
  - Non traditional and broad based alliances.

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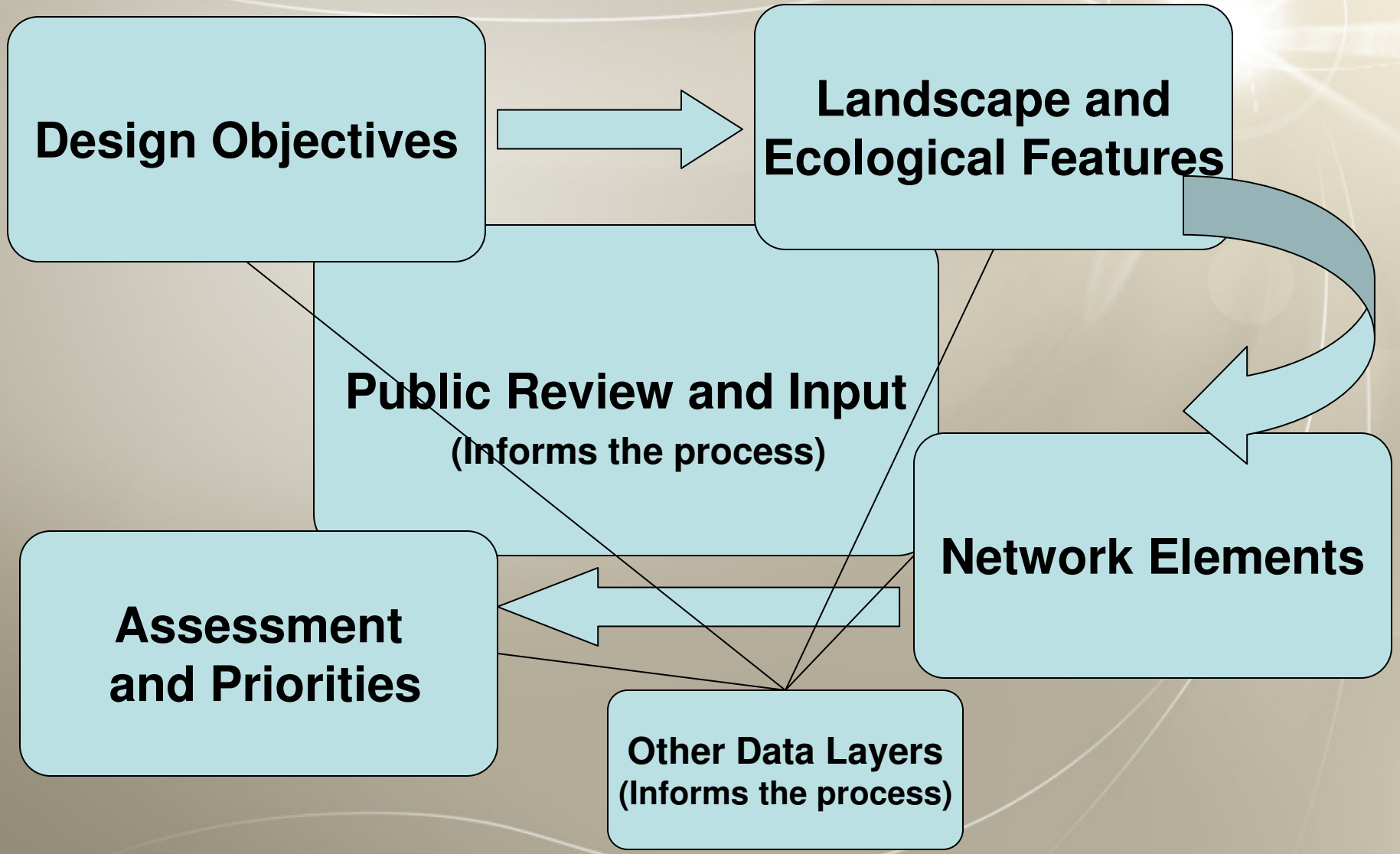
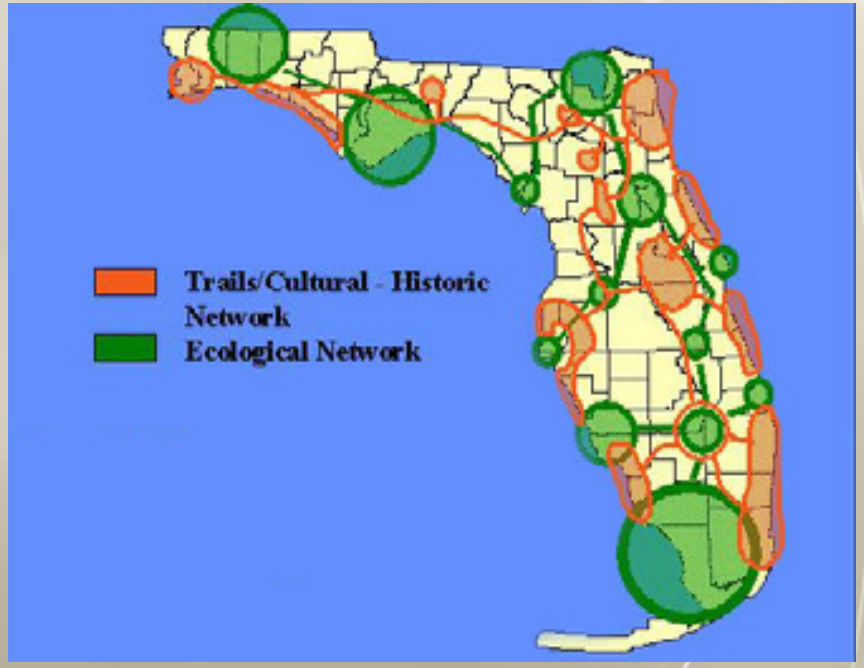
Network Design



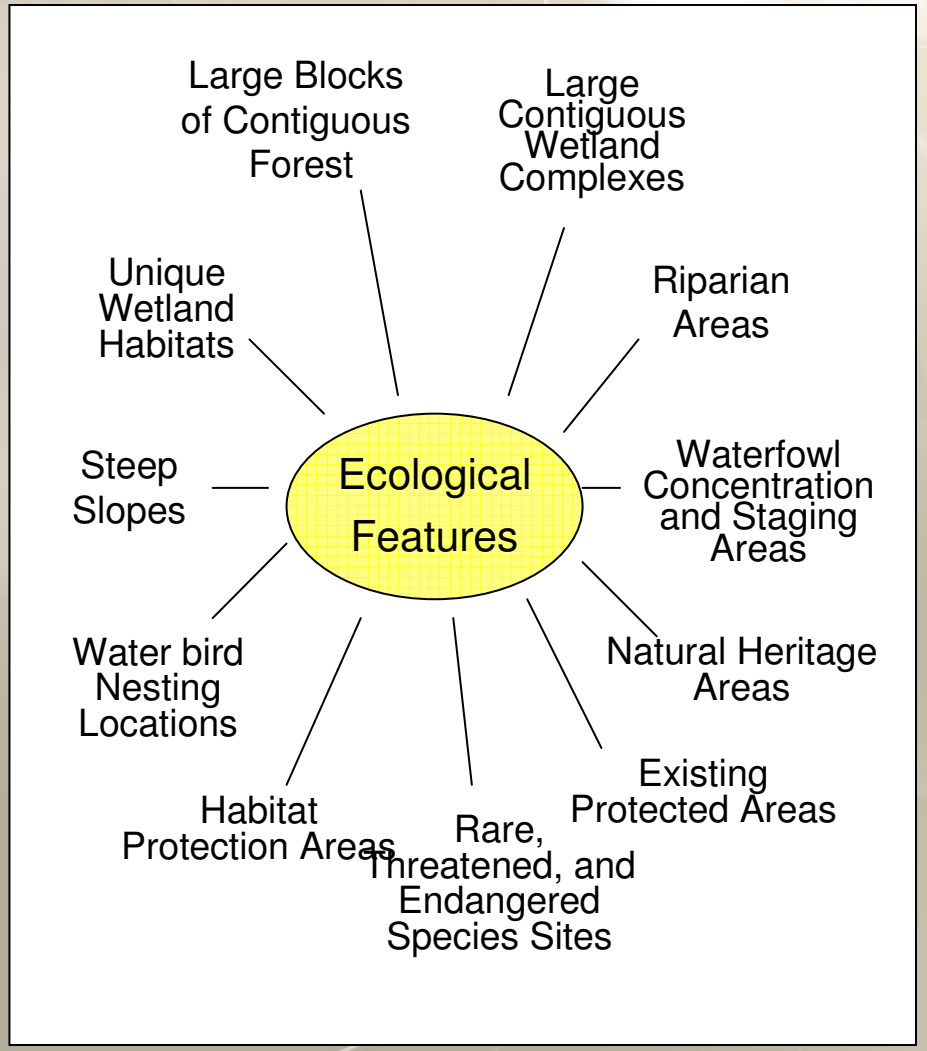
Design Goals and Objectives

- Refer to earlier exercise.
- Florida Ecological Network
  - Conserve critical elements of native ecosystems and landscapes
  - Restore and maintain connectivity
  - Facilitate ability of landscape to function as dynamic system.
  - Maintain the evolutionary potential to adapt to future change



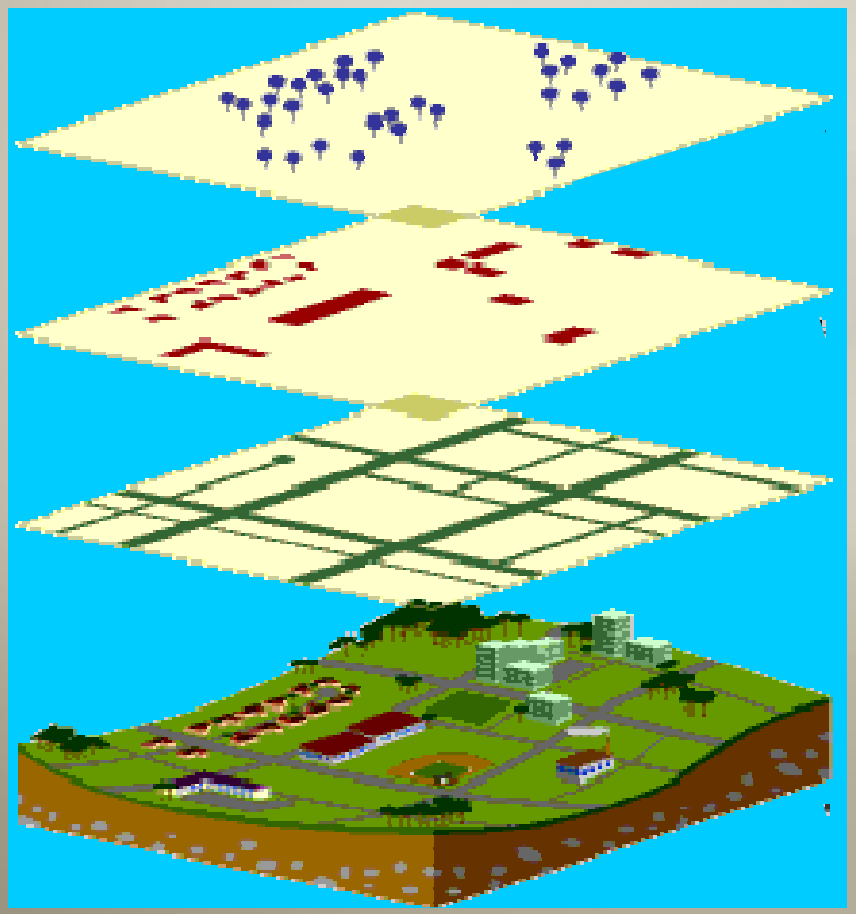
Landscape and Ecological Features

- Features which best describe the existing natural system
- Reflect your goals
- Better defines needed data



Other Data Layers

(Including the Human Network)



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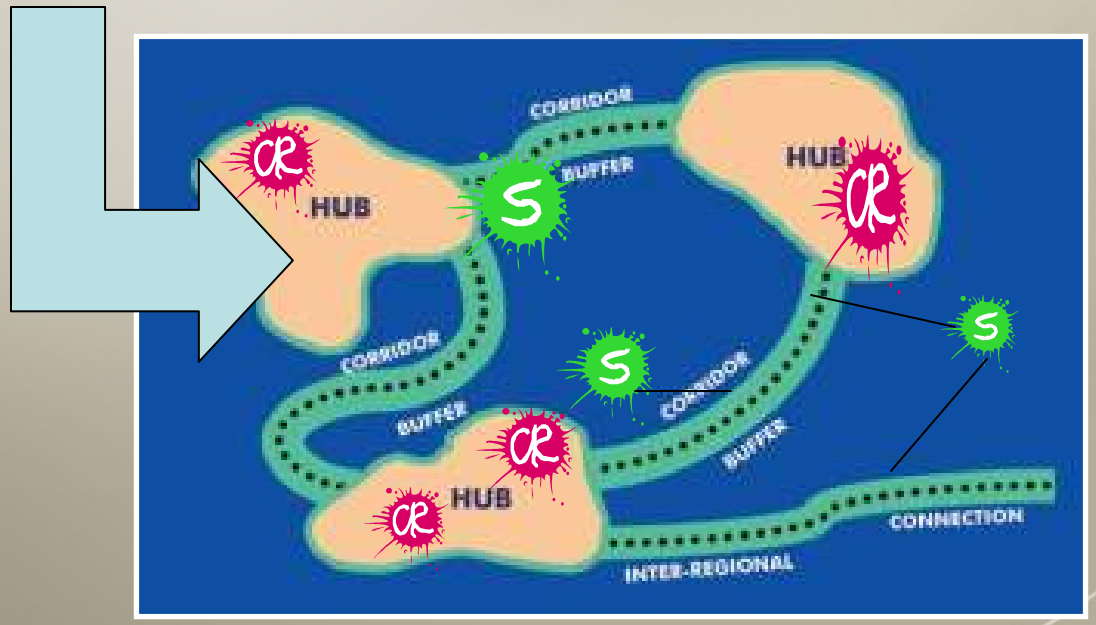
- Land use, land cover
- Floodplains, watershed boundaries
- Roads, railroads, trails
- Buildings, infrastructure
- Land ownership, parcels
- Historic, cultural resources
- Political subdivisions
- Topography
- Arial photography
- Other geographic layers

Network Elements

- Hubs – Highest quality, largest, least fragmented ecological landscape attributes. These anchor the Network!

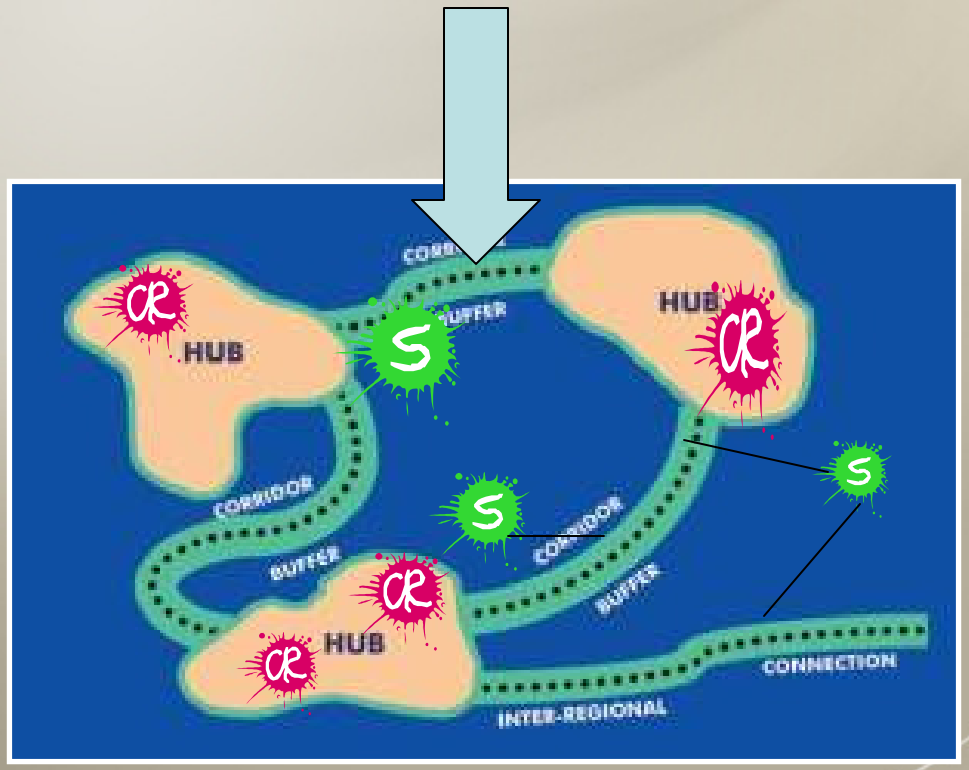


Network Elements

- Core Area – A large area within a network that is managed primarily as an ecological reserve for the conservation of biological diversity.
- A key feature within a hub with a strong objective appeal.

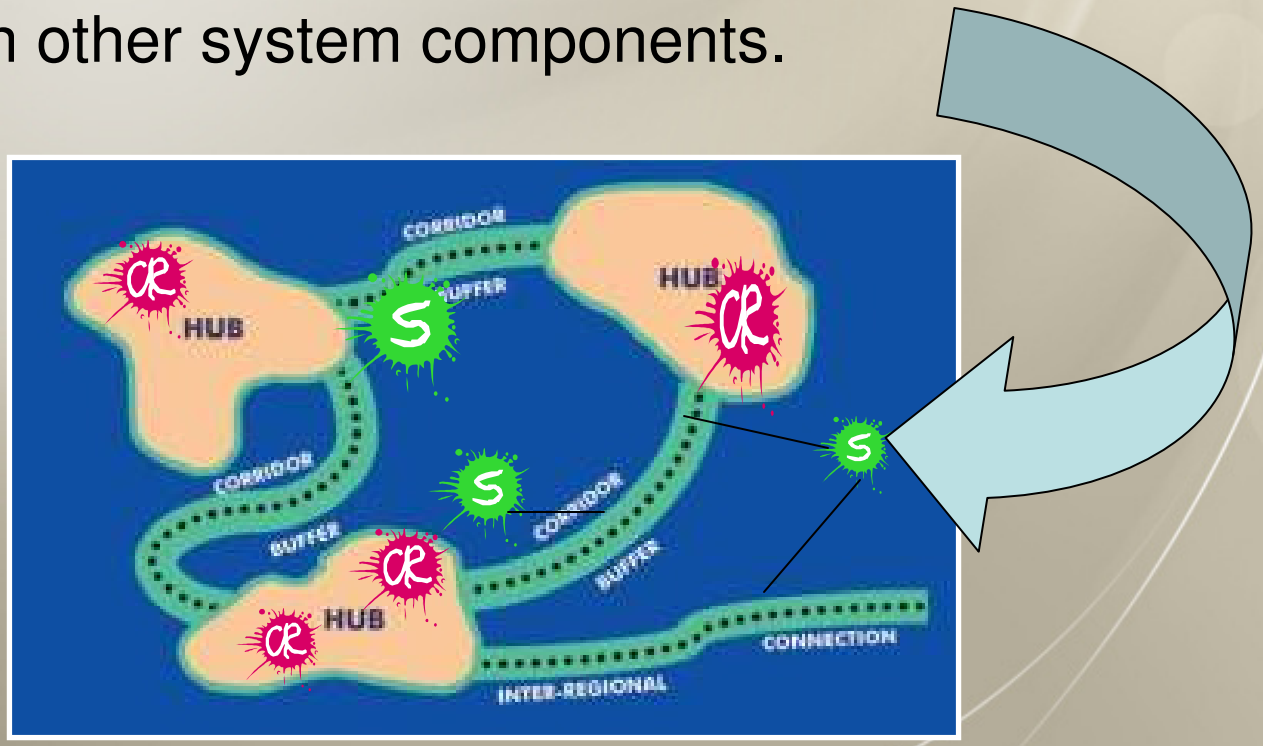
Network Elements

- Links – Connections that tie the green infrastructure system together.



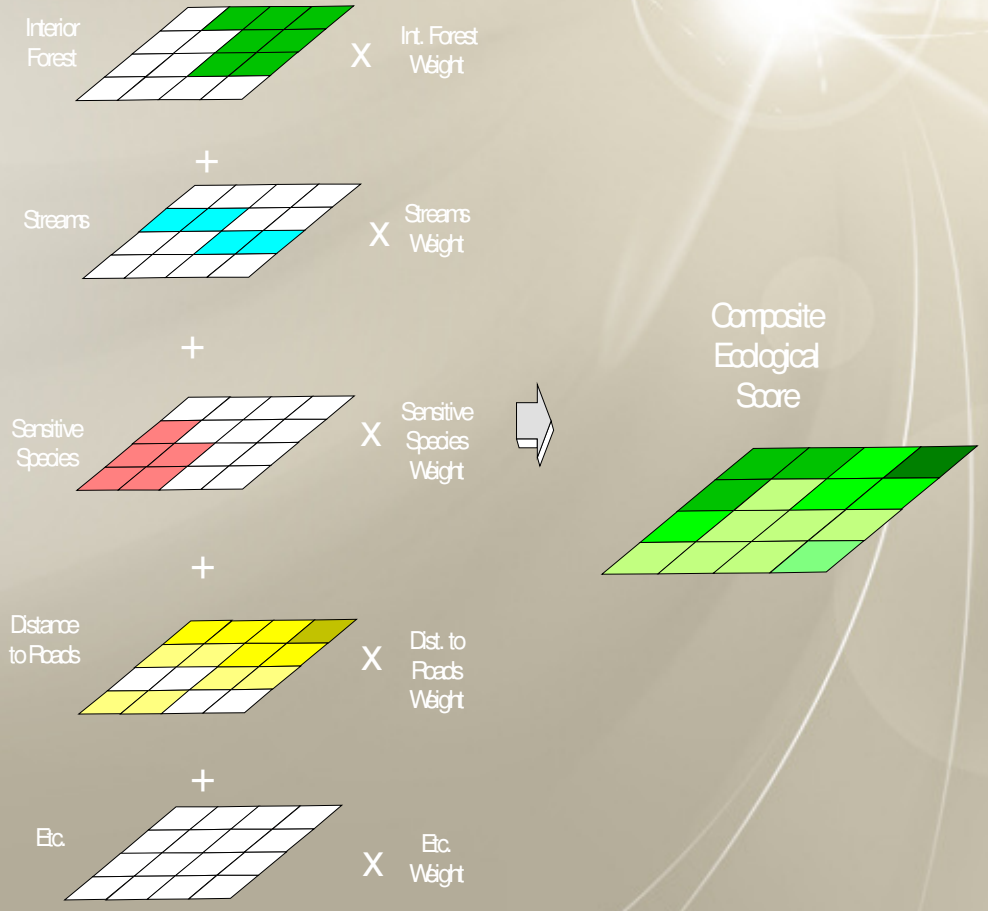
Network Elements

- Sites – A small feature that provides a place for native species and/or human activities and serve as a point of origin or destination but may or may not be physically linked with other system components.



Assessment and Priorities
Value of Network

- Suitability analysis
- Ecological significance
- Comparative conservation value
- Vulnerability
- Degree of protection
- Feasibility
- Degree of urgency

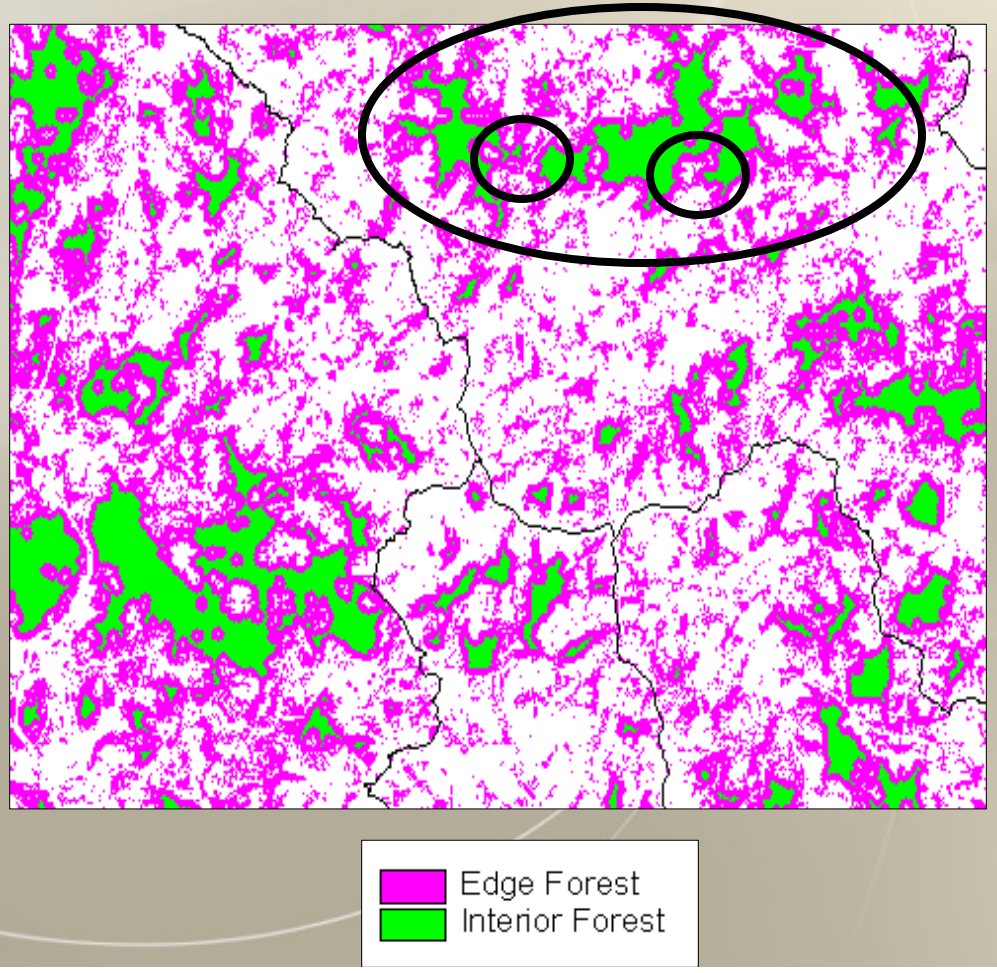


Assessment and Priorities
Value of Network
Elements

- Water Resource Protection
  - **Water quality/supply data**
  - **Floodplain, wetlands, streams and lakes**
- Working Landscapes
  - **Forest products industry**
  - **Agriculture**
  - **Ecotourism, hunting, fishing, and other recreation**
- Forest Management
  - **Best management practices**
  - **% of land in a certification system**
  - **% of land with forest plans**
  - **State and local ordinances affecting forest management**

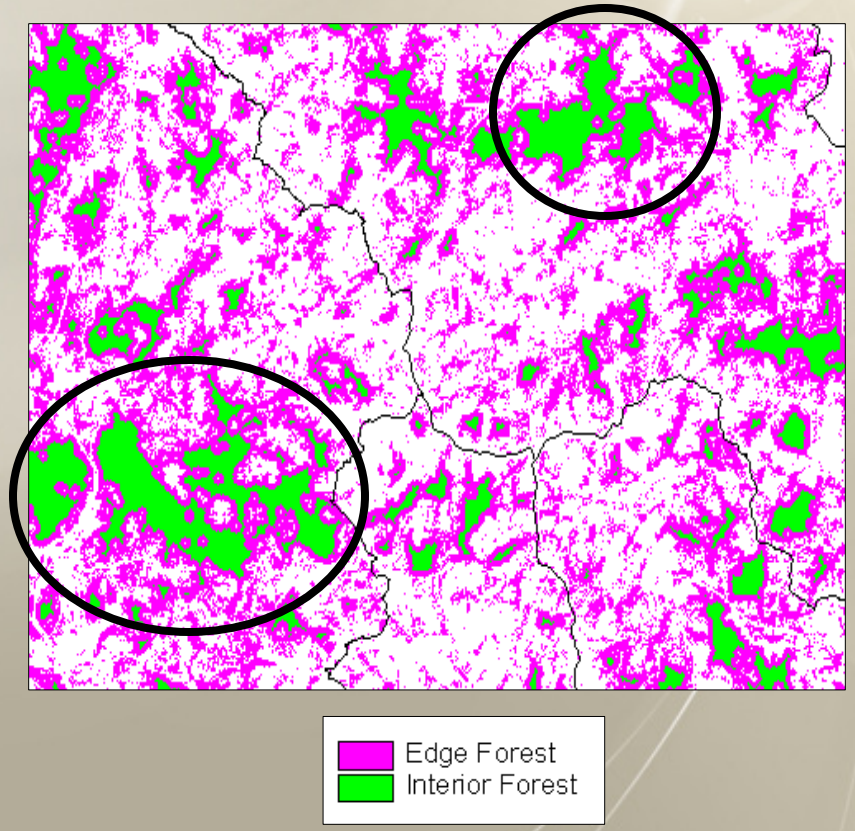
Assessment and Priorities
Value of Network
Elements

- Restoration Needs, "Internal" Gaps
  - break in continuity of large forest blocks
  - can increase edge effects on interior species
  - restoration "fills in" the network gaps



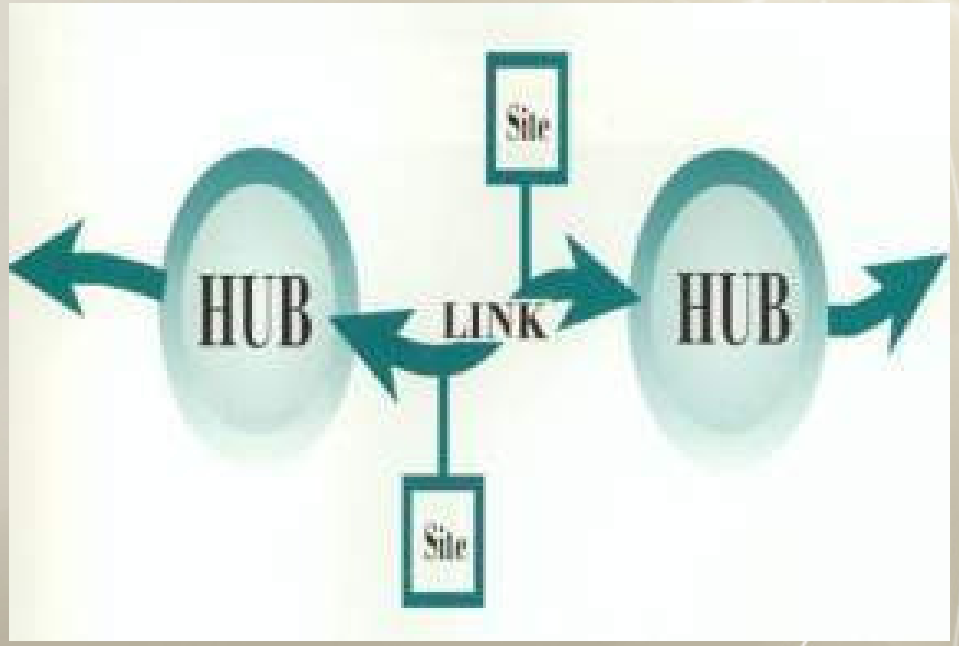
Assessment and Priorities
Value of Network
Elements

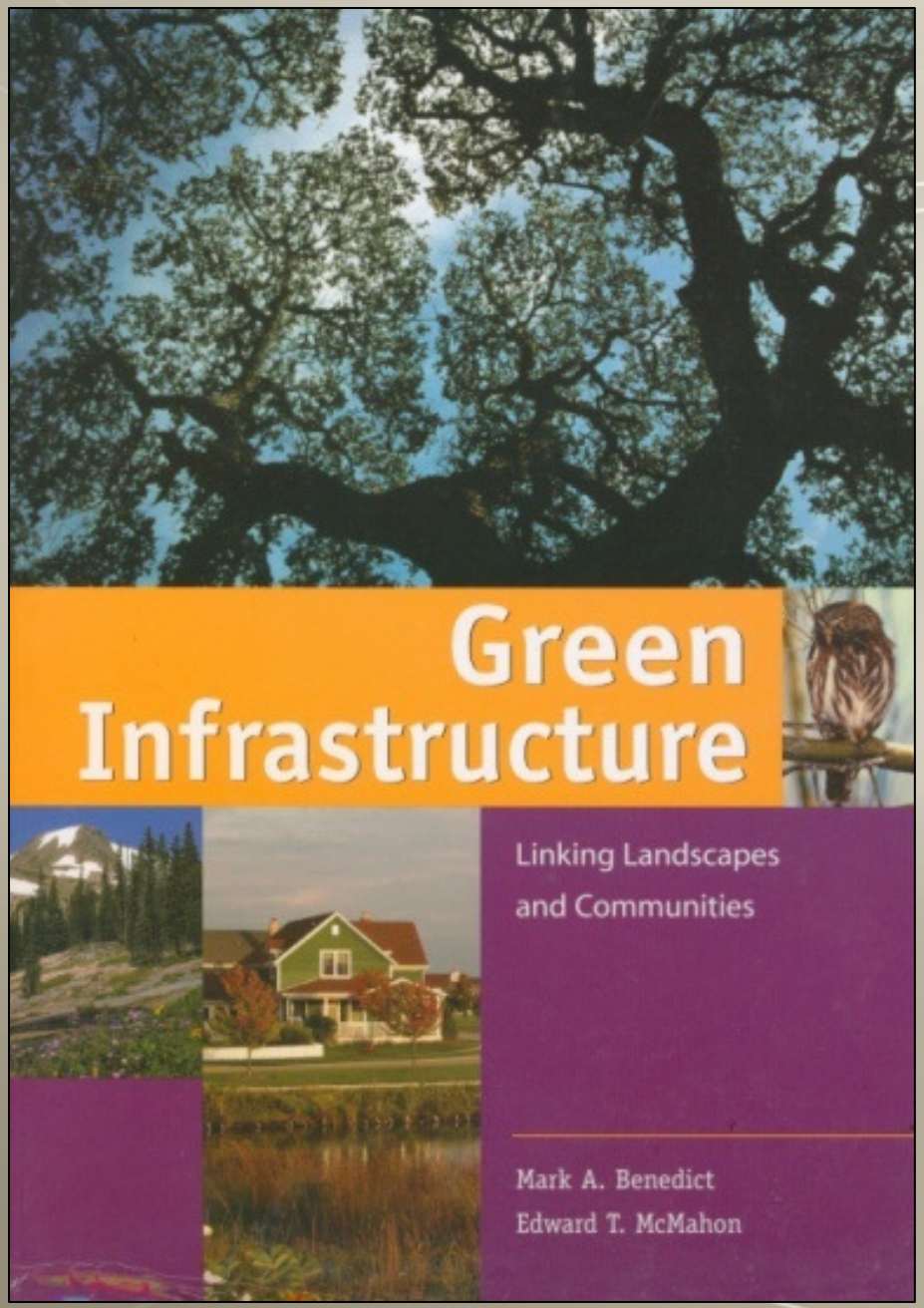
- Restoration Needs, "Exterior" Gaps
  - smoothing out edges
  - expands interior conditions while working at forest edge
  - restoration "expands" the network



Your Turn!

1. Review goals
2. Discuss landscape features
3. Depict hubs and where appropriate hub cores
4. Create linkages
5. Identify sites.





Linking Landscapes and Communities

Part 3: Implementation

Ed Macie

USFS Southern Region

March 28, 2009

The Implementation Quilt

Matching Available Resources to Network Needs

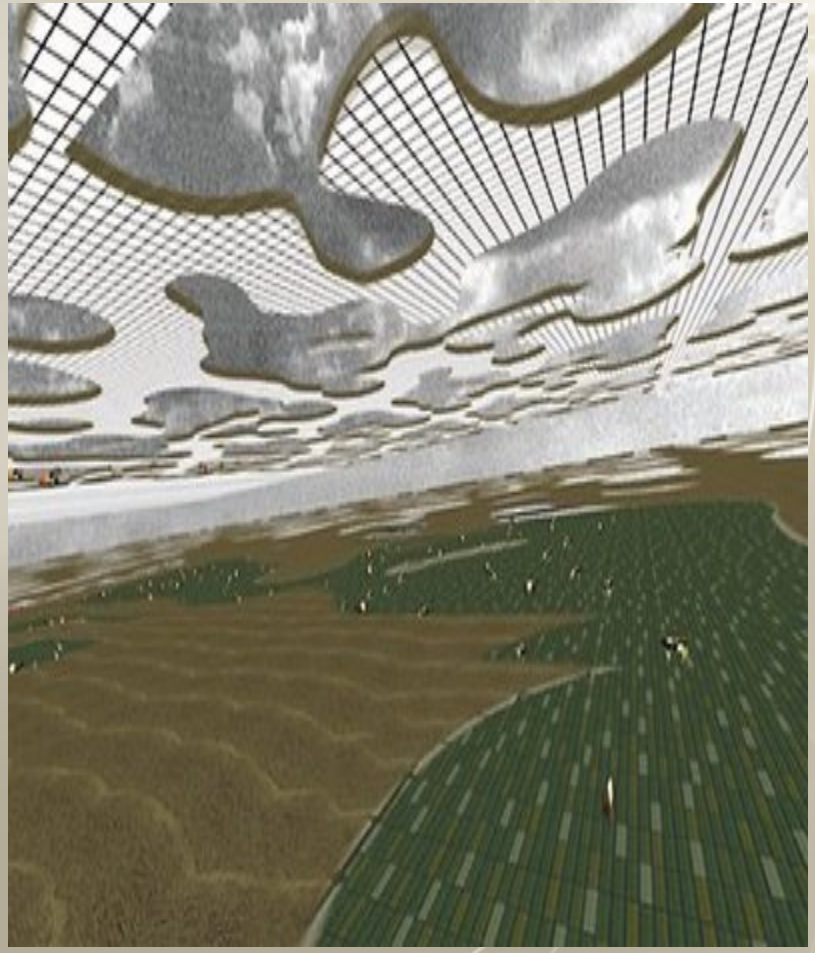
- Many pieces of different sizes, shapes and purposes.
- “Stitched together” to create a functional whole.
- By a diversity of people, tools, agencies and organizations.
- Working together to accomplish common goals.

Different Sizes, Shapes and Purposes

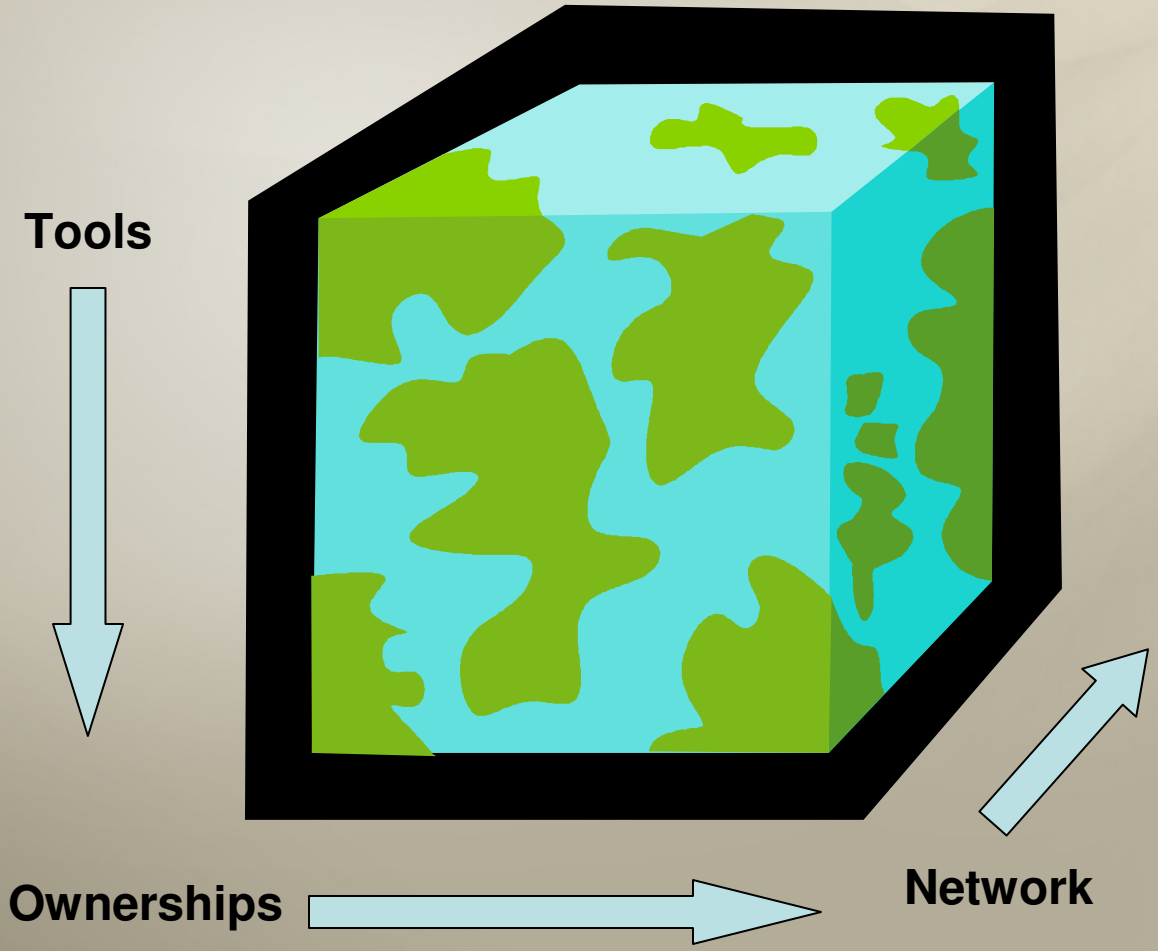
- Policy
- Practices
- Programs

- A multidisciplinary approach across all ownerships at the local, regional, state (and and perhaps multi-state).

- Scale includes the landscape as well as delivery.

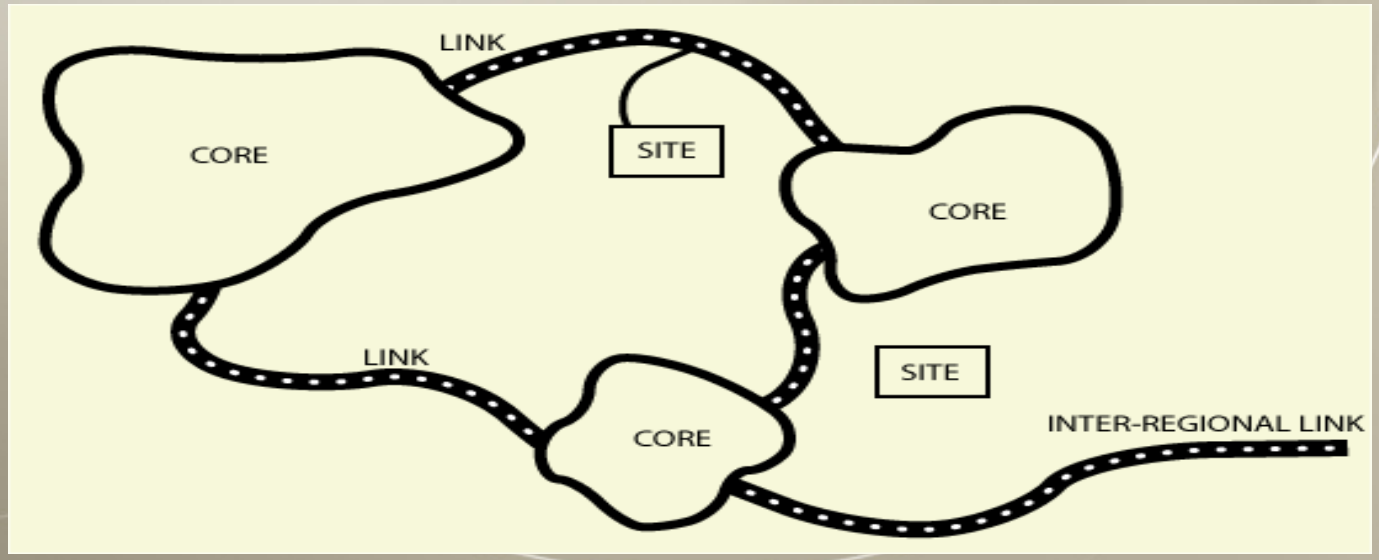


Rubik's Cube



Network

- Objectives
- Hubs, corridors, cores, sites
- Priorities
- Opportunities and urgencies



Tools

- Physical applications on the ground.
  - Restoration
  - Constructed wetlands
  - Buffers and trails
- Public policy and regulation.
  - Planning and land use management
  - Development codes
  - Design standards
  - Storm water management
  - Vast array of federal regulation
  - Impact fees
- Incentives
  - Tax incentives and estate management
  - Ecosystem services
- Conservation
  - Land acquisition
  - Transfer of development rights
  - Conservation easements

Land Ownership

- Private
- Public
  - Local
  - State
  - Federal
- Institutional
- Acquisition as example
  - Local: fee simple
  - Private: conservation easement
  - State and federal: Forest Legacy Program

What Might This Look Like?
Tools Perspective

	Local	State	Federal	Private
Land Acquisition	Fee Simple	Historic Preservation Easement	Farmland Protection Policy Act	Conservation Easement
Regulation	Buffer or Landscape Ordinance	Water Management Permitting	Endangered Species Act	Private Mitigation Banks
Incentives	Tax Incentives	BMPs	Wetland Reserve Program	Environmental Trading
Funding	Bonds	Open Space Funds	Transportation Enhancements	Land Trusts

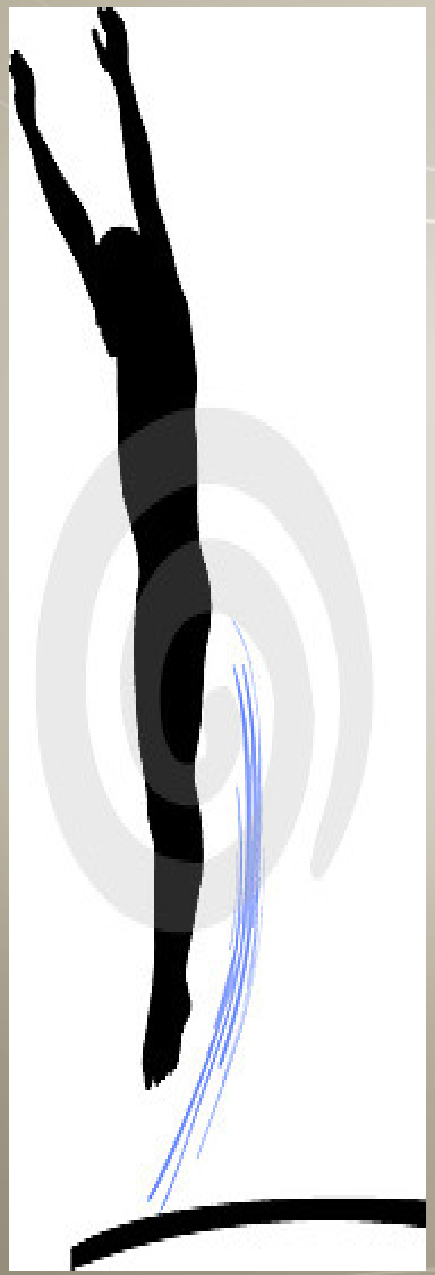
What Does this Look Like?

Network and Objective Perspective

Consider condition of landscape, priorities, and opportunities for each element.

	Programs	Practice	Policy
Hub A (Mitch Park)	*Park Expansion (Fee Simple)*	Park Restoration	
Hub B (Spruel Farm)	Conservation (Easement)	Agriculture and Forestry BMPs	*Cluster Development Regulations*
Corridor A (Deer Creek Trail)	Rails to Trails	Buffer Restoration	Storm Water Regulations

High priority or urgent projects are in *italics.*



Your Turn!

A Description of Edmond's Plans and Policy

Next Steps
(Leadership is Critical)

- Context – what is the bigger picture
- Refine Objectives
- Develop Draft Network
- Public Comment
- Revise and Revisit Context
- Develop Implementation Quilt
- Establish Action Plan
  - What, When, Who, How Much
- Communicate