Mobile Utility Inspection Solutions
SRP Transmission & Distribution Inspections / Patrol

- Overhead Patrol (5 Yr)
- Infrared (3 Phase - 5 Yr, 1 Phase - 10 Yr)
- Wood Pole (10 Yr)
- Lighting (5 Yr)
- Vegetation Management (3 Yr)
- Steel Pole (5 Yr)
- Transmission Line Inspections (6 Months)
  - Aerial (Helicopter) / 230KV-500KV
  - Ground / 69KV-115KV
Infrared Inspection
Infrared Image Fusing Cubicle
RAMS2 Project

• **RAMS = Reliability & Asset Management**

• **Initial Scope**
  - Infrared and Overhead Patrol Inspections
  - 12KV Distribution System, Metro Phoenix Area

• **Objectives**
  - Replace / Retire Existing Smallworld Applications
  - Streamline Business Processes
  - Improved Reporting / Work Planning

• **Buy vs Build**
  - Build = Lowest Cost / Most Functionality
1 - Create Maximo Inspection Work Order
2 - Define Work Area & Assign Work
3 - Prep & Print Map

4 - Inspect / Patrol Equipment
5 - Priority 1 Notifications
6 - Capture Results On Paper
7 - Transfer Results To GIS
8 - Download & Store Digital Photos
9 - Create Follow-Up Maximo Work Orders
10 - Close Maximo Inspection Work Order

Time Consuming Map Prep
Manual Processing of Digital Photos
Manual Notifications For Priority 1 Issues
Redundant Data Entry
Legacy GIS Application
Manual Work Order Creation
Data Latency

Old Workflow
636 Assets
55 Minutes
1. Create Maximo Work Order
2. Define Work Area & Assign Work
3. Inspect / Patrol Equipment
4. Log Inspection Results Into RAMS2 App
5. Digital Photo Upload

Elimination of Paper Maps & Map Preparation Activities
Single Point, Real-Time Data Capture
Modernized GIS Application
Automated Work Order Creation & Notifications
Improved Management & Storage of Digital Photos

RAMS 2 / New Workflow
# Original Benefit Estimates

<table>
<thead>
<tr>
<th>Anticipated Benefit</th>
<th>Staff Savings (FTE)</th>
<th>Other Value</th>
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<tr>
<td>Elimination of Map Prep</td>
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<tr>
<td>Modernized, Flexible Technology Stack</td>
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<td>Expedited Response To Change Requests</td>
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<td>Application Lifespan</td>
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<td>Single Point Data Capture</td>
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<td>Real-Time Data Capture</td>
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<td>Improved Planning &amp; Scheduling</td>
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System Architecture

• **Connected / Browser-Based Application**
  - Instead of Disconnected / Store & Forward
  - Estimated 95% Cellular Coverage
  - Paper-Based Backup Process
  - Direct Access To Other Corporate Data & Resources
  - Reduced Deployment & Support Costs
  - Real-Time Updates & Monitoring

• **Maximo Integration**
  - Inspection Sets Related To Work Order
  - Post-Inspection Work Orders Auto-Generated
Web Based Architecture Requires Cellular Connectivity

Backup Processes Are Needed If Cellular Network Is Unavailable

Inspection Results Stored In GIS Database, Not Maximo
Step 1: Inspections Coordinator Creates Inspection Set
Step 2: Field Inspector Opens Inspection Set
Step 3: Field Inspector Chooses Individual Asset To Be Inspected
Step 4: Field Inspector Logs

Touch Screen

Inspection Results
Step 5: Digital photos are uploaded.

Comments: gave this job to daryl chipman.
Step 6: Maximo Work Order Is Auto-Generated
Status

• **Overhead Patrol**
  - Deployed October 2012, 40+ Users
  - 40,820 Inspections Completed

• **Infrared Inspections**
  - Deployed Sept 2013, 12 Users
  - 16,981 Inspections Completed

• **69KV Transmission Inspections**
  - Deployed May 2014
Results

• **Time Savings**
  - Elimination of Map Prep: ½ FTE
  - Elimination of Maximo Work Order Creation: ½ FTE
  - Inspector Productivity: +/- 10% Productivity Gain

• **Work Planning & Analytics**
  - Mainstream Reporting Tools = More & Better Reports

• **IT Support**
  - No Longer Built On Proprietary Platform
  - Easier to Staff, Lower Cost
Futures

- **Rugged Tablet Computers**
- **Other Inspections**
  - Wood Pole, Lighting, Steel Pole
  - Vegetation Management, Joint Use Attachments
- **New Platform**
  - Native Phone or Tablet Apps?
  - Custom ArcGIS Run-Time or ArcGIS Collector?
- **Consolidation**
  - Standardize Business Processes & Merge Apps
- **Silverlight Re-Platform**
  - 2018-2020