GIS and SCADA Integration at Chugach Electric Association

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Chugach Electric

- Service area from Tyonek to Moose Pass
- 83,000+ Utility service meters
- 500+ MW of commissioned generating capacity
- 1250 Miles Primary
- 1350 Miles Secondary
- 430 Miles Transmission
The Situation

- Mapboard Retirement
  - Tracked Tags
    - Clearance
    - Operation
    - Hold
    - Condition
    - Control
    - Information

- Switching Changes
  - Normal
  - Abnormal
GIS Replacement

- Functionality Needed
  - Real-time Updates
    - SCADA/Multispeak
    - Outages
  - Tagging Tracking
    - Tags
  - Network Backbone
  - Spatially Representative
Vision

- Provide real-time spatially accurate GIS which dispatch personnel can use to monitor tagging, changes in switching, and outages
The Project

- Develop new dataset consisting of only primary backbone
- Link Software
  - GIS
  - SCADA
- To supplement existing PragmaGeo outage software where facilities have not been asbuilt
Concerns

- Time Delay
  - Project Energization
    - Asbuilting
    - GIS Updates
  - Current Maps
    - Completion to Asbuilt Delay
- Efforts to speed up the process but lag remains
Planning

- Dispatchers
  - Needs
  - Design Preferences

- System Analysts
  - Multispeak Compatibility

- IT Programmers
  - Scripting needs
  - Server needs

- GIS Staff
  - Resource Needs
  - Map Development
Technology Used

- ESRI ArcGIS Server 10.1.1
  - Custom CEA Webmap
    - Map Service
    - Python Scripts
- Schneider Electric ArcFM 10.1
  - Geometric Network
  - Dispatch Board Dataset
- OSI Openview.Net
  - Multispeak Data
Data Architecture
Maintenance

- Map Updates
  - Workflow
  - Asbuiltting
- Quality Assurance
  - Review Process
  - Record Keeping
- SCADA Updates
  - OSI
- Two Datasets
  - Dispatch Board
  - Electric Facility Data
Maintenance Diagram

NTP

Development Database
- Redline Backbone
- Validation
- Group Email
- Validation
- SCADA Display Built
- Validation

Energized

Production Database
- SCADA Display Updated
- Group Email
- GIS Display Built
- Validation
- Group Email

Updated Displays
Timeline

- **Summer of 2016**
  - Project Design  (06/2016)
  - Dataset Creation in Development  (07/2016)
  - Demo Webmap in Development  (08/2016)

- **Fall of 2016**
  - Live Multispeak Data Stream  (09/2016)
  - Dataset Moves to Production  (10/2016)
  - Display Moves to Production  (10/2016)
  - Go Live  (11/2016)

**Timeline**

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Project Design</td>
<td>Jun-16</td>
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<tr>
<td>Dataset Creation in Development</td>
<td>Jul-16</td>
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<tr>
<td>Demo Webmap in Development</td>
<td>Aug-16</td>
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<tr>
<td>Live Multispeak Data Stream</td>
<td>Sep-16</td>
</tr>
<tr>
<td>Dataset Moves to Production</td>
<td>Oct-16</td>
</tr>
<tr>
<td>Display Moves to Production</td>
<td>Oct-16</td>
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<tr>
<td>Go Live</td>
<td>Nov-16</td>
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Map Functionality

- Clock
- Feeder Manager
- Tagging
- Switching Positions
- Outages
Results

- Real-Time Switching Webmap
- SCADA – GIS Integration
- Updates on project energization
- Flexibility
- Modular
- Lessons Learned
After
Path Forward

- Additional Components
  - Substation Buildout?
  - Transmission?
  - Secondary?

- Similar Products
  - Accounting
  - CIS
Conclusion

- Real Time GIS
- Data Integration
- Value to Customer
- Reproducible
Acknowledgements

- Chugach Electric Association
  - Ken Hilfiker
    - GIS Manager
  - John Johnson
    - Supervisor System Operations
  - Dee Fultz
    - Sr. System Control Operations Engineer
  - Steve Finneran
    - GIS Programmer
  - Rob Wood
    - Sr. Systems Analyst-Electronics