René Espinoza
Project Introduction
# Our Team

<table>
<thead>
<tr>
<th>René Espinoza</th>
<th>Alex Johnson, PE</th>
<th>Adeline Pirijanyan, PE</th>
<th>Tom McCormack</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAVFAC SW</td>
<td>AHBC</td>
<td>AHBC</td>
<td>AHBC</td>
</tr>
</tbody>
</table>
Project Bases
Coronado Naval Complex

• Naval Air Station, North Island
• Naval Amphibious Base
• Silver Strand Training Center
• Naval Outlying Field, Imperial Beach
NAVFAC SW Utilities GIS Update

Project Objectives

- Convert GIS to new data model
- Field Verify Existing GIS Features
- Update Feature Locations
- Add Missing Features
- Update GIS
Alex Johnson
Project Overview
NAVFAC SW Utilities GIS Update
Strategy, Tools, Technology

- ArcPy
- Model Builder
- Geometric Networks
- Data Interop
- Trimble TerraSync
- Data Reviewer
- Add-Ins
- Extensions
- Data Models
- PathFinder Office
- Replication
NAVFAC SW Utilities GIS Update

Project Overview

Data Conversion
Field Survey
GIS Updates
NAVFAC SW Utilities GIS Update

Project Requirements

+/- 1 ft.

Trimble TerraSync
ArcGIS Version 9.3.1

Schedule

NAVFAC Utilities Data Model v.3.04
β Complex Data Model
β Geometric Networks
Data Conversion

Original Data Model – SDSFIE 2.6 Utilities Data Model

New Data Model – NAVFAC 3.04 Utilities Data Model
Challenges

Geometric Network

Feature Classes

Attributes
- Data Type
- Subtypes
- Domains
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBJECTED</td>
<td>150</td>
</tr>
<tr>
<td>Shape</td>
<td>Polyline 2</td>
</tr>
<tr>
<td>Enabled</td>
<td>True</td>
</tr>
<tr>
<td>Data Source</td>
<td>Other</td>
</tr>
<tr>
<td>Updated By</td>
<td>AHBC</td>
</tr>
<tr>
<td>Updated Note</td>
<td>Original Source: PSW406_Utilities_Editor.gdb</td>
</tr>
</tbody>
</table>
### ArcGIS for Desktop Advanced (Concurrent Use)

To borrow or return licenses, check or uncheck the boxes next to the features and click Apply.

**Borrow For:**

- **2 Days**

The maximum borrow limit is 2 days. Contact your License Administrator to modify this value.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Version</th>
<th>Borrowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Advanced</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Network Analyst</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>3D Analyst</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Spatial Analyst</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Geostatistical Analyst</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Publisher</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td><strong>Data Interoperability</strong></td>
<td><strong>10.1-1...</strong></td>
<td><strong>✓</strong></td>
</tr>
<tr>
<td>Schematics</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>VBA</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Workflow Manager</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Production Mapping</td>
<td>10.1-1...</td>
<td></td>
</tr>
<tr>
<td>Data Reviewer</td>
<td>10.1-1...</td>
<td></td>
</tr>
</tbody>
</table>
Field Survey
Alex Johnson
Field Data Workflow

- Data Input
- Data Export
- Field Surveys
Field Data Workflow
GPS Export: Model Builder
Field Data Workflow
Trimble Pathfinder Office
Field Data Workflow
Pathfinder Office Shapefiles: GeoProcessing Script
Field Data Workflow
Import to Production Database: Data Interoperability Extension
Field Data Workflow
Final Field Data Workflow
Challenge: Distributed Workforce

Sacramento, CA

Walnut Creek, CA

Irvine, CA

Central GIS Database
SAN DIEGO

SAN DIEGO, CA
Solution:
GeoDatabase Replication
Challenge: Multiple Data Sources

- As-Builts
- Field Notes
- Field Photos
- Operational Drawings
- Existing GIS
- GPS Surveyed Location
Solution 1: Data Source Hierarchy

- GPS Surveyed Location
- Field Photos
- Field Notes
- As-Builts
- Operations Drawings
- Existing GIS
Solution 2: Data Source Add-In
Challenge: Ensuring data quality, connectivity of the networks, and efficiency

Solution: Utilizing ESRI’s Geometric Network and Water Utility Network Editing Tools

• Attribute Assistant
• Infrastructure Editing Toolbar
• Infrastructure Reporting Toolbar
Editing Tools

- Attribute Assistant
- Infrastructure Editing Toolbar
- Infrastructure Reporting Toolbar
• Infrastructure Reporting Toolbar

More Editing Tools
Quality Assurance/Control

Challenge: Consistent QA/QC of an extensive data model with many attributes

Solution: Using ESRI’s Data Reviewer and Batch Job Manager
Data Reviewer: Batch Job Manager
Data Reviewer: Table
Conclusion
NAVFAC SW Utilities GIS Update
Strategy, Tools, Technology
Thank you!