Geospatial Integration with SAP

Snohomish County PUD
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About Snohomish PUD

- Second largest publicly owned utility in Washington
- 337,000 electric customers and 20,000 water customers
- Service territory covers over 2,200 square miles of Snohomish County and Camano Island
- Operate 3 Hydroelectric Plants
- 6,000+ Miles of Wire
- 93,500 Transformers
- 113,000 Poles
- 370,000 Meters
- and thousands of other misc equipment

SAP Implementation

- Replacement of legacy ERP
- Consolidation of other Asset Registry and Asset Management systems

Display Functional Location: Master Data

Functional loc.	P458124	Cat. P	PUD General
Description	Pole 63641		
Status	CRTE		

General | Location | Organization | Structure | Other

Structuring

StrIndicator	ED02	PUD Electric Asset
SupFunctLoc.	S-ED-SN-6NSN-SLST	
Description	S Lk Stevens	
Position		
RefLocation		
Description		
InstallSpecs	☑ Equi-installation allwd	☐ Single installation
ConstType		

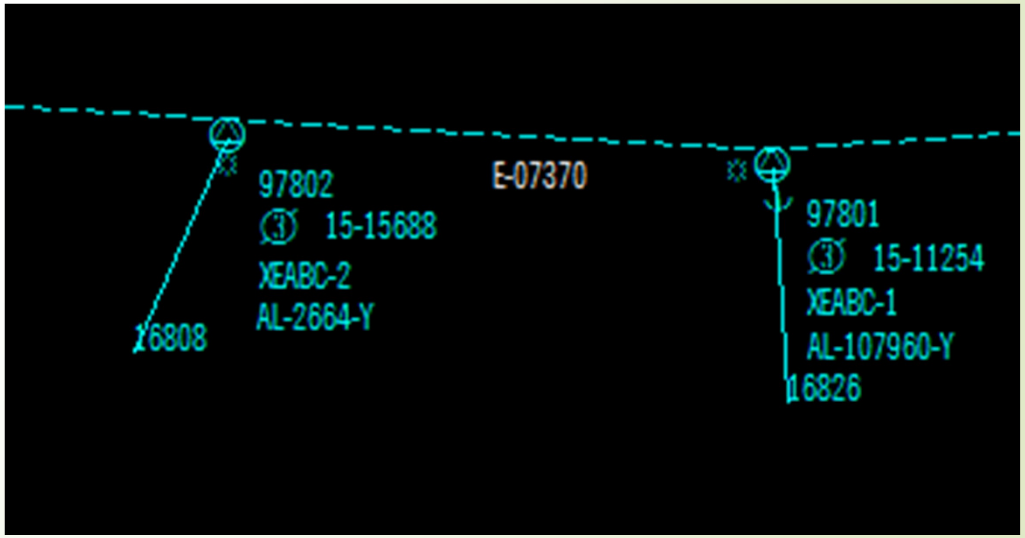
Equipment

Pos.	Equipment	Sb-Eq	Description	EqmtType	Mfr
	402931	☐	OVERHEAD TRANSFORM…	ED_XFMR	PROLEC GE
	10000006637	☐	Pole 63641	ED_POLE	
	10000222145	☑	Attachment Placeholder …	JU_ATTACH	

Design Goal

- Make information about field equipment available in both GIS and SAP
  - Presents information to users in the context in which they are working
  - Makes more information available for standard reporting in each system
  - Minimizes disruption of work processes to groups which maintain information

- Use GIS for what it does best:
  - Connectivity information
  - Geographic display
- Use SAP for what it does best:
  - Asset Lifecycle Management
  - Cost analysis



So why not choose one source?

- For any serialized equipment, we track from the moment received (SAP)
- All other equipment doesn't get tracked until designed/installed (GIS)
- In some cases, the decision was also based on division of responsibilities for information

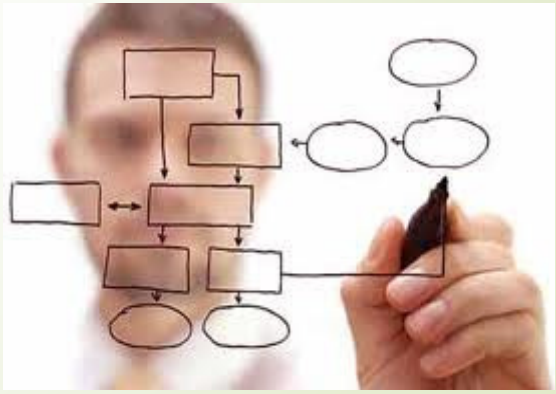
- But there's still overlap, things we want to see in both places:
  - Equipment attributes/characteristics
  - Recent activities (e.g. last inspection date)

Challenges

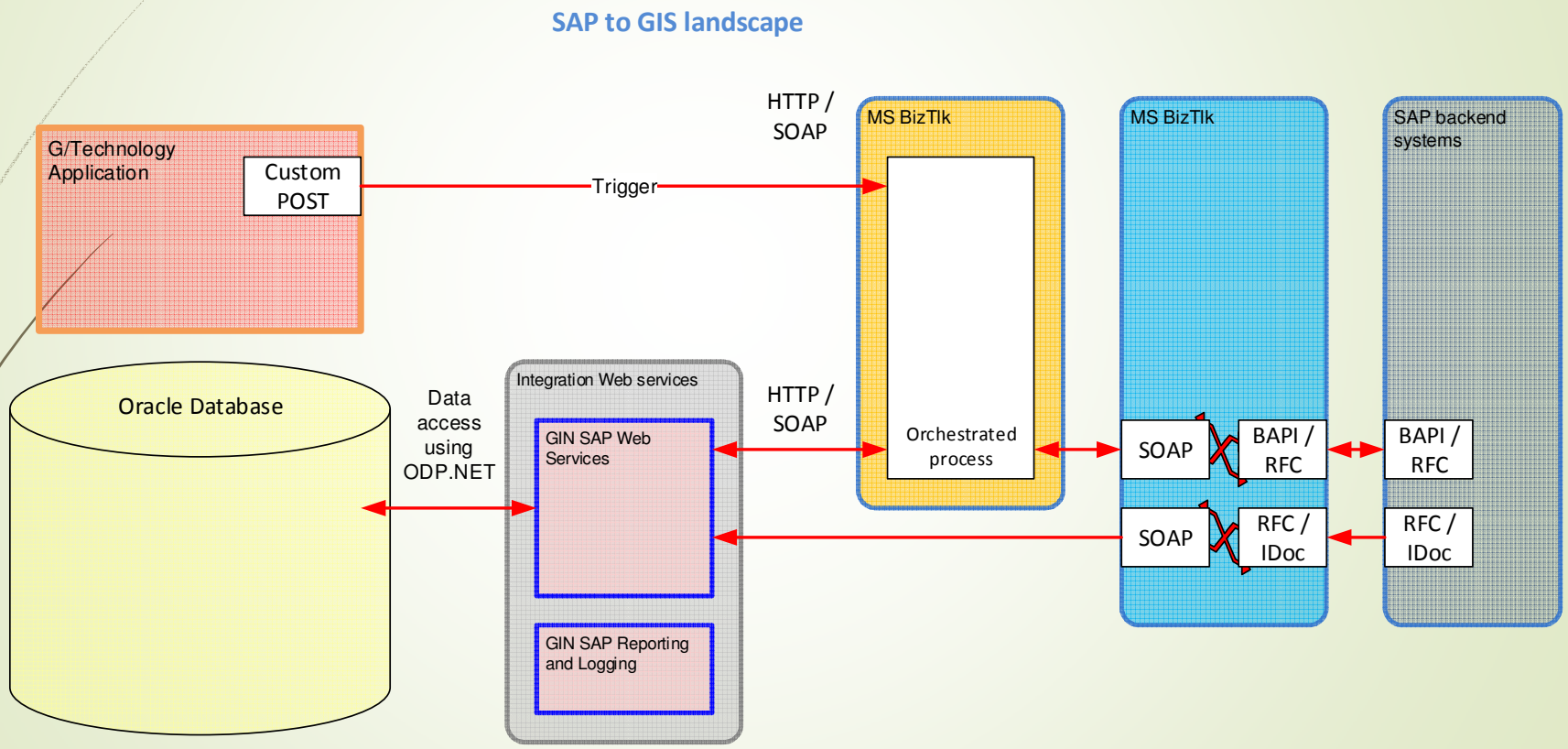
- Keeping the two systems in sync with minimal effort and no errors
- Yet another numbering system
- Concept of SAP Functional Location (FLOC) doesn't exist explicitly in GIS
  - Think of it as a place on the earth where a certain function is performed
  - It's the location where equipment gets "installed"
  - In SAP it can be established in a hierarchical arrangement
- Must have clear system of record (owner) for each piece of information
  - Don't want the same data going back and forth
  - Don't want to create equipment in GIS that SAP doesn't already know about
  - Eliminate risk of mistyped information, i.e. no fat fingering of key fields

Method

- Off the Shelf Interface (Intergraph SAP Interface)
  - Previous Experience with weekly Sync Interface (Meters)
- Proven Technology
  - 21+ other utilities using interface
- Web Service based making use of ESB (BizTalk, PI)
  - BizTalk sends SOAP Message to SAP PI
  - PI sends BAPI calls to SAP
- Table Driven
- Bi-Directional
- Synchronous



System Diagram



Examples

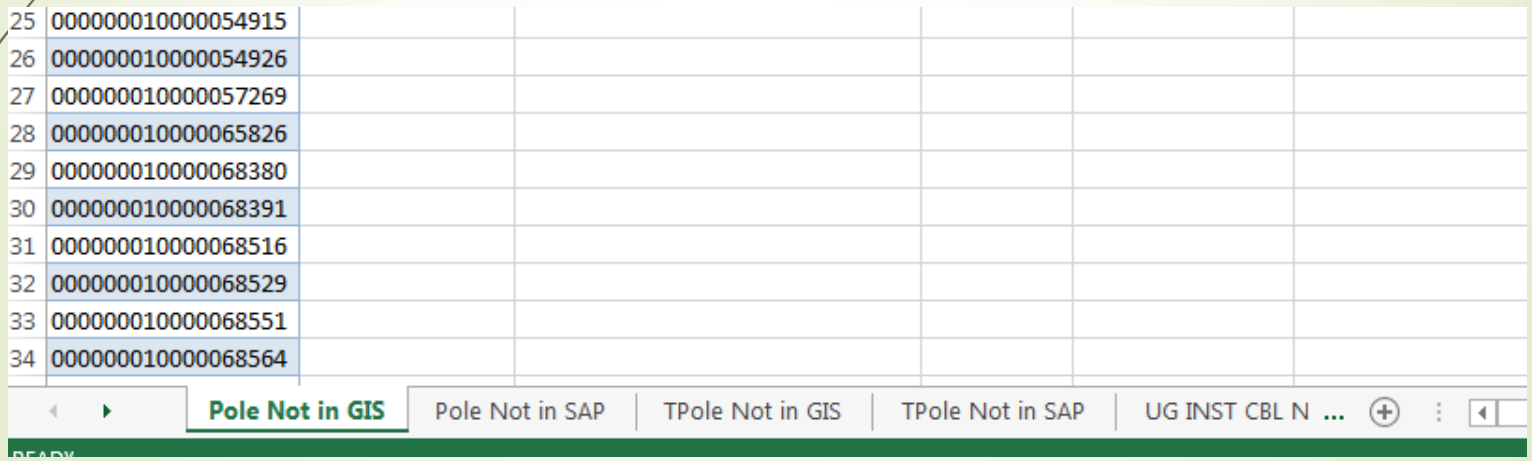
- Background Pole Scenario
  - New Pole with Joint Use Attachments
- Move to new FLOC/Superior FLOC
  - Update from GIS / Dismantle and Install in SAP
- Transformer Scenario
  - Refurbishment
- Replace Equipment Scenario
  - Reproduce a Dismantle and Install

Key Project Decision: Water

- Water system information tracked in a separate GIS
- Want to make use of the same integration architecture between SAP and GIS
- Existing goal: consolidate into single GIS platform
- Decided to consolidate during the project

Data Quality Checks

- Report to compare GIS and SAP
  - Installed Equipment (GIS) vs. Installed Equipment (SAP)
  - Available Equipment (GIS) vs. Available Equipment (SAP)



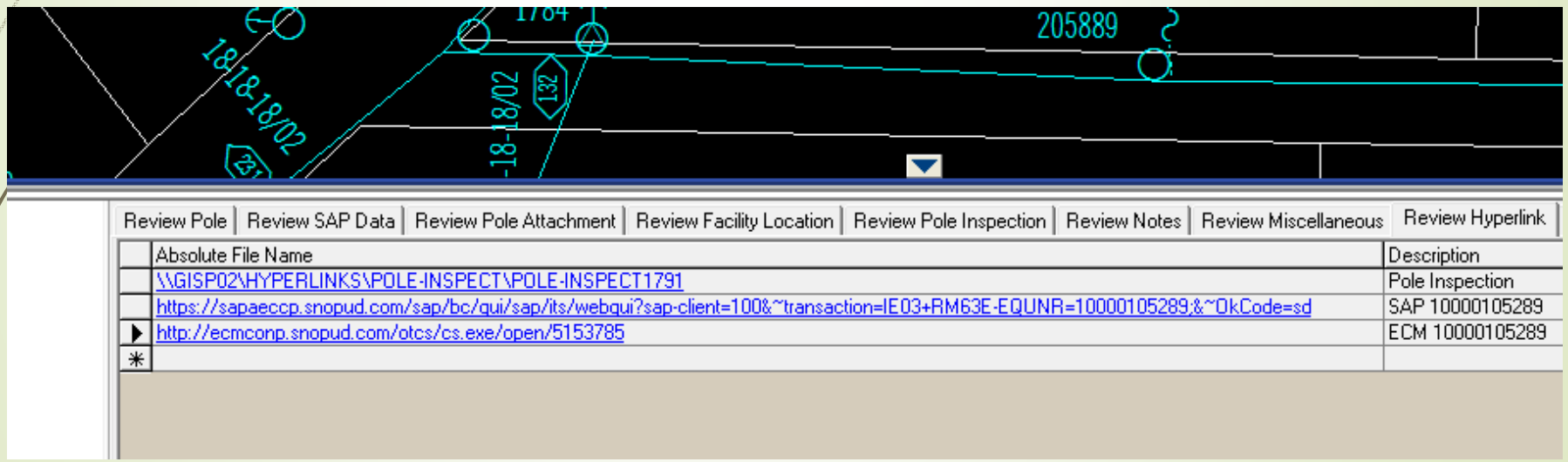
25	000000010000054915
26	000000010000054926
27	000000010000057269
28	000000010000065826
29	000000010000068380
30	000000010000068391
31	000000010000068516
32	000000010000068529
33	000000010000068551
34	000000010000068564

Pole Not in GIS | Pole Not in SAP | TPole Not in GIS | TPole Not in SAP | UG INST CBL N ...

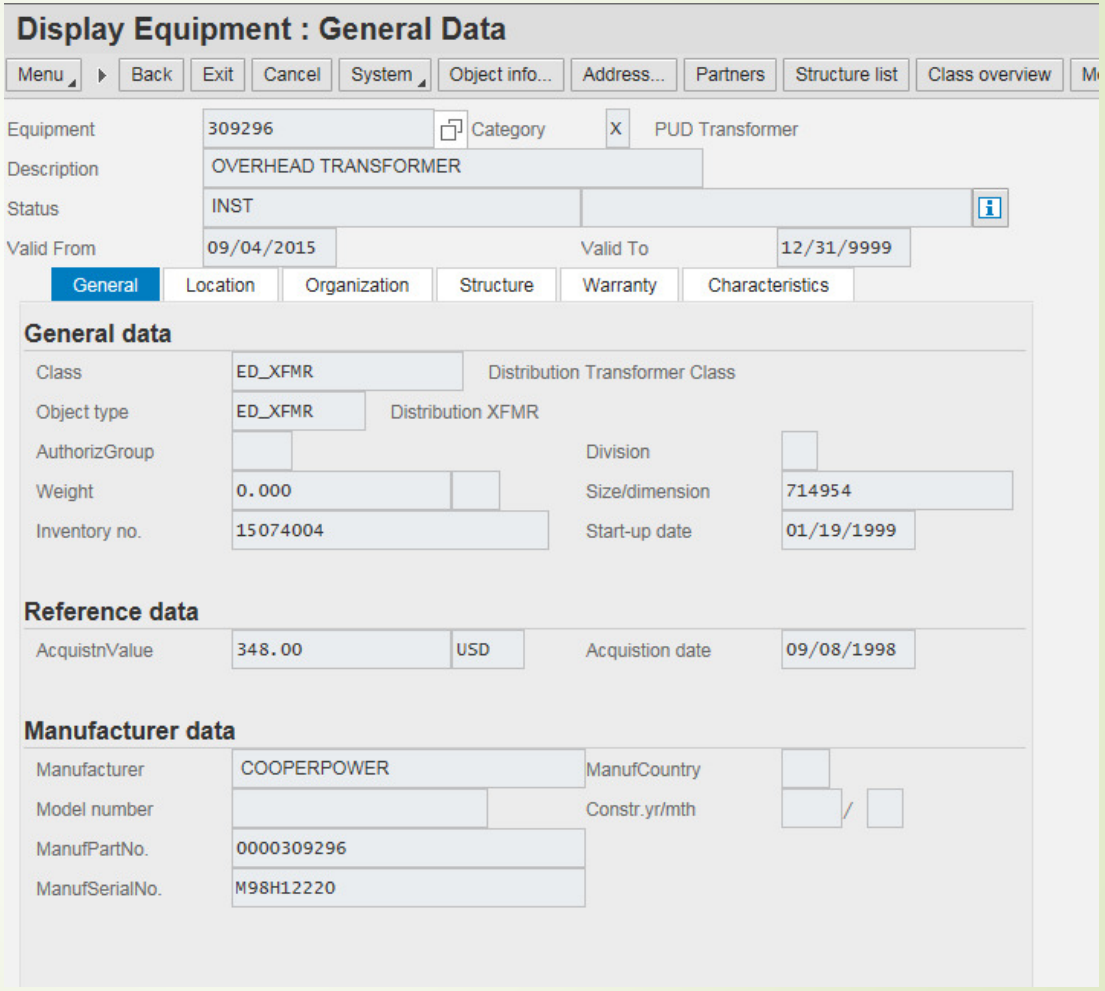
READY

Links from GIS to corresponding SAP records

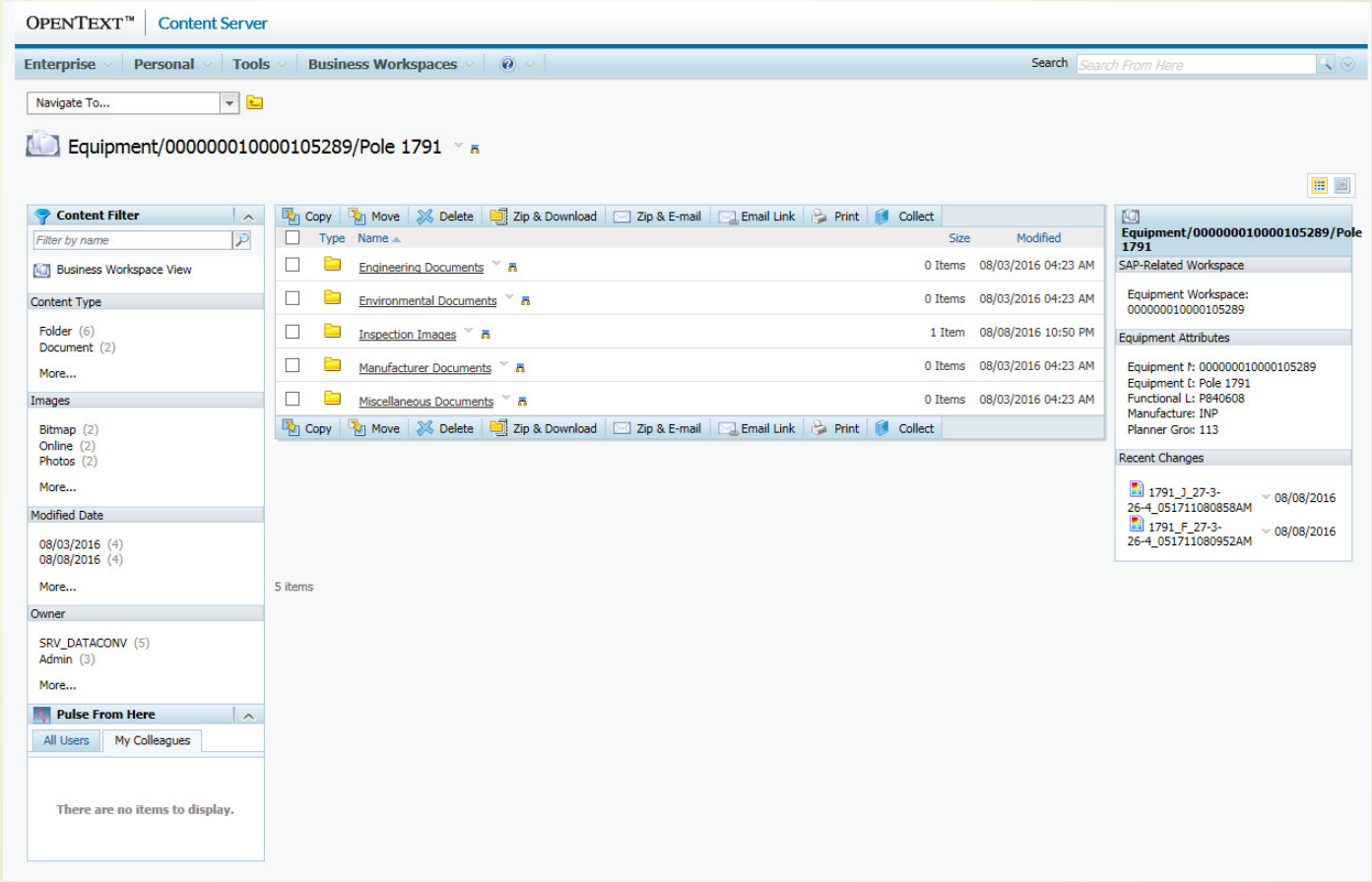
Programmatically build Hyperlinks in GIS to SAP Equipment Record and OpenText



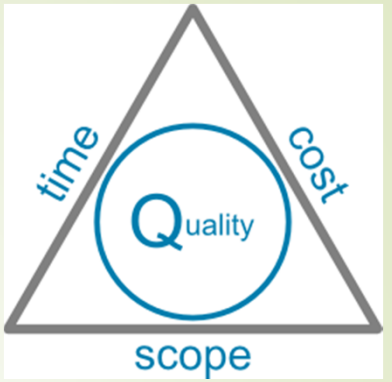
SAP GUI


Display Equipment : General Data
Menu
Back
Exit
Cancel
System
Object info...
Address...
Partners
Structure list
Class overview
Equipment
309296
Category
X
PUD Transformer
Description
OVERHEAD TRANSFORMER
Status
INST
Valid From
09/04/2015
Valid To
12/31/9999
General
Location
Organization
Structure
Warranty
Characteristics
General data
Class
ED_XFMR
Distribution Transformer Class
Object type
ED_XFMR
Distribution XFMR
AuthorizGroup
Division
Weight
0.000
Size/dimension
714954
Inventory no.
15074004
Start-up date
01/19/1999
Reference data
AcquistnValue
348.00
USD
Acquistion date
09/08/1998
Manufacturer data
Manufacturer
COOPERPOWER
ManufCountry
Model number
Constr.yr/mth
ManufPartNo.
0000309296
ManufSerialNo.
M98H12220

OpenText


OPENTEXT™ Content Server
Enterprise
Personal
Tools
Business Workspaces
Search
Search From Here
Navigate To...
Equipment/000000010000105289/Pole 1791
Content Filter
Filter by name
Business Workspace View
Content Type
Folder (6)
Document (2)
More...
Images
Bitmap (2)
Online (2)
Photos (2)
More...
Modified Date
08/03/2016 (4)
08/08/2016 (4)
More...
Owner
SRV_DATACONV (5)
Admin (3)
More...
Pulse From Here
All Users
My Colleagues
There are no items to display.
Copy
Move
Delete
Zip & Download
Zip & E-mail
Email Link
Print
Collect
Type
Name
Size
Modified
Engineering Documents 0 Items 08/03/2016 04:23 AM
Environmental Documents 0 Items 08/03/2016 04:23 AM
Inspection Images 1 Item 08/08/2016 10:50 PM
Manufacturer Documents 0 Items 08/03/2016 04:23 AM
Miscellaneous Documents 0 Items 08/03/2016 04:23 AM
5 items
Equipment/000000010000105289/Pole 1791
SAP-Related Workspace
Equipment Workspace: 000000010000105289
Equipment Attributes
Equipment N: 000000010000105289
Equipment D: Pole 1791
Functional L: P840608
Manufacture: INP
Planner Gro: 113
Recent Changes
1791_J_27-3-26-4_051711080858AM 08/08/2016
1791_F_27-3-26-4_051711080952AM 08/08/2016

Lessons Learned



- Scope, schedule and resources will drive quality
  - We would have had better quality had we been able to adjust at least one of these other
- In spite of best design, still want to have reconciliation reports to ensure that data is being kept in sync and identify potential process issues
- The field has benefited by keeping accurate information available in a geographic view that matches the work assignments (referencing the equipment) they are seeing on their iPads

Future Work & Opportunities

- Still working through defects
  - It's difficult to think of all work scenarios to test during the course of a project
- Evaluating use of batch in some scenarios where that method makes more sense
  - Bulk load
  - Information not required immediately
  - Less complicated
- Stop storing certain information in 2 systems and just make web service calls to display the info that is stored in the other context
- Extend the ability to navigate back and forth between the 2 systems