SGUC Executive Committee

June 13, 2011

Minutes

Attending: John Farley, Robert McKittrick, Dianne Enright, John Cox, Mark Voss, Tom Morgan, Brett Spivey, David Giordano, Jeff Brown

Technical Architecture for Geospatial Data and Applications

The focus is geospatial data and applications; services to satisfy business needs.

State users do not have technical architecture guidelines specific to geospatial technology. State users have software in common (through the Esri Enterprise License Agreement). This narrows the options for database management, data serving, and applications, but does not provide a technical architecture.

Discussion of a geospatial data framework led to emphasis on a business need for geospatial datasets that are consistent across the state whether from statewide creation or from integration of multiple source datasets.

JB note: a geospatial data infrastructure for NC is implied by the National Spatial Data Infrastructure and its emphasis on Framework datasets (imagery, transportation, cadastral, geodetic, elevation, hydrography, and governmental unit boundaries). All of the framework datasets are in digital format in North Carolina and cover the entire state, managed by one or more data producers.

The business need for integrated datasets relates to transportation planning and projects, emergency communications, emergency management, economic development, regional planning, environmental analysis, and many more state applications. Mismatched roads, inconsistent parcel mapping and attribution, varying currency of local datasets, varying scale or resolution of datasets, and inconsistent rendering of map services come into play in multi-jurisdictions projects.

Data standards and data models enable systematic integration. Data models need to be negotiated.

Data standards: North Carolina has a set of standards relating to Framework data. Implementation of standards in the enterprise is the more challenging task and progress is needed in the state.

Currently, technical architecture is addressed case by case, with no ready framework specific to geospatial applications.

State geospatial architecture includes access to data and services at all levels of government, with public access as an important component for generating benefits across the state. Local data producers and users are important to state users.

For example, the Working Group for Roads and Transportation identified a business need for integration of street centerlines. The group is using its grant from the Federal Geographic Data Committee to develop a geo-synchronization project with The Carbon Project for application development.

Reliability and accessibility are important elements of a technical architecture.

The NC OneMap team, based on the revitalization project last year, cautioned against trying to make a technical architecture be all things to all people.

Regarding implementation of a technical infrastructure, there are disparate users in terms of technical capability and local system capacity.

A discussion of recommendations versus policy brought out the point that a local data producer may be engaged in an effort to be consistent with a technical architecture/standards if a state program is funding related local efforts.

Does a technical architecture and/or a set of state standards have anything to offer county tax assessors? It would appear that the vehicle tax program is something that assessors are willing to pay for; a return is evident to the assessors.

The statewide orthoimagery 2010 project is an example of a statewide project achieving data integration and serving a wide range of geospatial users. NC DOT is testing the imagery services in its Spatial Data Viewer (saving storage space and time).

Enterprise resources are relevant to technical architecture. For example, geo-location services could be standard enough to meet the needs of many users across state agencies.

Data retention (archiving) and disaster recovery may be part of a technical architecture. A framework like NC OneMap could provide a focus for storage of local datasets. There are disaster recovery arrangements between counties in some cases, but there is value in a comprehensive, consistent approach. Natural hazards in North Carolina make a compelling case for effective disaster recovery.

In state government (subject to reorganizations, labor reductions, and other uncertainties) application development and maintenance may be vulnerable if tools are heavily customized by a developer using non-standard resources.

A technical architecture has stakeholders at all levels of government. Consider what is practical to define and implement.

A technical infrastructure relates to a range of geospatial information, including prepared maps, tools, web services, geoprocessing, data discovery, data transfer, and documents.

An approach would be to define the architecture to enable NC OneMap to consume what is being published by many publishers.

We have information on user needs from the NC OneMap revitalization effort. Business requirements should inform the architecture discussion.

An incremental approach to implementation of a technical architecture is advisable.

A huge effort on technical architecture by SGUC and other coordination participants is not likely. Agencies are losing staff, using technology to plug holes, and being strategic. There is a long term pay-off to a technical architecture, but it will be difficult for agencies to carve out much time to make progress on the effort. The absence of a technical architecture is more expensive in the long run as ad-hoc development misses opportunities to achieve wider benefits.

There are opportunities to make progress on a technical architecture. For example, Tom Morgan is beginning an update of the cadastral mapping standard – both geometry and attribution. This is an opportunity for guidance to cadastral data producers.

Part of a technical architecture is governance to help reach consensus and communicate the benefits.

Note that work by SGUC on technical architecture may inform both the Technical Advisory Committee (John and Dianne are members) and NC's Chief Technology Officer who is updating the State Technical Architecture later in 2011.

Added by JB: excerpts from documents online that may inform the effort:

1. **Technical architecture** (From the Office of the State Chief Information Officer)

- The fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution.
  - ISO/IEC 42010:2007
- A formal description of a system, or a detailed plan of the system at component level to guide its implementation.
  - TOGAF
- The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time.

- TOGAF

What architects DO NOT do:

- Process compliance – that's project office
- Estimates – that's service owners
- Hardware specifications – that's Engineering
- Software specifications – that's Developers
- Requirement gathering – that's Business Analysts
- Process description – that's Business Analysts

What architects CAN do:

- Plan technology direction and set technology standards
  - Help you figure out which technologies you should support.
- Review plans, designs and purchases
  - Assess how well a plan aligns with current direction and desired future positions.
- Identify opportunities to reuse components and services
  - Leverage enterprise contracts and license agreements.
  - Integrate shared services where they might be cost-effective.
- Review business organization and business processes
  - Technical Architecture: align your technology plan with enterprise goals, business plans and business processes.
  - Enterprise Architecture: align your business plans, business process and technology plan with your enterprise goals.

2. Current framework

State Chief Technology Officer is responsible for Statewide Architecture for Application Delivery. Nevin Fouts. Expected to update the Statewide Architecture in second half of 2011.

Office of Enterprise Architecture. Douglas Banich.

The Office of Enterprise Architecture for the State of North Carolina provides leadership for the state's information technology programs and works collaboratively with other information technology leaders throughout state government to partner IT with the state's business objectives. Therefore, the Office acts as a strategic planner and architect for the state's IT programs and as a leader in formulating and advancing a vision for those programs.

Technical Architecture System Design (TASD)

Office of IT/Business Alignment Strategies. Mike Fenton (on Technical Advisory Committee)
Goals

- Assist agency staff and management in the IT planning process. The unit advocates improved delivery of services through the alignment of business services and IT initiatives in an effective and cost conscious way. IT/Business Alignment asks that business plans and IT initiatives are linked to provide a line-of-sight view into each IT investment and its associated value to the business.

- Apply architectural principles, practices and standards to technology, information flow, business process and IT deliverables. By using a common tested reference model, agencies can reduce the risk profile for programs, projects and initiatives.
- Identify opportunities to combine common capabilities (IT and business process) and recommend steps to reduce duplication, avoid cost, and improve performance. Leverage where possible economies of scale.

Enterprise Project Management. Kathy Bromead.
Mission

- To provide leadership for the improvement and expansion of Project Management across state government through coordination and communication, standardization and measurement, and mentoring and coaching.
- To improve the management of IT investments over their life cycle by providing expert advice, formal education and training, extensive documentation and personal instruction on the underlying theories and concepts of portfolio management. Training in the use of the supporting software tool is a key component of this mission.

Project Portfolio Management (PPM)

JB addition: Robert McKittrick's powerpoint content:

3. Where are we now?

- Download data from many disparate sources
- Find Web Services
  - Useful?
  - Right Features?
  - Appropriate SLA?
  - Many Stove Pipes with unknown interoperability
- Rework data into a usable form
- Spend many hours producing a product that is likely not (easily) reusable

4. What do we need?

- More technology more quickly to do more with less
  - More Web Services
  - Web Service Catalogs
  - Federated and Decentralized databases
- A plan that allows all levels of government to retain their autonomy with high levels of participation
- Support for funding
- Standard GIS Architectures to guide individual implementations
- Funding to properly implement individual implementations
  - Standard processes for funding
- NC GIS architecture description
  - Unify the stakeholders (state, county, and local)
  - Address the concerns of all the stakeholders
  - Expect exceptions

- Project / business manager
  - An NC GIS Architecture may be more politically challenging than technically challenging
- Architect
  - Architectural description(s)
    - Communicate from the small to the large
    - Needs to seem intuitively viable
      - "What can it do for me?"
    - Incrementally implementable (what can we do now?)
    - Consensus to implement and utilize the solution

5. What did we accomplish in recent years?

- Lack of funding in state agencies
  - Prevents doing right things right
- Need for common services
  - Right features
  - Appropriate SLA
  - Practical discovery
- Stovepipes need to be eliminated or be made part of a larger GIS

6. What can we do now?

- Re-form an architecture team
- Locate or create State Enterprise Architecture documentation
  - Facilitate making the right decisions
  - Identify all the prospective participants
  - Identify relationships between participants
  - Identify relationships between existing technology providers
  - Needs analysis
  - Identify and formalize issues (concerns)
  - Recommend solutions