Best Practices for ArcGIS Platform Migration Using Esri’s Enterprise Advantage Program

Christie Pleiss, Deepti Kochhar, Kelly Auman, Jeff Colburn - Esri

Marguerite Weber - Veterans Health Administration (VHA)
Esri Enterprise Advantage Program (EEAP)
ArcGIS Release Plans

Plan For The Future

• Numeric release identifier cycle
  - 10.2, 10.2.1, 10.2.2, 10.3, ...
  - “service pack” term obsolete

• Releases may contain:
  - Quality fixes and improved performance
  - Feature enhancements
  - New functionality and technology

• Software downloadable
New Calendar-based Support Life Cycle

• Since March 1\textsuperscript{st} 2014, the Product Life Cycle has moved from a version-based approach to a calendar-based approach.

• Targeting 3 releases per year

• Provides predictability, transparency, and consistency.

• For the majority of new ArcGIS products, exact dates for all phases of the Product Life Cycle will be published

• You will know when and for how long a new release is supported.

... Providing a clear and concise Support Life Cycle for Esri products
Esri Product Lifecycle

<table>
<thead>
<tr>
<th>Version</th>
<th>Release Date</th>
<th>General Availability</th>
<th>Extended Support</th>
<th>Mature Support</th>
<th>Retired</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3.1</td>
<td>April 2009</td>
<td>April 2009</td>
<td>June 2010</td>
<td>June 2012</td>
<td>Dec 2013</td>
</tr>
</tbody>
</table>

Product Lifecycle changed to the calendar-based model in March 2014.

... Have you started a migration plan?
ArcGIS is Evolving
Integrating Implementation Patterns

Supporting collaborative approaches
Integrating Organizations and People
Breaking Down the Barriers

... Sharing Resources
a migration is a project that your organization needs to plan for and manage
Veterans Health Administration (VHA)
VHA 10P (GHESS) Organization

- Deputy Under Secretary of Health for Health Policy and Services
- **ADUSH for Policy and Planning (10P1)** Planning Systems Support Group (PSSG) – Planning Portals & Viewers
- **ADUSH for Information and Analytics (10P2)** – VSSC Data, Portal for ArcGIS, NonVA Care Data Viewer, Population Health & Analysis
- **Office of Public Health (10P3)** – Threat Mapping, Biosurveillance & Geospatial Mapping of Disease
- ADUSH for Patient Care Services (10P4)
- Office of Interagency Health Affairs (10P5)
- National Center for Ethics in Health Care (10P6)
- Office of Health Information (10P7)
- Office of Research and Development (10P9)
VHA 10P (GHESS)

**Background**
- VHA reorganization created 10P – with various offices using GIS
- Consolidating licenses and software purchases – PSSG’s need for server refresh
- Consistencies in maintenance and contract renewal
- Allow for data and knowledge sharing across VHA offices

**EEAP Outcomes**
- Create uniform Staff Development Plan
- GIS standards policies and procedures across 10P
- Access to all available software, extensions, and maintenance
- Support for custom educational plans (i.e. - training/workshops)
- Standardize GIS project tracking and organizational stewardship
- Premium support from Esri for both technical issues and VHA development
High-Level Approach
Migration Process
High-Level Approach

Migration Process

Inventory → Envisioning → Migration Components → System Architecture Design → Develop Implementation Plan → Execute Implementation Plan → Operations
Inventory

- **Business**
  - Determine GIS alignment with organizational strategy
  - Supported functions and workflows

- **Data**
  - Geodatabases, shapefiles, rasters
  - Data management procedures

- **Applications**
  - Desktop, web, mobile
  - Integration with other systems

- **Technology**
  - Software, hardware
  - Networks

- **Governance**
  - Roles, responsibilities, user profiles
  - Procedures

- **Training**
  - Skills
  - Learning pathways
Inventory
GIS Architecture Review

- Baseline of current GIS architecture
- Understand interrelated components
- Provides recommendations for improvement

... Good practice and provides documentation
High-Level Approach

Migration Process

1. Inventory
2. Envisioning
3. Migration Components
4. System Architecture Design
5. Develop Implementation Plan
6. Execute Implementation Plan
7. Operations
## Envisioning

- Determine how your GIS needs to support the organization moving forward
- Involve business stakeholders
- Prioritize spatial information products
- Focus on the ‘People’ involved

### Initiative and Objectives

<table>
<thead>
<tr>
<th>Initiative and Objectives</th>
<th>10P1</th>
<th>10P2</th>
<th>10P3</th>
<th>10P4</th>
<th>10P5</th>
<th>10P6</th>
<th>10P9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand up and improve:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. VHA AGOL site</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. GHESS 10P SharePoint Site</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>c. Links to Portals</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>d. Common Data Standard</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>❌</td>
</tr>
<tr>
<td>Support for individual offices initiatives and programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Web App Builder</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>b. Mobile Technology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>c. ArcGIS Pro</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>d. Security measures w/Portal</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>e. Python Integration</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>f. SQL training and integration with</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Source: VHA 10P
High-Level Approach

Migration Process

Inventory ➔ Envisioning ➔ Migration Components ➔ System Architecture Design ➔ Develop Implementation Plan ➔ Execute Implementation Plan ➔ Operations
Migration Components

• Identify exactly what you will be migrating
  - ‘As-is’ and ‘To-be’ mapping
  - List out all components

• Functionality analysis
  - Compatibility of components between versions

• Evaluate COTS vs. Custom
  - Configure First
  - Customize Second
  - Create New Last

• Involve stakeholders
Migration Components

• Take into consideration:
  - Dependencies and Integrations
    - RDBMS or O/S
    - 3rd party solutions & extensions
    - KBUs/stakeholders
  - Level of Effort
    - Deployment
    - Procurements
    - Resources required
High-Level Approach
Migration Process
System Architecture Design

- Determine an appropriate GIS architecture
- Examines the following:
  - User workflows & functions
  - Data, Application & Technology
- Incorporates technology considerations
  - Servers
  - Data storage
  - Network infrastructure
  - Security
- Identifies a target architecture
High-Level Approach

Migration Process

1. Inventory
2. Envisioning
3. Migration Components
4. System Architecture Design
5. Develop Implementation Plan
6. Execute Implementation Plan
7. Operations
Implementation Plan
Cyclical Approach

Migration is an iterative process

review → build → configure → deploy → test → review
Implementation Plan

Elements to Consider

- Sequencing of activities or tasks
- Deployment environments/instances
  - Development
  - Testing
  - Production
- Change management processes
- Disaster recovery plan
- Roles & responsibilities
- Schedule
- Training

... Should be reflective of Migration Components
# Implementation Plan

## Roles & Responsibilities

<table>
<thead>
<tr>
<th>Role/Position</th>
<th>General Use</th>
<th>GIS Analysis</th>
<th>GIS Data Entry</th>
<th>Cartography</th>
<th>GIS Documentation</th>
<th>Geospatial Programming</th>
<th>Database Administration</th>
<th>System Administration</th>
<th>Web/Application Programming</th>
<th>Web Administration</th>
<th>GIS Coordination</th>
<th>GIS Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Web User - Non-Clinician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Web User - Clinician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General User - Desktop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General User - Researcher/Statistician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General User - Programmer (SQL, JavaScript, Python)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General User - Management Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager/Supervisor of GIS Employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GIS Analyst</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GIS Data Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Administrator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web Administrator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database Administrator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Table of Contents

1.0 Executive Summary
   - Organizational Excellence and the GIS Staff Development Plan
   - Business Strategy of Staff Development
2.0 Staff Development Plan Process
   - Applying GIS - Functional Competency Areas
3.0 Strategic VHA and 10P GIS Goals
   - VHA 10P GIS Goal #1 Alignment
   - VHA 10P GIS Goal #2 Alignment
4.0 Roles, Competencies, Training and Educational Resources
   - Training Roles, Competencies, and Training
     - General GIS User
     - GIS Analyst
     - Geographic Data Processor
     - GIS Data Entry Specialist
     - Cartographer
     - GIS Documentation Specialist
     - GIS Application Programmer
     - System Administrator
     - Web Administrator
     - Web Application Programmer
     - GIS Manager
5.0 Appendix: Guide to Getting Started with GIS
6.0 Appendix: General GIS Resources
7.0 Endnote Citations

... Bringing in the non GIS users
High-Level Approach
Migration Process

Inventory → Envisioning → Migration Components → System Architecture Design → Develop Implementation Plan → Execute Implementation Plan → Operations
Execution

Recommendations

• Build
  - Use isolated, development environment
  - Follow best practices for sequencing components

• Test
  - Functionality, loads, & user acceptance testing
  - Establish formal testing plan and process
  - Use staging environment

• Deploy
  - Determine best cutover approach
  - Consider deploying on off-hours
  - Be prepared to roll-back if necessary

… Practice, practice, practice!
Execution Plan

Training Plan

- Enhance technical expertise in key areas
- Timing of training courses is key
- Critical if significant technology changes have taken place
- Better preparation = better execution of migration plan

Source: Department of Defense Customer
High-Level Approach

Migration Process

Inventory → Envisioning → Migration Components → System Architecture Design → Develop Implementation Plan → Execute Implementation Plan → Operations
Operations

- Focus on three key areas:
  
  **Business**
  - Meet with your stakeholders regularly
  - Continue delivering key maps and apps

  **Tactical**
  - Monitor your GIS system to gauge overall health
    - Consider using Esri System Tools (i.e. System Monitor)
  - Execute regular maintenance tasks

  **Strategic**
  - Stay in tune with Esri product and technology direction
  - Identify additional opportunities for GIS supporting your organization
Migration Tips

✔ Manage your migration as an enterprise project
✔ Develop and maintain detailed documentation
✔ Leverage COTS components as much as possible
✔ Have a Staff Development and Training plan
✔ Leverage Esri Technical Support
Staff Development Plan

Improve staff skills & knowledge in current & evolving roles

- Staff attend right training at the right time
- Projects are not delayed due to staff skills
- Training events maximized by coordination
- Training benefits realized almost immediately

... Helps maximize return on investment (ROI)
ArcGIS Platform
Consider the Full Enterprise When Migrating

Effectively support your organization
Maximize your investment with Esri

- Reach your enterprise GIS vision
- Collaborate with Esri experts
- Proactive advice and advocacy
- Enable your organization
Don’t forget to complete a session evaluation form!
Print your customized Certificate of Attendance!

Printing stations located on L St. Bridge, next to registration
GIS Solutions EXPO, Hall D

Monday, 12:30pm – 6:30pm
Tuesday, 10:45 AM–4:00 PM

- Exhibitors
- Hands-On Learning Lab
- Technical & Extended Support
- Demo Theater
- Esri Showcase
Networking Reception:

*National Museum of American History*

Tuesday, 6:30 PM–9:30 PM  
Bus Pickup located on L Street
Interested in diving deeper into Esri technology?

Add a day to your Fed GIS experience and register to attend the Esri DevSummit Washington DC. Stop by the registration counter to sign up.
esri
Understanding our world.