VDOT Northern Virginia-Centric Regional ITS Architecture
Where We've Been and Where We're Going

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Where We've Been ...

History

Develop NOVA Regional Architecture

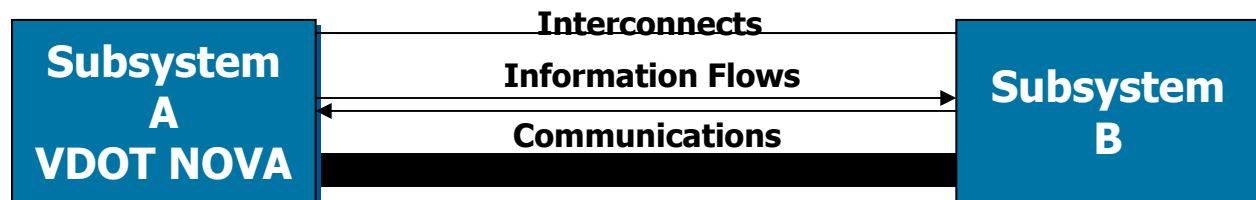**Maintain NOVA Regional Architecture**

History

- **12/99: NOVA Smart Travel Program Plan**
- **05/02: NOVA ITS Architecture v. 1.0**
- **12/03 & 05/04: Train the Use of Architecture**
- **06/04: Update NOVA Architecture to v. 1.2**
- **04/05: Update NOVA Architecture for Federal Rule Conformity to v. 2.0**
- **12/05: Update NOVA Smart Travel Program Plan, COO, and Architecture**

Purpose*: guide the planning and deployment of ITS systems within VDOT and those systems that interface with VDOT by identifying interfaces that facilitate integration across the region's transportation system.*

Develop NOVA Regional Architecture

- **Needs-based**

- **Strawman Architecture**

- **Extensive Outreach: focused; to critique & validate; champion; scenarios**

- **Extensive Coordination - Interwoven with 2 architectures in DC Region & MD**

- **VDOT NOVA Centric: interfaces among VDOT Systems and between VDOT systems and non-VDOT systems in the Northern Virginia District.**

| Subsystem A VDOT NOVA | Interconnects / Information Flows / Communications | Subsystem B |

Maintain NOVA Regional Architecture

- **When?**
  - Update Annually
- **How?**
  - Upgrade to latest Turbo version & Nat'l architecture
  - Collect project architecture via website
  - Collect existing & planned projects continuously
  - Update architecture definition
  - Communicate with the impacted stakeholders
  - Coordinate with adjacent architectures
  - Finalize next version of NOVA Architecture
  - Document changes
- **Where?**
  - Website *www.vdot-itsarch.com*

Where We Were Lately ... Rule Conformity

Regional Architecture

Project Architecture

Rule Conformity: *NOVA Regional Architecture*

- **Definition Update**
  - In Cooperation with MPO on stakeholder, inventory, operational concept, functional requirements, and information flow.
  - Interviews: non-overlapping stakeholders w/ MPO
- **Fulfill Other Rule Requirements**
  - Needed Agreements
  - Modify the Planning Process
  - Modify the Project Development Process
- **Rule Conformity Assessment**
  - 100% conformity
  - Conformity Table

Rule Conformity: *NOVA Project Architecture*

- **Use NOVA Regional Architecture to define project architecture**

- **Use System Engineering approach**

- **Purpose/Benefit:**
  Define a project using the SE process and the NOVA ITS Architecture maximizes the integration opportunities available by examining the interfaces that the project should accommodate.

Where We are Going … Use Architecture

Strategy

When & How

Project Architecture

Use NOVA Regional Architecture: *Strategy*

- **Tool Development (Website)**
  - Keep living architecture available
  - Provide general navigation & Turbo download
  - Provide step-by-step process
- **Education (next class: late 2005)**
  - How to use the website
  - Determine NOVA vs. DC regional architecture
  - Develop project architecture using Turbo
- **Institutional Embracement**
  - On-going champion effort to use the arch.
  - Include "using architecture" in the existing project development process

Use NOVA Regional Architecture: *When & How*

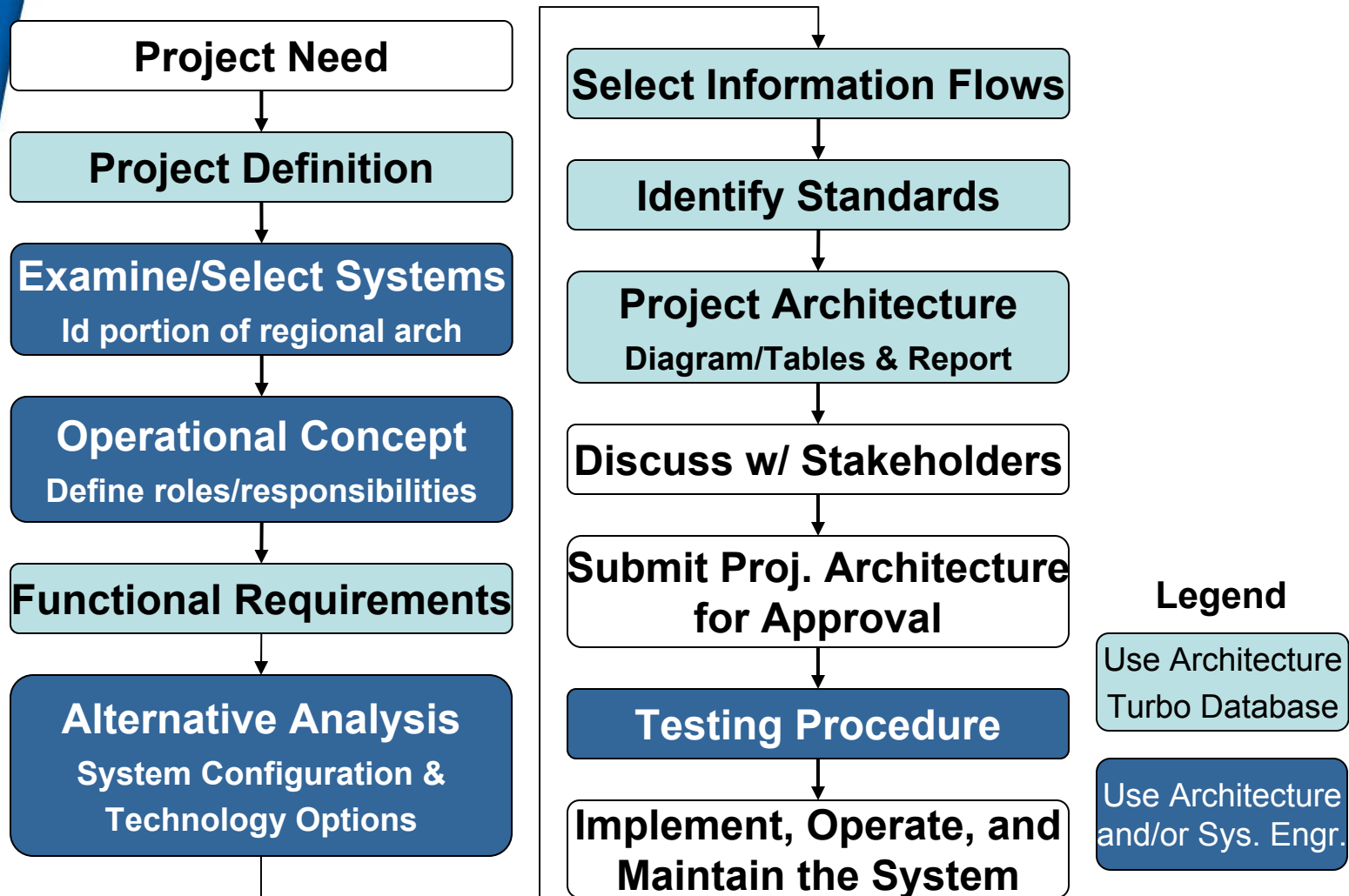| WHEN	HOW & WHAT
Before Funding is Identified	• How: Navigate the website • What: Examine subsystems/ stakeholders and their interface with the subject system to define the scope
When Funding is Available	• How: Download Turbo database from the website • What: Define a project architecture (next slide)
After a Project is Completed	• How: Submit project architecture via the web • What: Incorporate into the regional architecture definition

Use NOVA Regional Architecture: *Project Arch.*

Project Need

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Project Definition

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Examine/Select Systems
Id portion of regional arch

↓

Operational Concept
Define roles/responsibilities

↓

Functional Requirements

↓

Alternative Analysis
System Configuration &
Technology Options

Select Information Flows

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Identify Standards

↓

Project Architecture
Diagram/Tables & Report

↓

Discuss w/ Stakeholders

↓

**Submit Proj. Architecture
for Approval**

↓

Testing Procedure

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**Implement, Operate, and
Maintain the System**

Legend

Use Architecture
Turbo Database

Use Architecture
and/or Sys. Engr.

Challenges Ahead

Regional Architecture

Projects

Challenges: *NOVA Regional Architecture*

- ## Maintain Architecture
  - Staffing: full attention to maintain regional architecture and review project architectures
  - Knowledge: needs to keep core knowledge in-house and keep same architecture team or have a knowledge transition plan
  - Financing: needs routine budget to maintain and update
  - Coordination: sync with other architectures
  - Maintain "changes": Architecture, COO, Strategic Plan
- ## Chase Changes
  - Systems' change: collect changes or stakeholders need to know whom to inform the changes
  - Stakeholders' changes: stakeholder representatives change
  - Nat'l ITS architecture and Turbo: keep up the versions and train/re-train w/ latest

Challenges: *Projects*

- **Administrative**
  - Needs to build into existing project process
  - Local/State agreement revision
- **Willingness & Interest**
  - If not using Federal fund: willing?
  - Institutional Support: needs leadership and staff buy-in in addition to the federal fund requirement.
  - Difficult to keep stakeholders' interest and tune in architecture beyond development outreach phase
  - Difficult to keep non-transportation agencies such as public safety community remain awareness of ITS and architecture
- **Confusion**
  - Definition of ITS: Signals? Public Safety?
  - Stakeholder representatives to architecture change: need to re-train new representatives

Challenges: *Projects*

- **More Rule Conformity Confusion**
  - How one may demonstrate the compliance with regional architecture.
  - Do FHWA regional offices practice review uniformly?
  - What happens to grandfather projects?
  - Require extensive effort to bring all parties to the good level of understanding

Despite all the challenges, FINALLY, stakeholders started inquiring about architecture without my constant preaching (or nagging?!)

…. federal $$$ matters!!

You asked, how's the life after regional architecture from 2002 to 2004?

It's a lonely place!

So, you asked again, how's the life after regional architecture in 2005?

I am getting popular!