



Collector for ArcGIS, Survey123, and Distribution Automation: How They All Work Together

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What are they?

- Collector for ArcGIS
 - Collect and update data in the field using mobile devices
- Survey123 for ArcGIS
 - Form-centric data gathering solution
- Distribution Automation
 - Intelligent control over electrical power grid devices



Why did we need them?

- To collect and show the communication status of devices
- Three types of devices:
 - Regulators – 54
 - Capacitors – 124
 - OCRs – 539
- Not all devices are capable of electronic communication for various reasons:
 - Manual control
 - Malfunctioning
 - Communication equipment not installed

Steps

1. Confirm locations of all devices in the field
2. Confirm communication status of all devices in the field
3. Show communication status of each device on a map
4. Allow communication specialist to create and update information about each device



Obstacles

- Due to limitations with the Milsoft model, data for the AGOL maps is not live and we were not willing to give the engineer access to edit the model
- Milsoft feature classes cannot be used in an AGOL service
- Communication status for the devices was hidden in a number of spreadsheets
- Naming and map locations of each device was not consistent across all data sources

Getting the Data Together

- Different data sources could not be consolidated, but names and map locations of devices could be made consistent amongst them
 - Went through entire system correcting and updating names and locations so all sources were consistent
 - This step also had the effect of correcting additional errors in the model related to devices
- Created non-spatial tables in our SDE for the communication status
- Created a relationship class between the two tables

Viewing the Data

- Created a view using an SQL statement to join the table to the feature class
 - This allowed us to symbolize by the communication status in the related table
 - Could still export updated data from Milsoft to the feature class and not un-do all of our work

Creating the View

ArcCatalog - Database Connections\SDE_10.sde

File Edit View Go Geoprocessing Customize Windows Help

Database Connections\SDE_10.sde

Catalog Tree

- Folder Connections
 - C:\Mlsoft\Database\WindMillMap LLM E-CN
 - C:\Users\cpope
 - C:\Users\cpope\Desktop
 - Z:\
 - Mlsoft Model
- Toolboxes
- Database Servers
- Database Connections
 - Add Database Connection
 - SDE_10.sde
- GIS Servers
 - Add ArcGIS Server
 - Add ArcIMS Server
 - Add WCS Server
 - Add WMS Server

Contents

Name	Type
DBO.composite	Locator
DBO.Compositetest	Locator
DBO.CREC_Consumer_CreateAddress	Locator
DBO.CREC_MapLocations	Locator
DBO.CREC_Pole_Number	Locator
DBO.Polenumber	Locator
DBO.SectionLocator	Locator
DBO.TownRangeSection	Locator
CREC_SDE_GIS.DBO.AlternativeEnergy	SDE Feature Class
CREC_SDE_GIS.DBO.AMEC	SDE Feature Class
CREC_SDE_GIS.DBO.ArrowleafLoads	SDE Feature Class
CREC_SDE_GIS.DBO.ArrowleafTestLoads	SDE Feature Class

Create New View

View Name: DA_Cap2Cap_View

View Definition:

```
SELECT CREC_Capacitor_.OBJECTID, CREC_Capacitor_.shape, DA_Capacitors.Comm_S  
FROM CREC_Capacitor_  
LEFT OUTER JOIN DA_Capacitors  
ON CREC_Capacitor_.wmMapName = DA_Capacitors.Location
```

OK Cancel

View Properties

General Fields XY Coordinate System Definition

Database View Definition

```
CREATE VIEW DA_Cap2Cap_View AS SELECT  
CREC_Capacitor_.OBJECTID, CREC_Capacitor_.shape,  
DA_Capacitors.Comm_Status, CREC_Capacitor_.wmMapName,  
DA_Capacitors.Location  
FROM CREC_Capacitor_  
LEFT OUTER JOIN DA_Capacitors  
ON CREC_Capacitor_.wmMapName = DA_Capacitors.Location
```

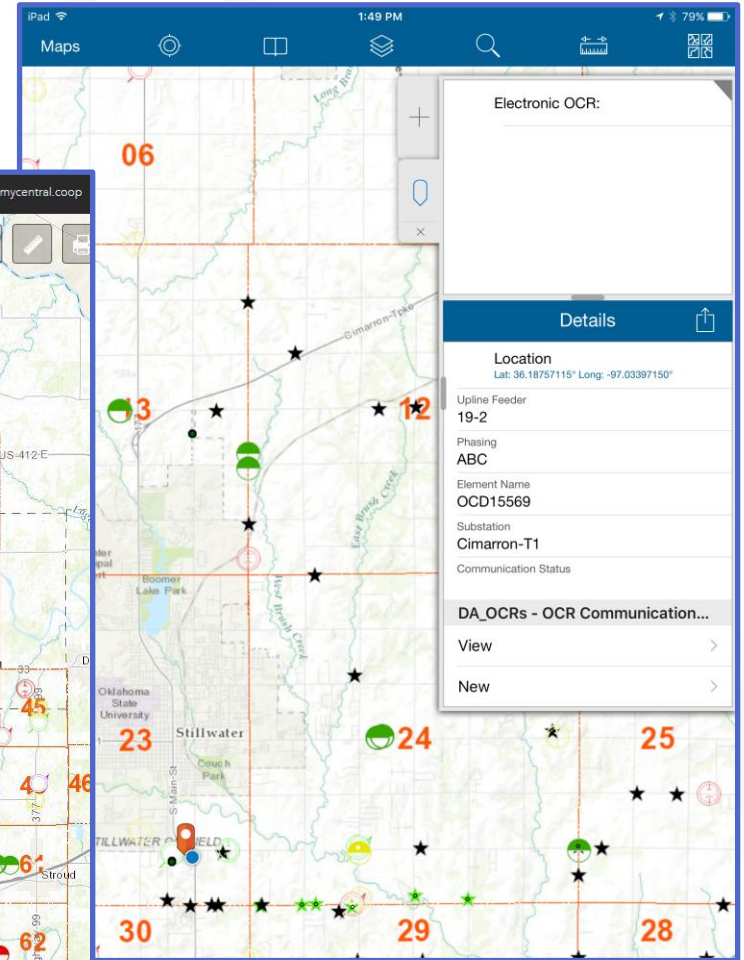
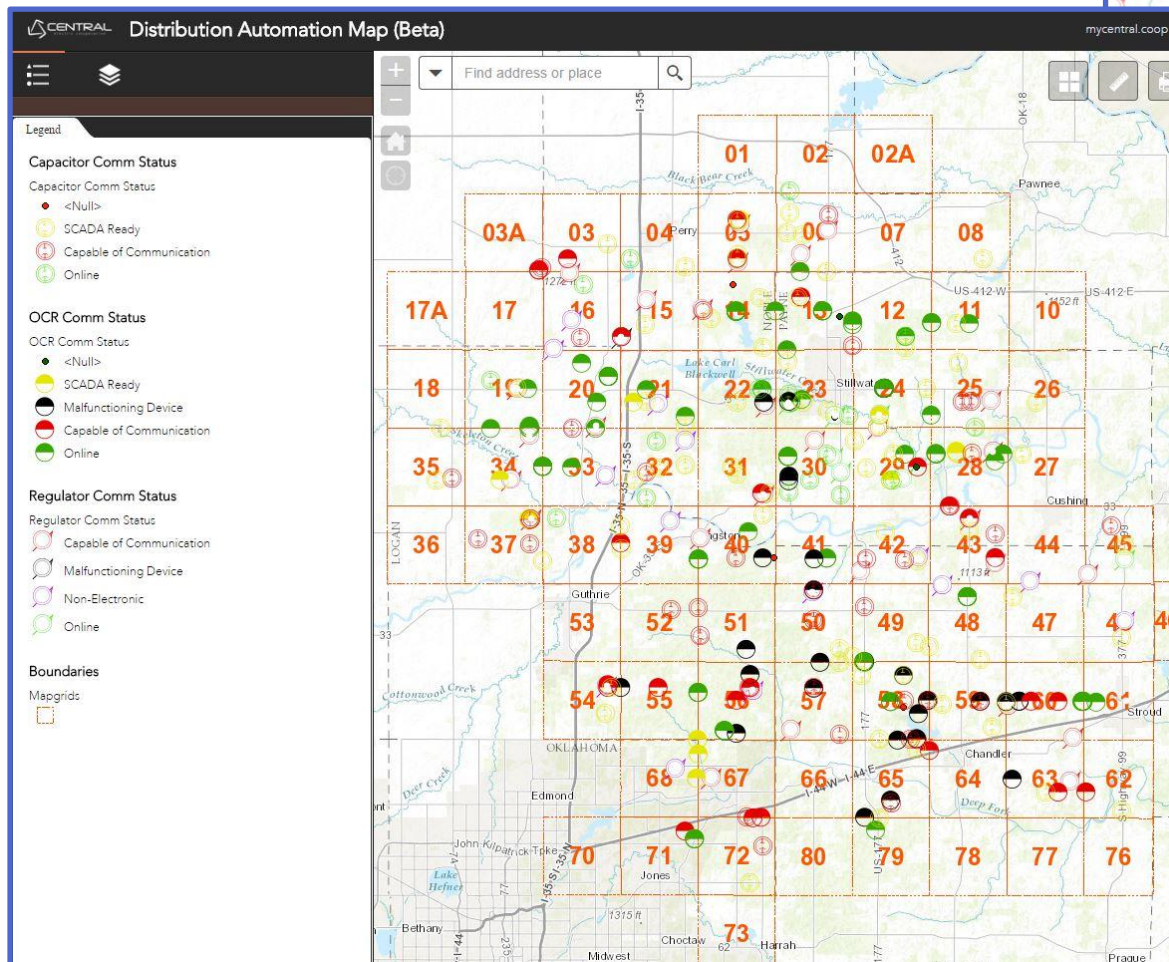
Context Menu

- Copy
- Paste
- Delete
- Rename F2
- Refresh F5
- New
 - Feature Dataset...
 - Feature Class...
 - Table...
 - View...
 - New View
 - Create a new view in this geodatabase..
- Import
- Export
- Administration
- Distributed Geodatabase
- Connect
- Disconnect
- Connection Properties...
- Geodatabase Connection Properties...
- Share as Geodata Service...
- Properties...

Data Goes Online

- Two web services were created for each device
 - 1. The service which would hold the view with the symbology
 - 2. The service which would hold the exported feature class and non-spatial table and have no symbology
- Both services were then added to a webmap
- Pop-ups were turned off for the “view” service and on for the “model” service
- The user could access the data in the non-spatial table through the relationship
- Final map was added to Collector, allowing the non-spatial table to be updated in the field by the engineer

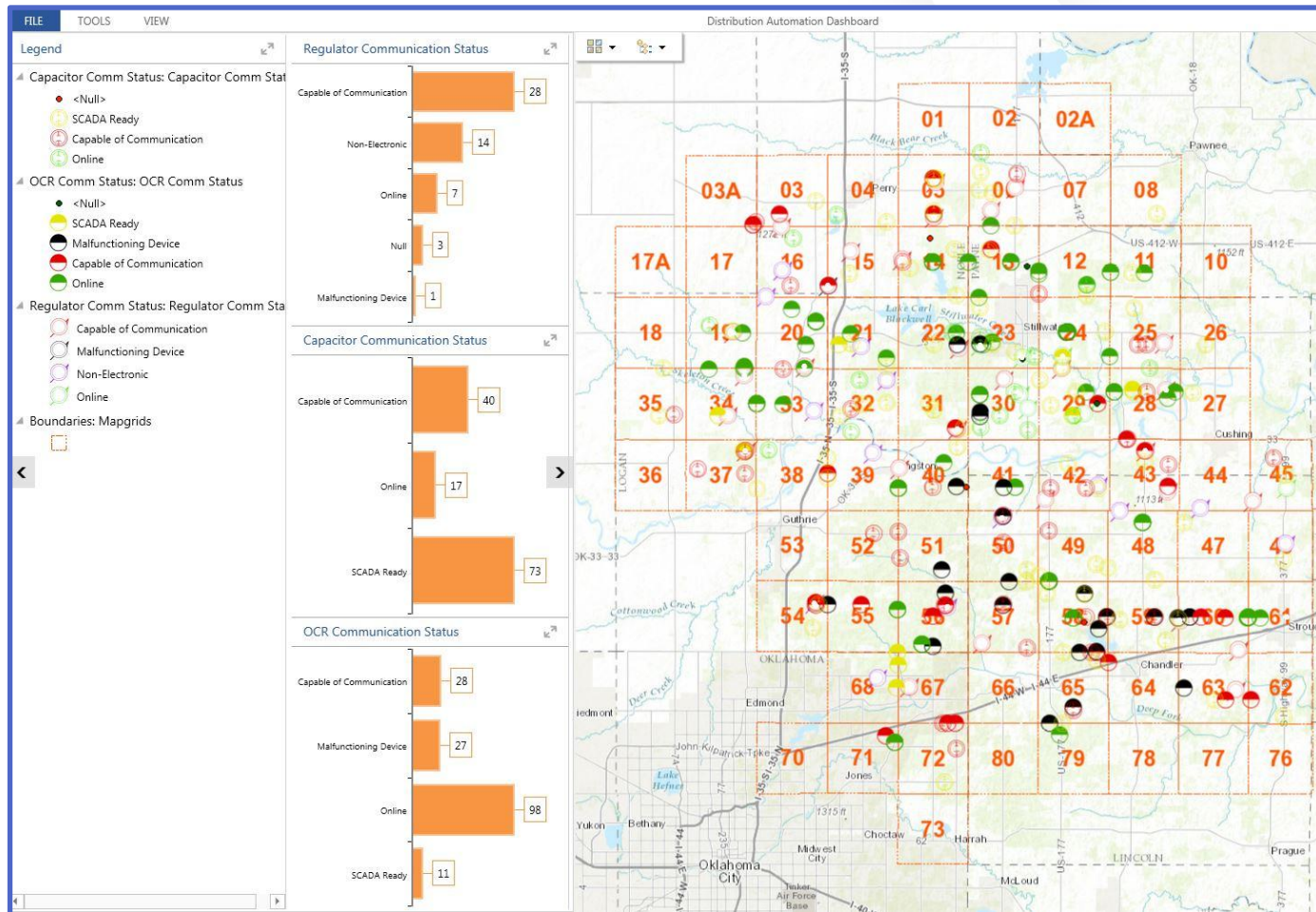
Final Product



Additional Requests

- Of course, after figuring out how to make the map work, administrators and managers had more questions:
 - How many of each communication status are there?
 - How many do we need to budget to get communicating?
- So, an Operations Dashboard was created using the same webmap
 - Made widgets to show the count of each status for each type of device

Final Product for Administrators



Addition of Survey123

- Communications Specialist needed more information about each site, rather than just a status
 - Date installed
 - Equipment installed
 - Additional equipment needed
 - Site/Path analysis status
 - Date completed
- This additional information allows a more thorough understanding of how long each site is in process
- Can export data as csv to have a report for each site
- Communications Specialist can create and publish surveys as needed

Survey123

VerB_Installation of Communication Devices

Communication Equipment Installation Date: *
Date PVN Installed Wireless Communication
September 15, 2016

Work Order# *
Example: 2016-0354

Type of Equipment Installed *
☐ Voltage Regulator ☐ Capacitor ☐ OCR's ☐ Sensors

External Power can be installed for wireless communication devices
Please check Yes or No
No Apparatus Installed at GPS Location

Site / Path Analysis Performed ? *
Complete this with Towercoverage.com
Fair Signal

Pole Number *
Enter the GPS tag from the pole.

Equipment Location *
Located on the power pole where equipment is to be installed.
No Location
Press to capture location using a map
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PVN Wireless Equipment Installed *
Please check each box that represents equipment installed at current MAP or GPS Location
☐ PBE-M5-400 5.8 Ghz Radio w400mm ☐ Universal Bracket Assembly ☐ Outdoor CAT5E ☐ Netgear Ethernet Hub/Switch

Wireless Installation Status *

Future Plans

- Relate the Survey123 table to the model table so that all data about each location is accessible via the map
- GeoEvent to email particular updates to certain people
- Ability to tie maintenance and inspection records to each data point via related tables