



United States Department of Agriculture Office of the Chief Information Officer



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Enabling Cross-Sector Spatial Data Visualization and Analytics

Stephen Costello Lowe, PhD

Panel Presentation

Mapping the Midwest's Future:

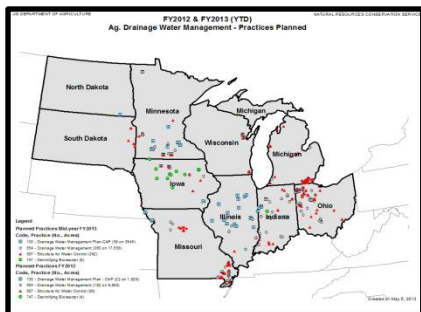
Regional Innovation Clusters and Competitiveness

30 September 2014

“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Mapping the Mid-West’s Future

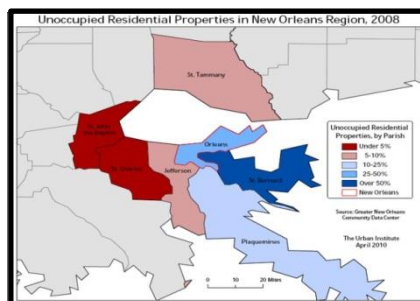
Create Stable Container...



Establish rational and bounded problem set, which uses “common geography” to express the scope and scale of the context. Answer... Where?

Space of Possibilities

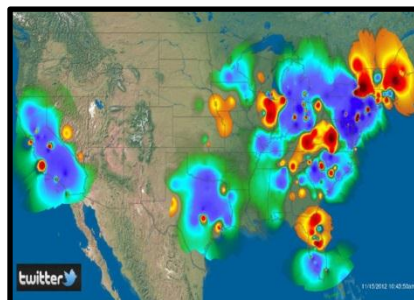
Ensure Transparent Data...



Use map frame as an information organizing tool to “simplify” complex data, define roles, demonstrate relevancy, and distinguish relationships between beliefs-values-action. Answer... What?

Visibility

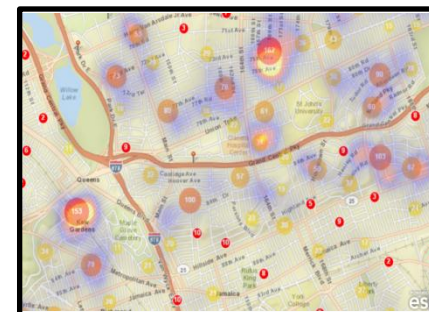
Engage Conversation Participation...



Measure the volume and magnitude of activating a cultural meaningful “visual narrative” that elicits direct local participation in the system. Answer... Who? Why?

Social Innovation

Foster Collaborative Solutions...



Place visual elements on neutral map to create equitable access to knowledge resources, and show collective impacts as “place-based evidence” of social value and change. Answer... How?

Collective Impacts



Stephen Costello Lowe
Geospatial Information Officer
United States Department of Agriculture



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

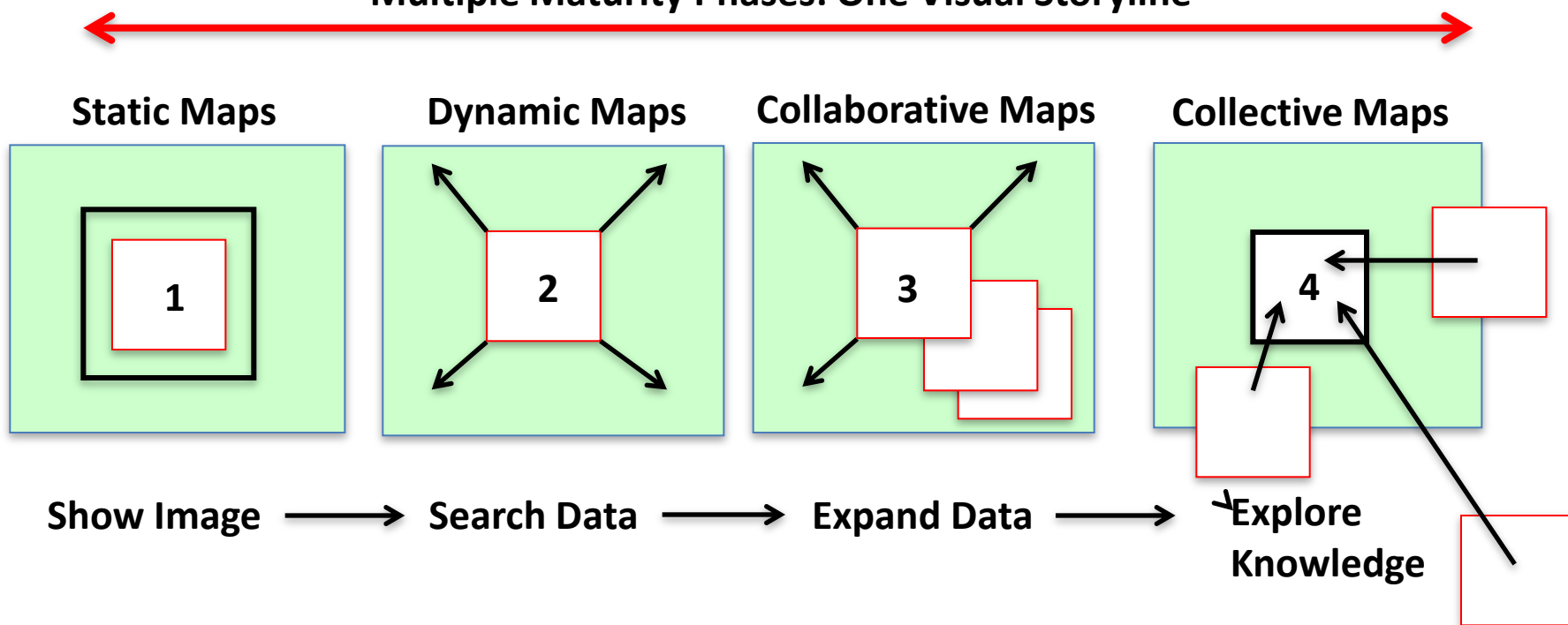
Space of Possibilities in Mapping

- **Location:** What exists at a particular location?
- **Condition:** Where do certain conditions exist?
- **Trends:** What has changed or is different since...?
- **Pattern:** What spatial pattern exists?
- **Modeling:** What if (forecasting, predictions, etc.) ...?
- **Behavior:** What do people do with...?
- **Relationships:** How does x impact y?
- **Equity:** What other voices need to be heard?
- **Community:** How do local people experience their world?

"Enabling Public Innovation and Service Excellence through Geographic Solutions."

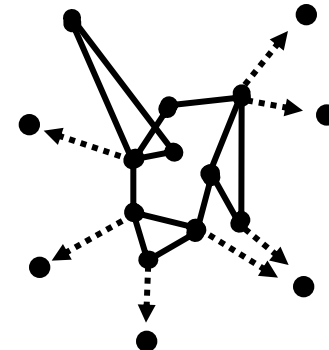
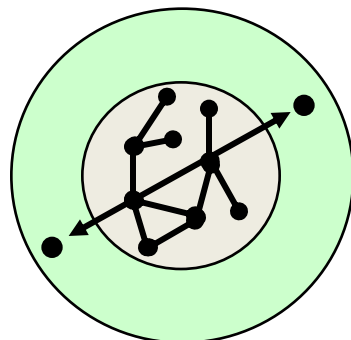
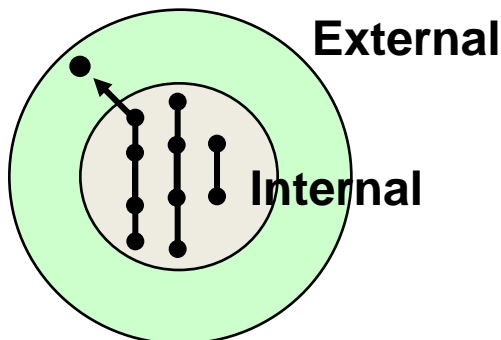
Visibility Increases with Democratization

Multiple Maturity Phases: One Visual Storyline



"Enabling Public Innovation and Service Excellence through Geographic Solutions."

Social Innovations Thrive in a Networked Society



Routine Response

Modular Response

Customized Response

- Familiar Problems
- Process Execution
- Well Defined Boundaries
- Centralized Decision-making

- Complex Problems
- Role of Participant
- Overlapping Boundaries
- Role-based Decisions

- Ambiguous Problems
- Other's Expertise
- Permeable Boundaries
- Collaborative Decisions

- Categorization/Classification
- Prediction
- Scheduling/Planning/Evaluation
- Professionals

- Configuration/Selection
- Monitoring
- Interpretation/Analysis
- Cross-Sector Expertise

- Framework Design
- Hypothesis Testing
- Local Diagnosis
- Crowdsourcing

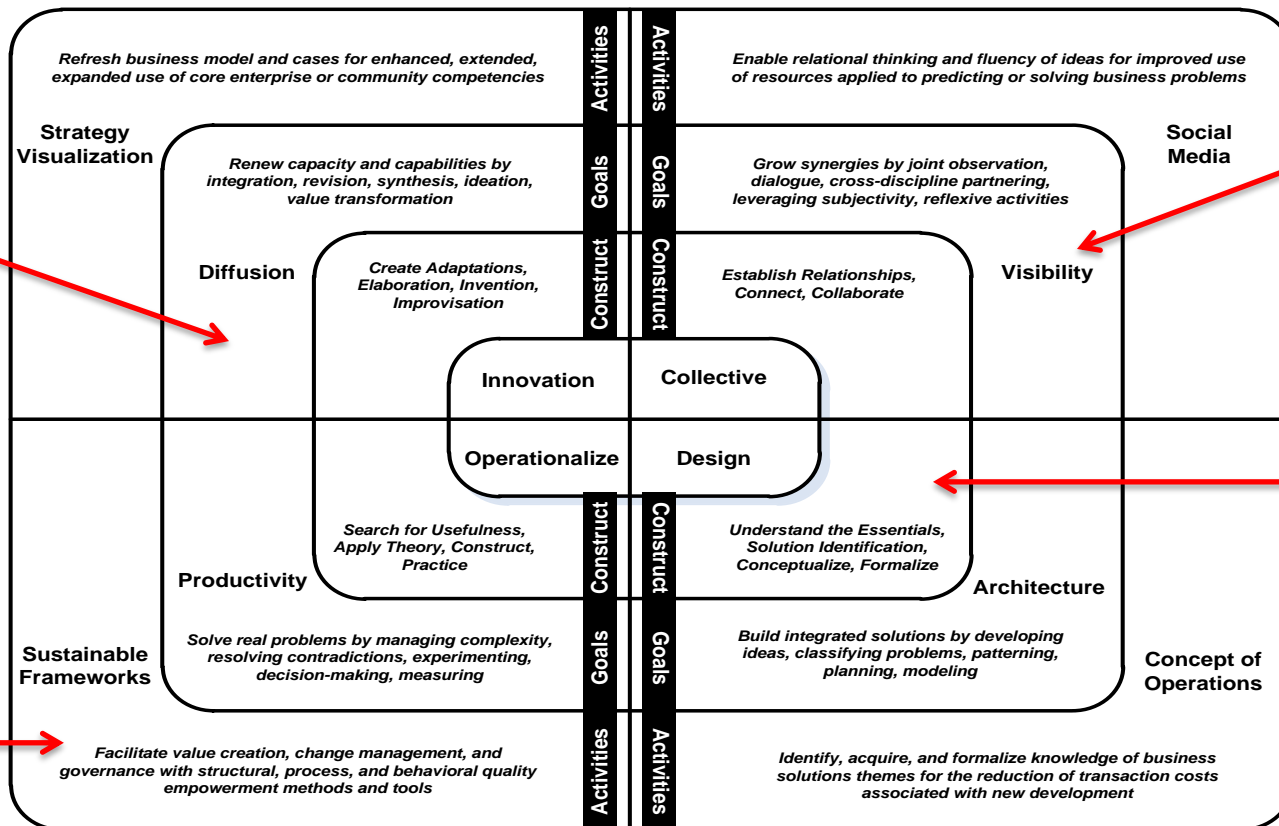
Attributes

Patterns



"Enabling Public Innovation and Service Excellence through Geographic Solutions."

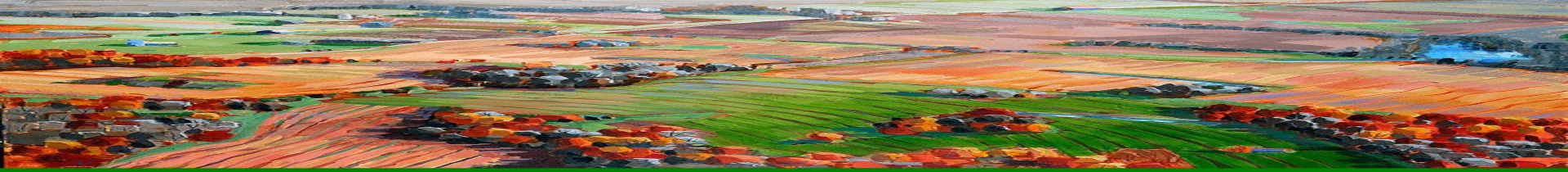
Collective Impact Domain Model



Stephen Lowe, 2009



Stephen Costello Lowe
Geospatial Information Officer
United States Department of Agriculture



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Point of Contact:
Stephen.Lowe@ocio.usda.gov



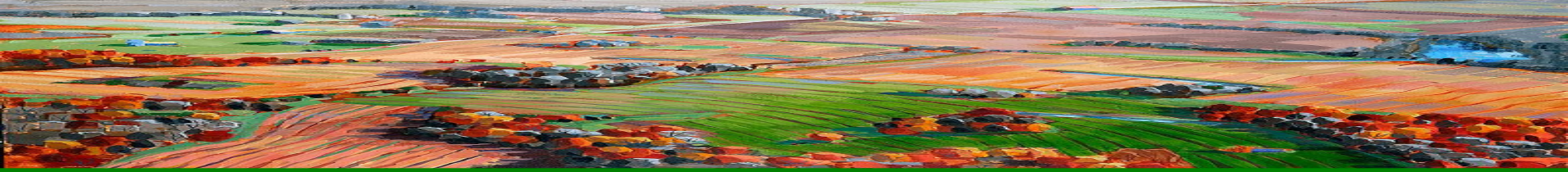
Stephen Costello Lowe
Geospatial Information Officer
United States Department of Agriculture



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Summary List of Data References

- [Data.gov/food/](https://data.gov/food/) – Food, Agriculture, Rural
- [Geoplatform.gov](https://geoplatform.gov/) – National Geospatial Platform
- [OpportunitySpace.org](https://opportunityspace.org/) – Surplus government property
- [SkyTruth.org](https://skytruth.org/) – Human-caused landscape and ecosystem changes
- [Data.Worldbank.org](https://data.worldbank.org/) – International statistics
- [Wri.org](https://wri.org/) – World Resources Institute environmental impacts
- [Fao.org](https://fao.org/) – UN Food and Agricultural Organization



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

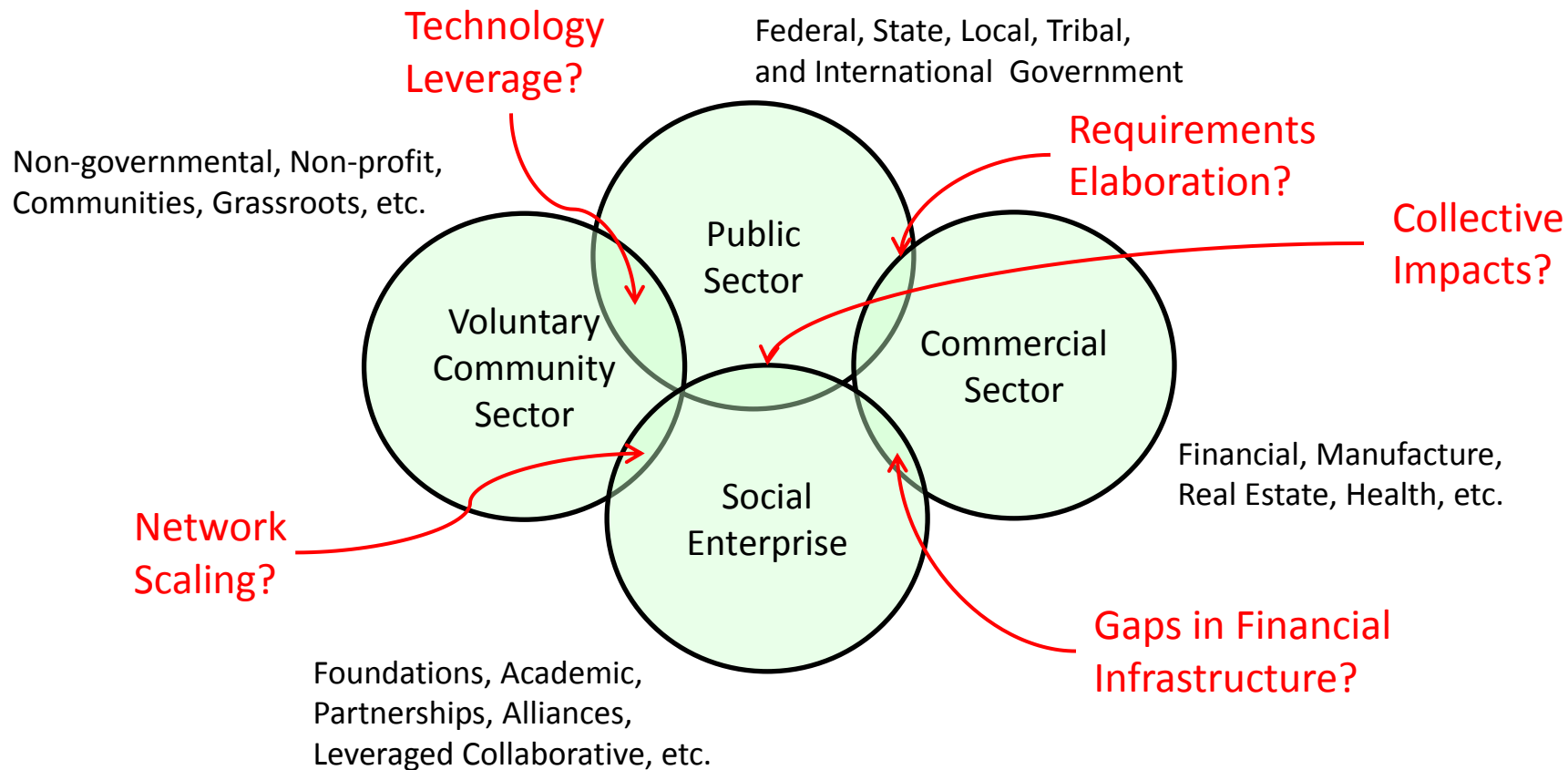
Appendices of Slides



Stephen Costello Lowe
Geospatial Information Officer
United States Department of Agriculture

"Enabling Public Innovation and Service Excellence through Geographic Solutions."

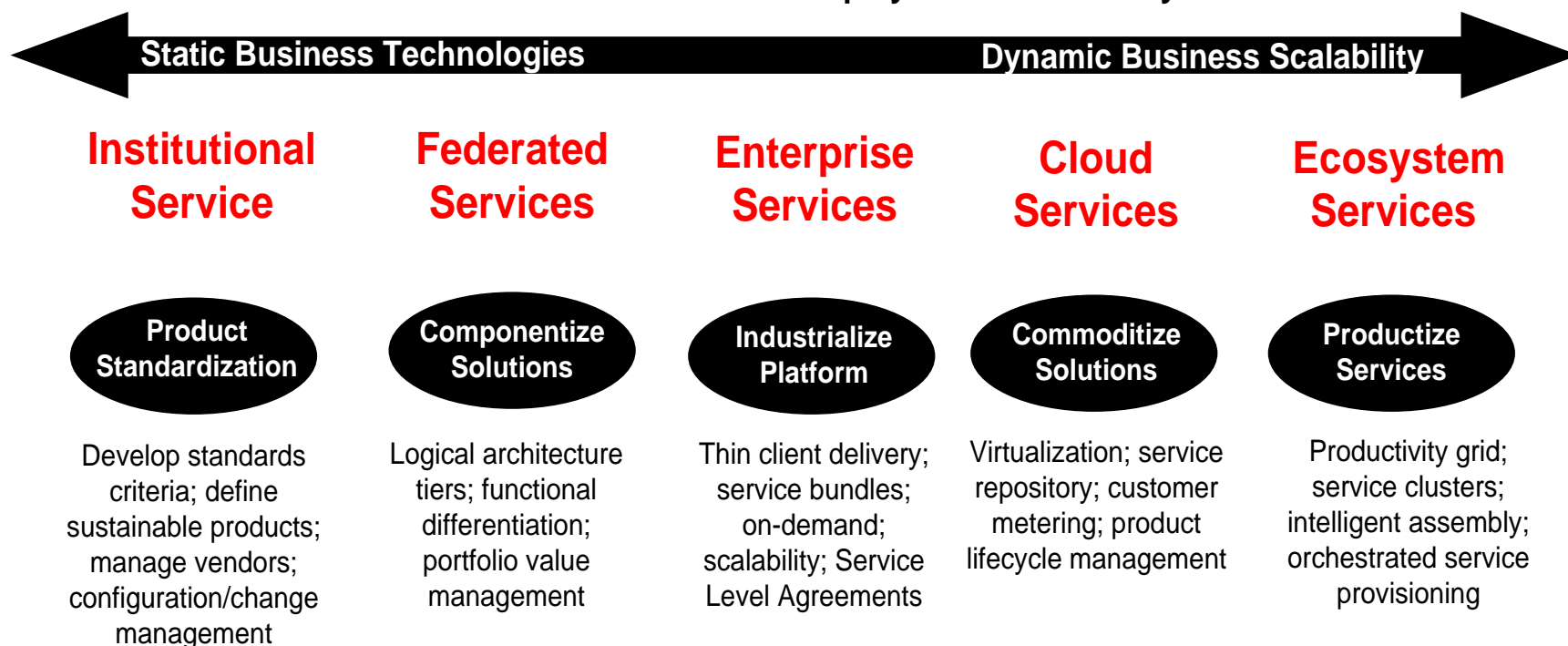
Cross-Sector Stakeholder Model



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Attributes of GIS Solution Continuum

Continuum of GIS Services Deployment and Delivery



"Enabling Public Innovation and Service Excellence through Geographic Solutions."

Cluster Mapping Value Proposition

Typical GIS Mapping Effort

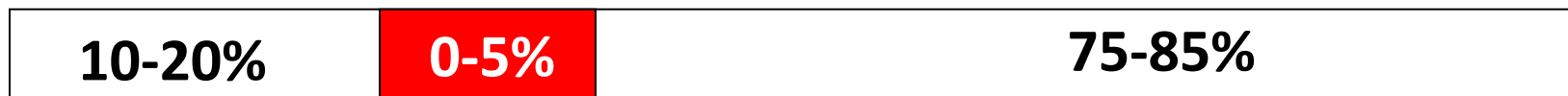


Identifying Core Business Values/Rules

Drafting and Redrafting GIS Map Products and Spatial Database

Creating Alignment to Business Analytics Competency

Cluster Mapping Best Practice



Identifying Core Business Values/Rules

Drafting and Redrafting GIS Map Products and Spatial Database

Creating Alignment to Business Analytics Competency



"Enabling Public Innovation and Service Excellence through Geographic Solutions."

Challenges of Ubiquity

Complexity

(too data much)

Equivocality

(too many frames)

Uncertainty

(not enough data)

Ambiguity

(no frames at all)

Analysis
(Facts)

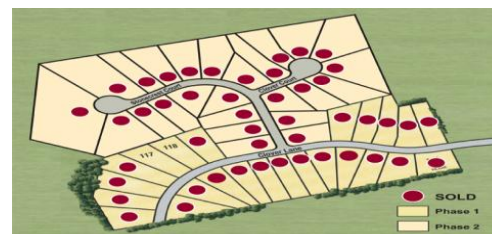


Interpretation
(New Information)

“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Overcome Traditional Mapping Obstacles

- Conventional maps frequently exclude “community”
- Mixed, diverse geographies needed to articulate place
- Highly unstructured data and dynamic networks
- Limited and complex access to knowledge sources
- Extensive equity issues around participation in mapping
- Spatial products often created for those already in power



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Community Mapping Capacity Building

- Process of producing collective map views in local spaces
- Represents the agenda, values of the community
- Content depicts local knowledge and information
- Socially and culturally distinct understanding of place
- Builds and integrates identity to the landscape
- Engages local epistemologies – How is knowledge acquired?





“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Volunteered Geographic Information (VGI)

- Create, assemble, and disseminate geographic information provided voluntarily by individuals
- Select an area and provide it with a description, including links to other sources
- Ability to superimpose (mashup) geographic information from sources distributed over the Web
- Results may or may not be accurate
- Anyone can edit entries, and volunteer reviewers monitor the results, checking for accuracy and significance
- Democratization of GIS capabilities



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Participatory Mapping Principles

- **See the Conversation:** allow the stakeholders to tell the story from their perspective
- **Relinquish Control:** let them organize the map information to avoid creating more noise than sense
- **Enable Metadata:** leverage all sources to facilitate search on their terms and make connections to map information
- **Extend Reach:** post map information extensively across various media, channels, environments, events, etc...
- **Stop Editing:** facilitate broad community input, minimal filters



“Enabling Public Innovation and Service Excellence through Geographic Solutions.”

Operational Transformation in Public Services

- Reduced transaction cost of finding assets
- Faster time to meet emerging public needs for information
- Elimination of obsolete hoarding behaviors
- Accelerated knowledge transfer and succession
- Capacity building for greater utility delivering content
- Improved lifecycle value management of data
- Performance measurement for really core assets
- Embrace product management principles for assets
- Enhanced public involvement and equity using their data