ssp innovations

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GIS and Asset Management: Better Together

Marshfield Utilities
April 27th, 2026

Introduction

David Miller
Executive Consultant

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Account Executive

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Company Overview

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Our Experience and Leadership

esri Partner Network Platinum

We lead the way to a better GIS for utilities.

- Systems Implementation
- Geospatial Data Services
- Operational Consulting
- Custom Solutions

- Esri IMGIS Conference 2021 Award Winner
- Esri IMGIS Conference 2022 AWARD WINNER
- Esri IMGIS Conference 2020 Award Winner
- Esri Partner Conference 2021 Award Winner – System Implementation
- Esri Partner Conference 2022 Award Winner – Top Influencer
- Esri IMGIS Conference 2025 Award Winner
- Utility Network Management Specialty
- Utility Network Specialty – Electric Utilities Services
- Esri Partner Conference 2023 Award Winner – Top Co-Sell Partner
- 2023 Infrastructure Management & GIS Conference AWARD WINNER
- ArcGIS System Ready Specialty

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Our Customers

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What is Asset Mgmt and GIS?

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What is Utility Asset Management?

From Google Gemini:

Utility asset management is the strategic, data-driven process of planning, operating, maintaining, and replacing critical infrastructure—such as power grids, water pipelines, and energy facilities—throughout its lifecycle. It ensures maximum reliability, safety, and efficiency while minimizing costs, optimizing performance, and ensuring regulatory compliance.

Key Aspects of Utility Asset Management

- **Lifecycle Management:** Covers everything from procurement and installation to maintenance, upgrades, and disposal.
- **Preventive/Predictive Maintenance:** Uses condition monitoring and data analytics to predict failures before they occur, rather than reacting to breakdowns.
- **Risk Management:** Identifies high-risk assets using data analytics and prioritization models to ensure resources are focused on critical infrastructure.
- **Technological Integration:** Utilizes Enterprise Asset Management software, GIS mapping, drone inspections, and IoT sensors to monitor real-time asset conditions.
- **Regulatory Compliance:** Ensures infrastructure meets safety and environmental standards, such as those from the EPA or ISO 55000

What Asset Management Typically Looks Like

Poles

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

	Pole Number	Address	Height	Pole Class	Pole Material	Pole Material Number	Pole Color	Date Manufactured	Installation Work Order
300	<Null>	W PALM CANYON & S...	40	<Null>	STL - Steel	10162	Utility Grey	1/1/2022	5035672
301	<Null>	W PALM CANYON & S...	40	<Null>	STL - Steel	10162	Utility Grey	1/1/2022	5035672
302	<Null>	W PALM CANYON & S...	40	<Null>	STL - Steel	10162	Utility Grey	1/1/2022	
303	<Null>	W PALM CANYON & S...	40	<Null>	STL - Steel	10162	Utility Grey	1/1/2022	
304	<Null>	W PALM CANYON & S...	40	<Null>	STL - Steel	10162	Utility Grey	1/1/2022	
305	<Null>	6500 GLADSTONE ST	40	4	Wood	<Null>	Not Painted	1/1/2020	
306	<Null>	W PALM CANYON & S...	40	<Null>	STL - Steel	10162	Utility Grey	3/30/2023	
307	77093	6601 W HOLDREGE ST	38.5	2	Wood	<Null>	<Null>	8/1/2020	
308	72678	6900 CARGER LN	38	2	Wood	<Null>	Not Painted	9/1/2020	
309	71886	2765 A ST	35	4	Wood	<Null>	Not Painted	1/1/2010	
310	48505	1634 PAWNEE ST	35	4	Wood	<Null>	Not Painted	1/1/1982	
311	59759	5120 NW 38 ST	35	4	Wood	<Null>	Not Painted	<Null>	
312	56263	4301 W ADAMS ST	35	1	Wood	<Null>	Not Painted	1/1/1988	

Trf Type	TRF Number	Bank KVA	Phases Present	Circuit #	Operating Voltage	Address	Installation Work Order
OH 3 Phase	84412	150	ABC	0525	12.5 / 7.2 kV	302 SUPERIOR ST	<Null>
OH 2 Phase	105665	50	AC	3064	12.5 / 7.2 kV	300 CHARLESTON ST	5034747
OH 2 Phase	83563	65	AB	1911	12.5 / 7.2 kV	1201 MANATT ST	<Null>
OH 1 Phase	88341	50	A	1911	12.5 / 7.2 kV	2727 N 12 ST	5038746
OH 3 Phase	105145	150	ABC	1911	12.5 / 7.2 kV	957 GARBER AVE	5034747
OH 3 Phase	84201	75	ABC	1911	12.5 / 7.2 kV	1151 SAUNDERS AV	<Null>
OH 3 Phase	88662	100	ABC	1911	12.5 / 7.2 kV	1130 OAK ST	<Null>
OH 3 Phase	71251	200	ABC	1911	12.5 / 7.2 kV	800 CORNHUSKER HW	<Null>
OH 2 Phase	54043	75	AC	1911	12.5 / 7.2 kV	800 CORNHUSKER HW	<Null>
OH 3 Phase	82338	200	ABC	1911	12.5 / 7.2 kV	926 OAK ST	<Null>
	84733	75	ABC	1911	12.5 / 7.2 kV	926 OAK ST	<Null>
	93259	125	AC	1911	12.5 / 7.2 kV	1325 DAWES AV	5003231

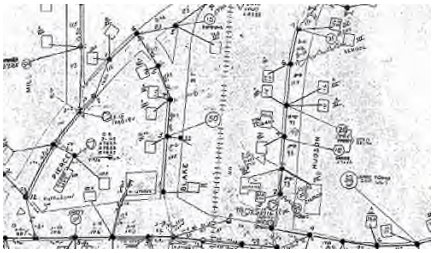
Type of Switching Fac...	Configuration	Manufacturer	Serial Number	Manufacture Date	Installation Date
Switch Gear	PMH-9	S and C	D59404	11/1/1986	3/31/2004
Switch Gear	PMH-11	S and C	662-18-00351	2/1/2018	7/2/2019
Switch Gear	PMH-11	S and C	161794	4/1/2016	7/10/2019
Switch Gear	PMH-11	S and C	164396	7/1/2016	7/10/2019
Switch Gear	PMH-11	Federal Pacific	J16896-3	5/1/2012	2/21/2013
Switch Gear	PMH-10	Federal Pacific	J17047-2	7/1/2012	<Null>
Switch Gear	PMH-11	S and C	662-22-00811	5/1/2022	<Null>
Switch Gear	PMH-11	S and C	662-21-00984	5/1/2021	8/17/2021
Loadbreak Junction	3P4H	<Null>	<Null>	<Null>	<Null>
Loadbreak Junction	1P4H	<Null>	<Null>	<Null>	<Null>
Switch Gear	PMH-11	S and C	662-18-02100	10/1/2018	6/30/2021
Switch Gear	PMH-11	S and C	662-19-02136	10/1/2019	6/30/2021

Tables. So…many…tables….

Asset Management Vendors

SAP
VUEWorks® An AtkinsRéalis Technology
IFS
IBM maximo®
COGSDALE
Cityworks® Empowering GIS®
ORACLE
Hitachi Energy Ellipse® EAM
nisc

Also Asset Management at Utilities



What is Utility GIS?

From Google Gemini:

Utility GIS (Geographic Information System) is a specialized system used to map, model, and manage infrastructure—such as electric, water, gas, and telecommunications networks—by connecting spatial, location-based data to asset attributes. It enables utilities to visualize networks, perform spatial analysis, manage assets, simulate scenarios, and optimize operations using digital twins of infrastructure.

Key Usage Examples of Utility GIS:

- **Asset Management:** Tracking infrastructure location, condition, and maintenance history, such as tracking transformers, pipes, or valves.
- **Network Modeling & Analysis:** Simulating outages, managing water quality/leak detection, and optimizing load distribution in electrical grids.
- **Field Operations & Incident Response:** Dispatching crews, accessing maps on mobile devices for repairs, and tracking underground assets before digging.
- **Compliance & Planning:** Managing right-of-way (ROW) and permits, tracking vegetation, and using historical data for predictive planning.
- **Smart Grid Integration:** Connecting with sensors and IoT systems for real-time monitoring of utility networks

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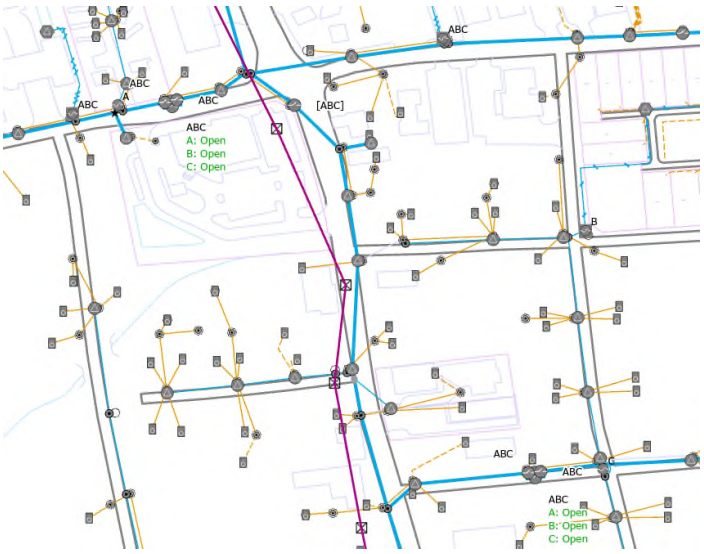
How Assets Look in GIS



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GIS Vendors

esri®

INTERGRAPH
HEXAGON

Diamond Maps

Smallworld

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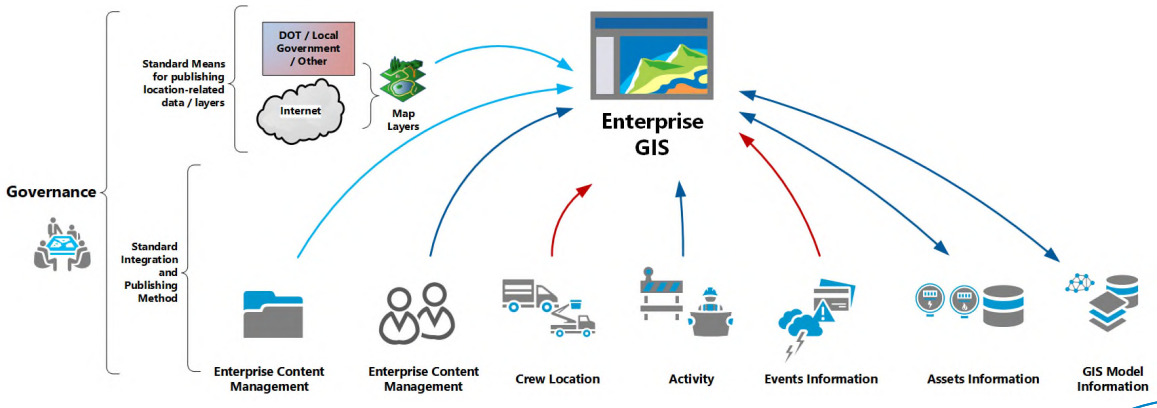
What Role Can GIS Play in Asset Mgmt?



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Using GIS and Asst Mgmt Systems Together

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Scenario 1: Pole Falls Over

- Iron street light pole falls over
- No one hurt
- Call to inspect all non-wood street light poles
  - Over 23,000 poles
- GIS had Stock Code Information
  - Reduced count to 30 poles to inspect

Pole Material — 9 symbol classes

✓	o	<Null>	<Null>	2
✓	o	ALU	ALU - Aluminum	1720
✓	o	CON	CON - Concrete	443
✓	o	FBG	FBG - Fiberglass	8062
✓	o	IRN	IRN - Iron	78
✓	o	LAM	LAM - Laminated	14
✓	o	STL	STL - Steel	13607
✓	o	UNK	UNK - Unknown	121
✓	o	WOOD	Wood	36863

Pole Number	Height	Pole Class	Pole Material	Pole Material Number	Pole Color	Date Manufactured
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	<Null>
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900
<Null>	<Null>	NA	STL - Steel	18903	Dark Bronze	1/1/1900

30 of *2,000 selected | 0 of 30 highlighted | Load All

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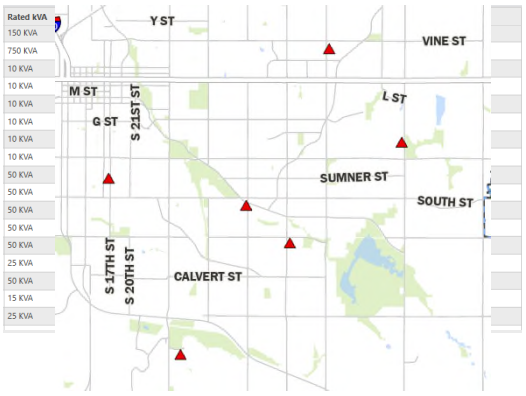
Scenario 2: Bad Bayonet Fuse

- Padmounted transformer blows bay-o-net fuse
- Fuse is found to be one size smaller than spec
  - Came from factory that way
- Are there more?!
- GIS had all Purchase Order Data
  - Could track down others on the P.O.



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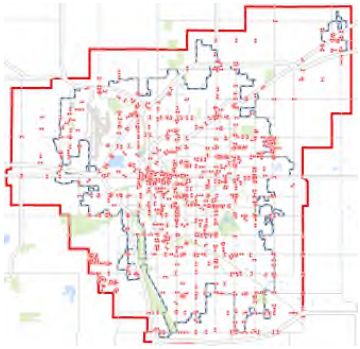
Scenario 3: Battery Powered Fault Indicators

- New type of asset being proposed
- Battery Powered
- No initial thought to tracking them
- "How long does the battery last?"

Fault Indicator Type	Model	Manufacturer	Installation Date
12kV Battery Powered Fa	UG Load Tracker - Feeder	Power Delivery	1/27/2020
12kV Battery Powered Fa	UG Load Tracker - Feeder	Power Delivery	1/27/2020
12kV Non-Battery Power	Non-Battery Reset	Power Delivery	5/11/2023
12kV Non-Battery Power	Non-Battery Reset	Fisher Pierce	6/22/2022
12kV Battery Powered Fa	UG Load Tracker - Distribution	Power Delivery	2/2/2023
12kV Non-Battery Power	Non-Battery Reset	Fisher Pierce	<Null>
12kV Non-Battery Power	Non-Battery Reset	Fisher Pierce	<Null>
12kV Non-Battery Power	Non-Battery Reset	Fisher Pierce	<Null>
12kV Non-Battery Power	Non-Battery Reset	Fisher Pierce	6/22/2022
12kV Battery Powered Fa	UG Load Tracker - Distribution	Power Delivery	2/10/2023



12kV Battery Powered Fault Indicator	1563
12kV Non-Battery Powered Fault Indicator	12629

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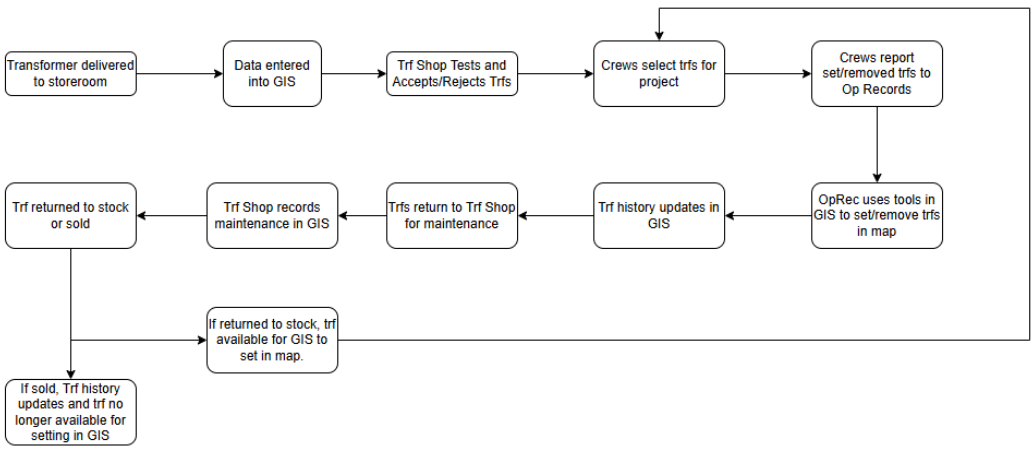
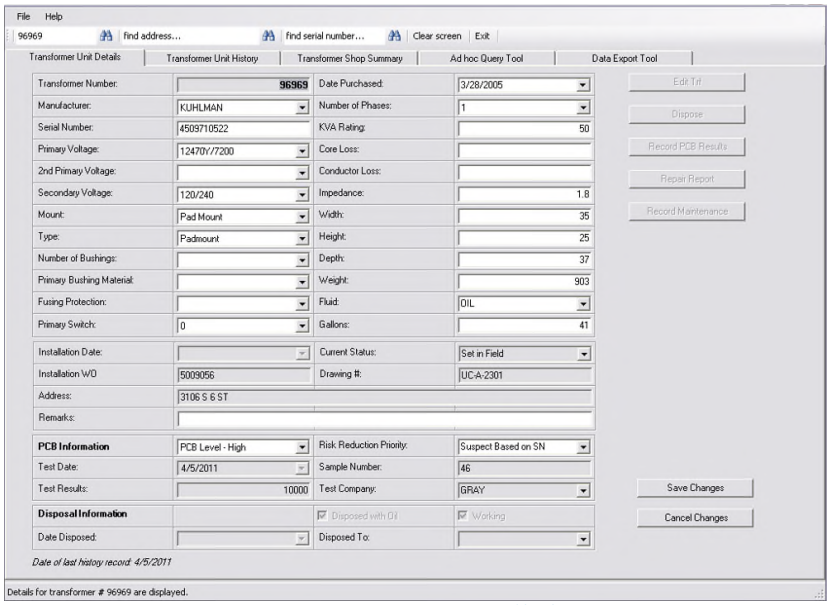
Did you know GIS can be an Asset Management System?

Transformer Management in GIS



Transformer Unit Information



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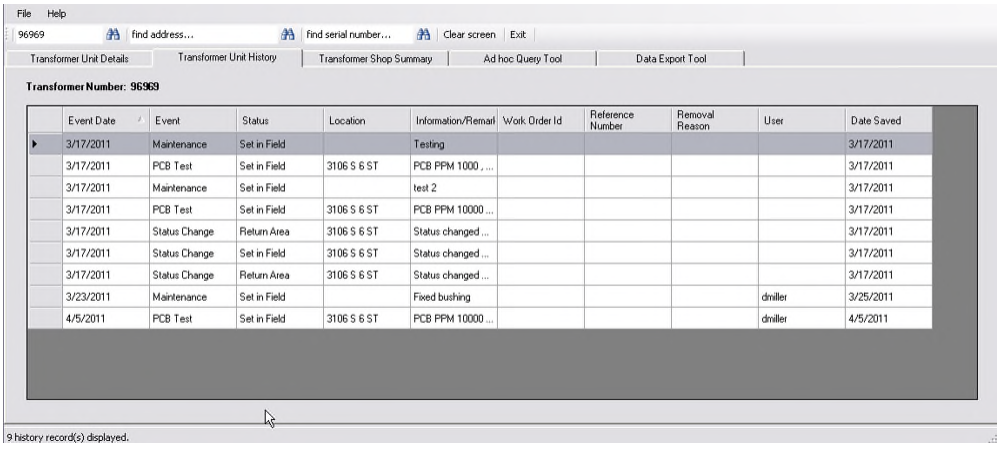
Transformer Unit History



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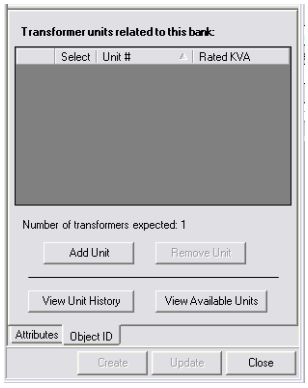
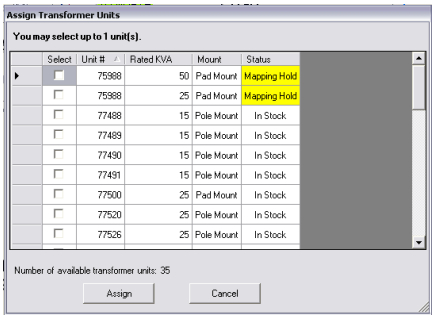
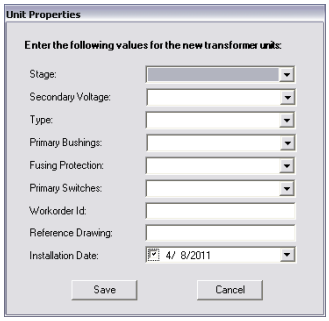
Setting Transformers in GIS







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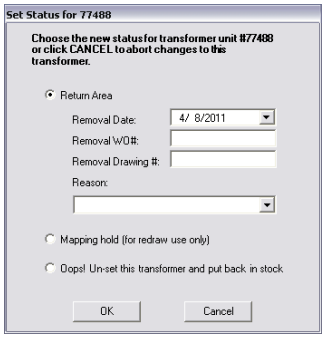
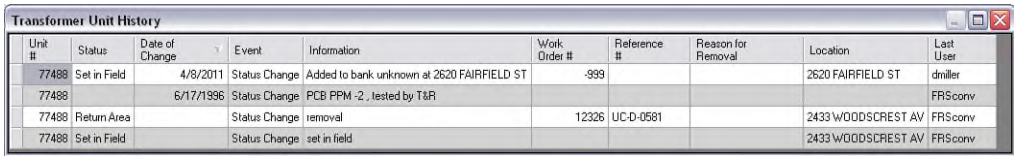
Removing Transformers in GIS





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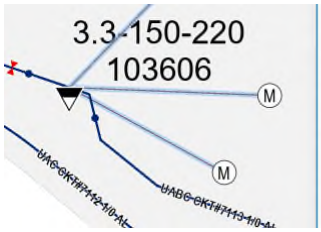
Key Transformer Data in GIS

Conductor Loss	Conductor Losses of the unit
Core Loss	Core winding losses of the unit
Impedance	Impedance of the windings

PCB Information (Maintained by the Environmental Group and Trf Shop):

Data Field	Description
PCB Sample Number	Identifier of the latest PCB sample
PCB PPM	Parts Per Million of PCB oil, if any
PCB Testing Company	Company that performed the PCB test
PCB Level Indicator	LES assigned PCB risk level
Risk Reduction Flag	Denotes if unit should be removed to lower LES' PCB contamination risks

Gallons	Number of gallons of fluid the unit holds



Fluid	OIL
Gallons	169
Remarks	<Null>
PCB Sample Date	<Null>
PCB Sample Number	<Null>
PCB PPM	<Null>
PCB Testing Company	<Null>
PCB Level Indicator	Non-Detectable
Risk Reduction Flag	No Risk

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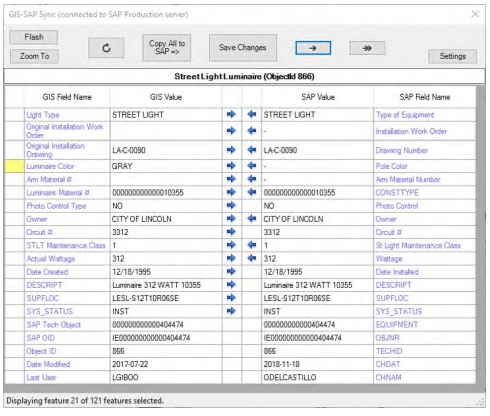
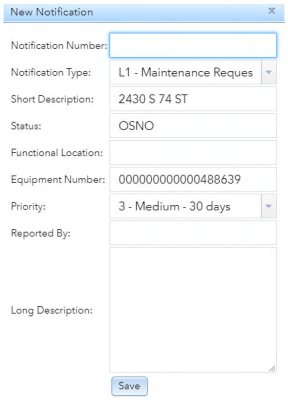
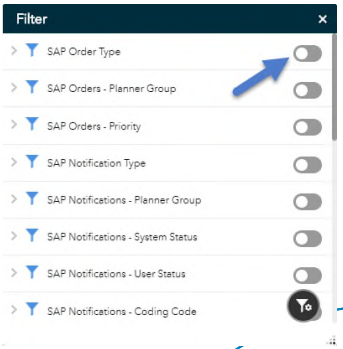
Use Case Examples: Workflow Mgmt

LES SAP-GIS Integration







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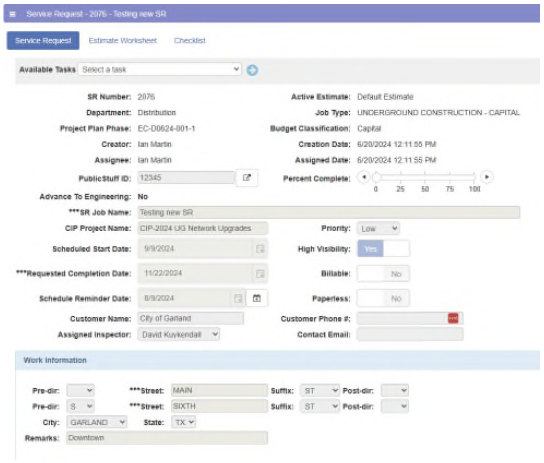
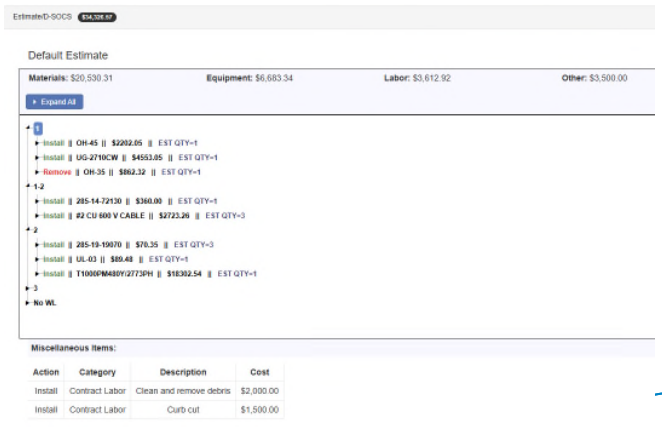
Use Case Examples: Workflow Mgmt

3-GIS Lifecycle at Garland Power & Light





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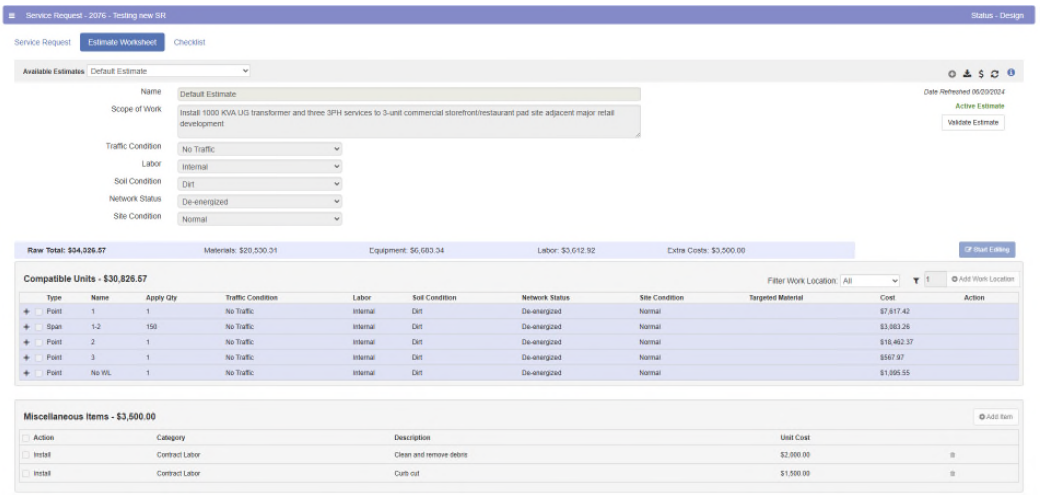
Use Case Examples: Workflow Mgmt



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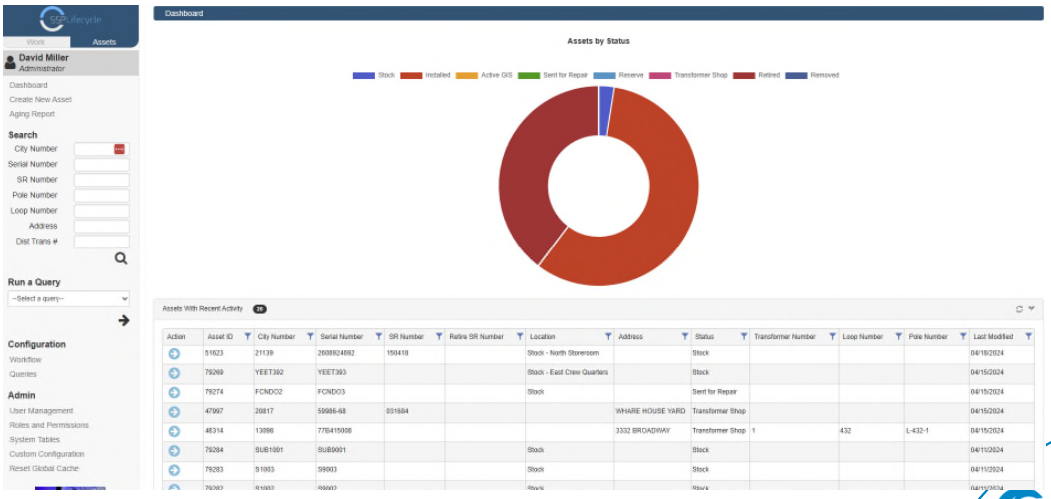
Use Case Examples: Workflow Mgmt



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Considerations

What to do next

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Define Your Vision

What do you want to do?

- ❑ Make maps
  - ❑ This should be step one!
- ❑ Feed Operational systems
- ❑ Feed analysis & planning systems
- ❑ Engineering Design integration
- ❑ Asset of record
- ❑ Digital twin (scenario analysis)
- ❑ Field tool
- ❑ Operational analytics & dashboards
- ❑ Engineering analytics & dashboards

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Define a Strategy / Roadmap

Have a plan for achieving goals

The plan includes (but not limited to):

- Education
- Decisions that need to be made
- Prototype / pilot
- Business requirements
- Identify/mitigate risk
- Do you want to workshare
  - Example: Consortium to do inventory, build and populate database
- Budget / schedule
- Data analysis & remediation
- Change management approach
- Training approach

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Design Slow

Take the time to design, study, and learn

- Standardized data model
  - Talk to other utilities and consultants about this!
- New business processes
- User interfaces
- Configurations
- Pilots
- Symbology & maps
- Any customizations
- Integrations
- Reporting needs
- Training plans
- Change management plans

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Questions

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