Modernizing Asset Management: Our Journey to Maximo

Standardizing Classifications, Attributes & Construction Onboarding

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Why Change

- Outdated legacy CMMS (limited asset structure, poor data integrity)
- Lack of standardized asset classifications
- No attribute structures to support lifecycle management
- Vision: Reliability, standardization, and future scalability

Goals of the Asset Management Changes

- Establish Asset Classifications
- Develop Asset Attributes
- Map and migrate legacy assets to Maximo
- Streamline new asset onboarding

Classification Development Process

- Started with:
  - 120 Legacy Asset Group Codes
  - 112,739 Assets to be Classified

Assess legacy asset data

Design new classification schema:

Class, Sub Class and Attributes that are required

Map and migrate assets

Build attribute structure

Train teams on the new system

Enable continuous improvement

Asset Classification: Approaches Explored

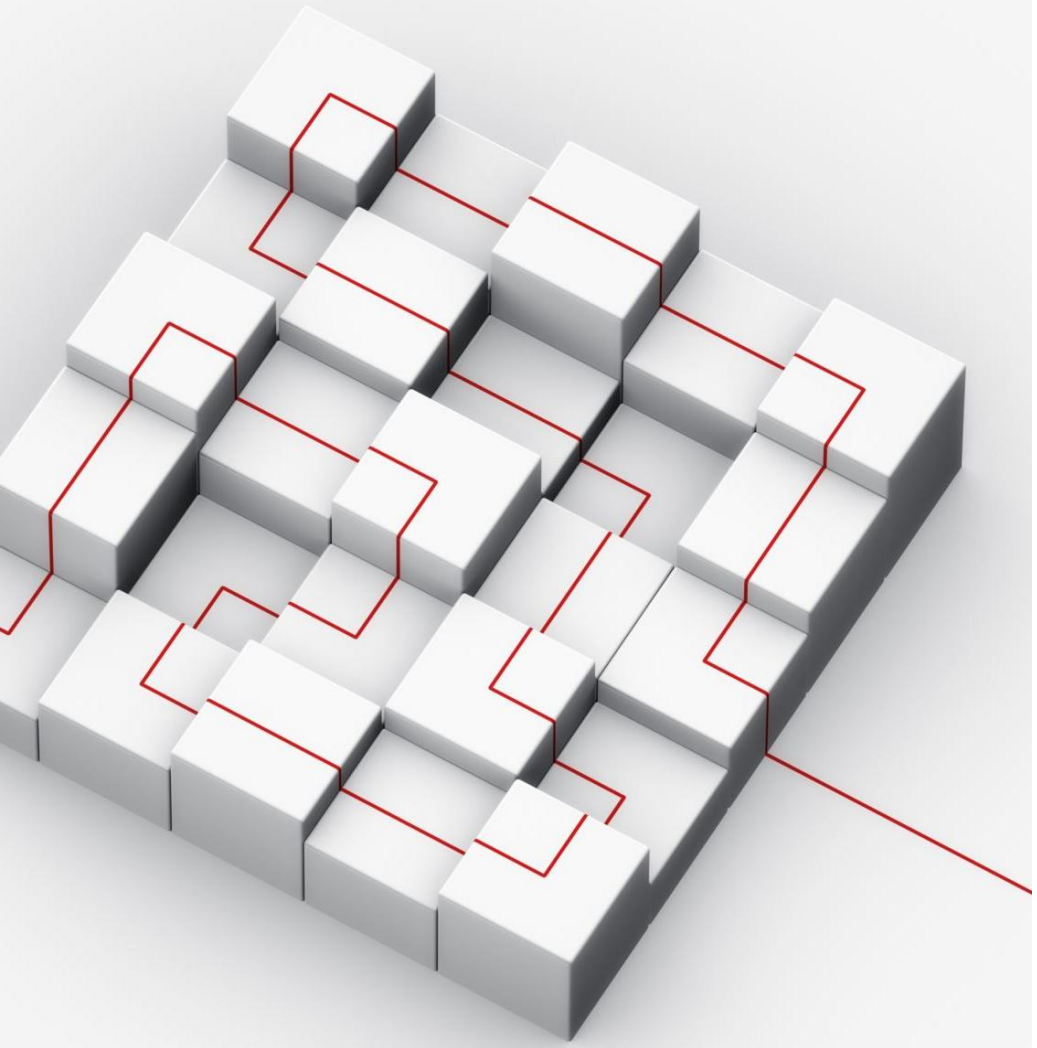
Option	Pros	Cons
Legacy Codes	Familiarity	Lack of hierarchy, unclear naming
Consultant Template	Guided	Limited customization
Custom Development	Tailored	Time-intensive
CSI Uniformat 2010	Industry Standard	Requires adaptation
Hybrid	Best of both	More coordination needed

CSI Uniformat 2010

- Pros:
  - Industry Standardization
  - Logical, System-Based Hierarchy
  - Facilitates Construction Integration

- Cons:
  - Not Maintenance-Specific
  - Would Require Customization
  - Learning Curve for Staff
  - Can Be Broad or Abstract

Type	CSI UniFormat 2010	Reference to Schematics on Tab 6	ASHE Asset Categories (Plain Language)	What is the asset?
Asset	D3050.50	Not on One-Line	D. HVAC - Air Handling - Air Curtain	Each Air Curtain
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Air Handling Unit	Air Handler is tracked as asset; c
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Air Handling Unit - Heat Recovery Unit	Each unit
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Air Handling Unit - Indoor Unit	Air Handler is tracked as asset; c
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Air Handling Unit - Make-up Air Unit	Air Handler is tracked as asset; c
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Air Handling Unit - Roof Top Unit	Air Handler is tracked as asset; c
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Clean Steam Generator	Each Clean Steam Generator
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Condensate Pump	Each unit
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Constant Air Volume Box	Each unit
Asset	D3050.50	D30-5	D. HVAC - Air Handling - Damper - Fire	Each Damper



Final Chosen Strategy: Hybrid Model

- Tiered structure:
  - Asset Type → Class → Subclass
- CSI-inspired where applicable
- Standardized naming for clarity
- Cross-department collaboration (Techs, supervisors, engineers, managers, work coordinators)
- 361 classifications created

Classifying and Mapping Assets

added sub-class, based on needs

CSI crosswalk

Legacy crosswalk

CLASS DISCIPLINE / ASSET TYPE	Proposed Classification Code	ASSET CLASS	ASSET SUB CLASS	ASSET CLASS + SUB CLASS	CSI UniFormat 2010	ASHE Asset Categories (Plain Language)	Legacy assetgrpcode	Legacy assetgrpdesc
ELECTRIAL EQUIPMENT	EL-SW	SWITCH			D5020.30			
	EL-SW-DI		DISCONNECT	SWITCH, DISCONNECT	D5020.30	D. Electrical Service and Distribution - Disconnect Switch		
	EL-SW-FD		FUSED DISCONNECT	SWITCH, FUSED DISCONNECT	D5020.30	D. Electrical Service and Distribution - Disconnect Switch Fused		
	EL-SW-MT		MOTOR-OPERATED DISCONNECT	SWITCH, MOTOR-OPERATED DISCONNECT				
	EL-SW-MT		MANUAL TRANSFER	SWITCH, MANUAL TRANSFER	D5010.70	D. Electrical Power Generation - Manual Transfer Switch		
	EL-SW-AT		AUTOMATIC TRANSFER	SWITCH, AUTOMATIC TRANSFER	D5010.70	D. Electrical Power Generation - Automatic Transfer Switch	ATS	Automatic Transfer Switch
	EL-SW-AT-DI		DISTRIBUTION ISOLATION	SWITCH, DISTRIBUTION ISOLATION				
	EL-ED	ELECTRIAL DISTRIBUTION					PDU	Power Distribution Unit
	EL-ED-PP		POWER PANELBOARD	POWER PANELBOARD	D5020.30	D. Electrical Service and Distribution - Panel, Power Distributio	ELP	Electrical Panel
	EL-ED-PS		POWER SWITCHBOARD	POWER SWITCHBOARD	D5020.10	D. Electrical Service and Distribution - Switchboard	SWITCHBOARD	Electrical switchboard
	EL-ED-MC		MOTOR CONTROL CENTER	MOTOR CONTROL CENTER	D5020.30	D. Electrical Service and Distribution - Motor Control Center	MCC	Motor Control Center
	EL-ED-LP		LIGHTING PANELBOARD	LIGHTING PANELBOARD	D5040.10	D. Electrical Lighting Control	LIGHTS	Groups of lighting fixtures
	EL-ED-SP		SURGE PROTECTION DEVICES		D5020.30	D. Electrical Service and Distribution - Power Filtering and Conc	SPD	Surge Protective Device / Transient Voltage Surge
	EL-ED-LI		LINE ISOLATION MONITOR		D5020.30	D. Electrical Service and Distribution - Line Isolation Monitor	LIM PANEL	Line Isolation Monitor (LIM) Panel
	EL-CP	CONTROL PANEL						
	EL-CP-LV		LOW VOLTAGE	CONTROL PANEL, LOW VOLTAGE				
	EL-CP-LC		LOCAL CONTROL	CONTROL PANEL, LOCAL CONTROL				
	EL-TR	TRANSFORMER					SUBSTATION	Electrical substation
	EL-TR-OF		OIL FILLED	TRANSFORMER, OIL FILLED	D5020.10	D. Electrical Service and Distribution - Transformer - Oil		
	EL-TR-DR		DRY	TRANSFORMER, DRY	D5020.10	D. Electrical Service and Distribution - Transformer - Dry		
	EL-TR-HE		HERMETIC	TRANSFORMER, HERMETIC				
	EL-UP	UPS (UNINTERRUPTABLE POWER SUPPLY)			D5010.20	D. Electrical Power Generation - Uninterruptible Power Supply	UPS	Uninterruptable Power Supply
	EL-UP-OL		ONLINE	UPS, ONLINE				
	EL-UP-BU		BACK-UP	UPS, BACK-UP				

Creating Meaningful Asset Attributes

- Attributes tailored by class (e.g., Transformers - KVA, Chiller - Tonnage)
- Used domains for consistency – dropdowns for validation (e.g., Filter efficiency – MERV/HEPA rating)
- Created 153 unique attribute IDs
- Attribute IDs were mapped to 932 instances

ClassificationID	Classification Description	Use in Asset Desc?	Seq	AttributeID	Attribute Description	Use Value in Asset Desc?	UoM	Domain (ALN)	Prefix	Domain Values		
FX-AH	AIR HANDLING UNIT (AHU)	N	15	FANSPLY	Fan Supply	N		MDA_FAN_SUPPLY		Axial	Centrifugal	Fan Wall
FX-AH	AIR HANDLING UNIT (AHU)	N	16	FANSPLYDRIVE	Fan Supply Drive	N		MDA_FAN_DRIVE		Belt Drive	Direct Drive	
FX-AH	AIR HANDLING UNIT (AHU)	N	17	FANSPLYBRNGS	Fan Supply Bearings	N		MDA_FANSPLYMTRBRNG		Greaseable	Oil Lubricated	Permanently Sealed
FX-AH	AIR HANDLING UNIT (AHU)	N	18	FANSPLYMTR	Fan Supply Motor	N		MDA_FAN_SUPPLY_MTR		AC	DC Inverter	
FX-AH	AIR HANDLING UNIT (AHU)	N	19	FANSPLYMTRB	Fan Supply Motor Bearing	N		MDA_FANSPLYMTRBRNG		Greaseable	Oil Lubricated	Permanently Sealed
FX-AH	AIR HANDLING UNIT (AHU)	N	20	TYPE-HEATING	Heating Type	N		MDA_HEATING_TYPE		Direct-Fired Gas	Hot Water	Indirect-Fired Gas
FX-AH	AIR HANDLING UNIT (AHU)	N	21	COOLING	Cooling Type	N		MDA_COOLING_TYPE		Chilled Water	Mechanical Refigeration	
FX-AH	AIR HANDLING UNIT (AHU)	N	21	TYPE-COOLING	Cooling Type	N		MDA_COOLING_TYPE		Chilled Water	Mechanical Refigeration	
FX-AH	AIR HANDLING UNIT (AHU)	N	22	HUMIDIFIER	Humidifier	N		MDA_HUMIDIFIER		IR Humidifier	None	Steam Humidifier
FX-AH	AIR HANDLING UNIT (AHU)	N	23	FINALFILTER	Final Filters	N		MDA_FINAL_FILTER		Carbon Filter	Hot Deck Post-Filte	Permanent
FX-AH	AIR HANDLING UNIT (AHU)	N	24	FINFILTER	Final Filter Efficiency	N		MDA_FINAL_FLTR-EFF		HEPA	MERV 1	MERV 10
FX-AH	AIR HANDLING UNIT (AHU)	N	25	FINFILTERMNT	Final Filter Monitoring	N		MDA_FINFILTERMNTR		N	Y	
FX-AH	AIR HANDLING UNIT (AHU)	N	26	FANRTN	Fan Return	N		MDA_FAN_RETURN		Axial	Centrifugal	Fan Wall
FX-AH	AIR HANDLING UNIT (AHU)	N	27	FANRTNDRIVE	Fan Return Drive	N		MDA_FANRTNDRIVE		Belt Drive	Direct Drive	
FX-AH	AIR HANDLING UNIT (AHU)	N	28	FANRTNBRNGS	Fan Return Bearings	N		MDA_FANRTNBRNGS		Greaseable Bearings	Oil Lubricated Beari	Permanently Sealed
FX-AH	AIR HANDLING UNIT (AHU)	N	29	FANRTNMTR	Fan Return Motor	N		MDA_FAN_RETURN_MTR		AC	DC Inverter	
FX-AH	AIR HANDLING UNIT (AHU)	N	30	FANRTNMTRBR	Fan Return Motor Bearing	N		MDA_FANRTNMTRBRNGS		Greaseable	Oil Lubricated	Permanently Sealed
FX-AH	AIR HANDLING UNIT (AHU)	N	31	CONTROLS	Controls	N		MDA_CONTROLS_TYPE		Building Automation	Local	
RO-GN	GENERATOR	N	1	UNIT-NAME	Unit Name	N						
RO-GN	GENERATOR	N	2	VOLTAGE-RAN	Voltage Range	N	V					
RO-GN	GENERATOR	N	3	SPEED	Rotating Speed	N	RPM					
RO-GN	GENERATOR	N	4	CAP-KVA	Capacity - kVA	N	KVA					
RO-GN	GENERATOR	N	5	BUS-RATING	Bus Withstand Rating/maximum fault current	N	KA					
RO-PU	PUMP	N	1	UNIT-NAME	Unit Name	N						
RO-PU	PUMP	N	2	PUMP-DRIVE	Pump Drive	N		MDA_PUMP_DRIVE		Direct Drive		
RO-PU	PUMP	N	3	FAN-BEARINGS	Fan Bearings	N		MDA_FAN_BEARINGS		Greaseable	Greaseable Bearings	Oil Lubricated
RO-PU	PUMP	N	4	MOTOR-BEARI	Motor Bearings Lubrication	N		MDA_MTR_BRNG_LUBE		Greaseable Bearings	Greaseable Bearings	Oil Lubricated Beari
RO-PU	PUMP	N	5	MONITORING-C	Monitoring Operations	N		MDA_MONITORING_OP		Monitored	Not Monitored	
RO-PU	PUMP	N	6	DUTY	Duty / Pump Function	N		MDA_DUTY_FUNCTION		Condensate Pump Centr	Fire Water Pump Ca	HVAC Water Pump

List View | Asset | Spare Parts | Safety | Meters | Specifications | Work | Work Zones | Service Address

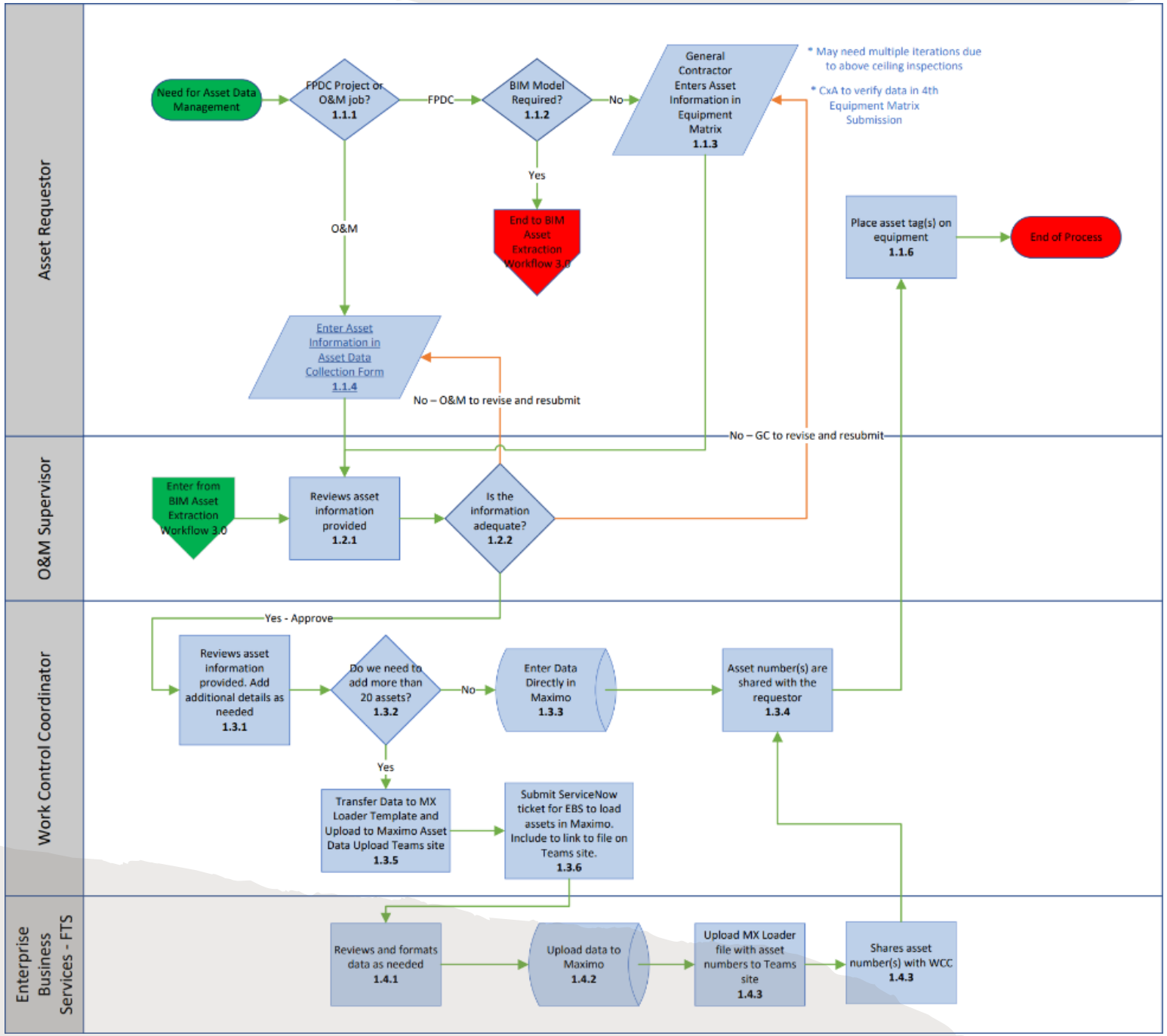
Asset: M1000406 AIR HANDLER UNIT, AHU 223 Site: FM

Classification: FX-AH Class Description: AIR HANDLING UNIT (AHU)

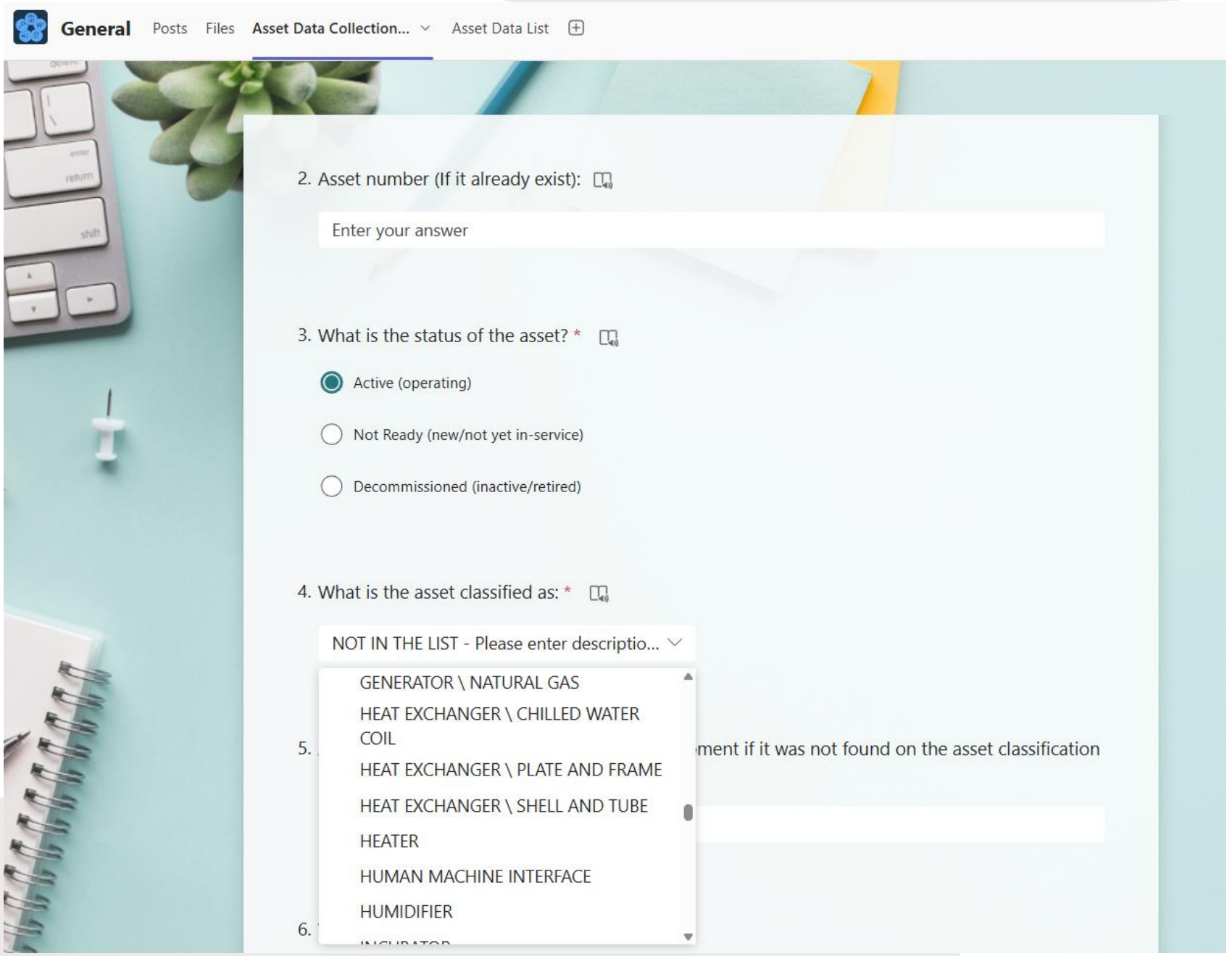
Specifications Filter 1 - 32 of 32

Attribute	Description	Data Type	Alphanumeric Value	Numeric Value	Unit of Measure	Table Val
UNIT-NAME	Unit Name	ALN				
HEATING-SECT	Heating Section	ALN			BTU/H	
COOLING-SECT	Cooling Section	ALN			BTU/H	
HEATRECOVER	Heat Recovery	NUMERIC			BTU/H	
CAP-CFM	Cubic Feet Per Minute	NUMERIC			CFM	
CONFIG	Configuration	ALN				
MOUNTING	Mounting	ALN				
RAPLENUM	Return Air Plenum	ALN				
PREFILTER	Pre-Filters	ALN				
PRIMEFILTER	Primary Filters Efficiency	ALN				
PRIFILTERMNT	Primary Filter Monitoring	ALN				

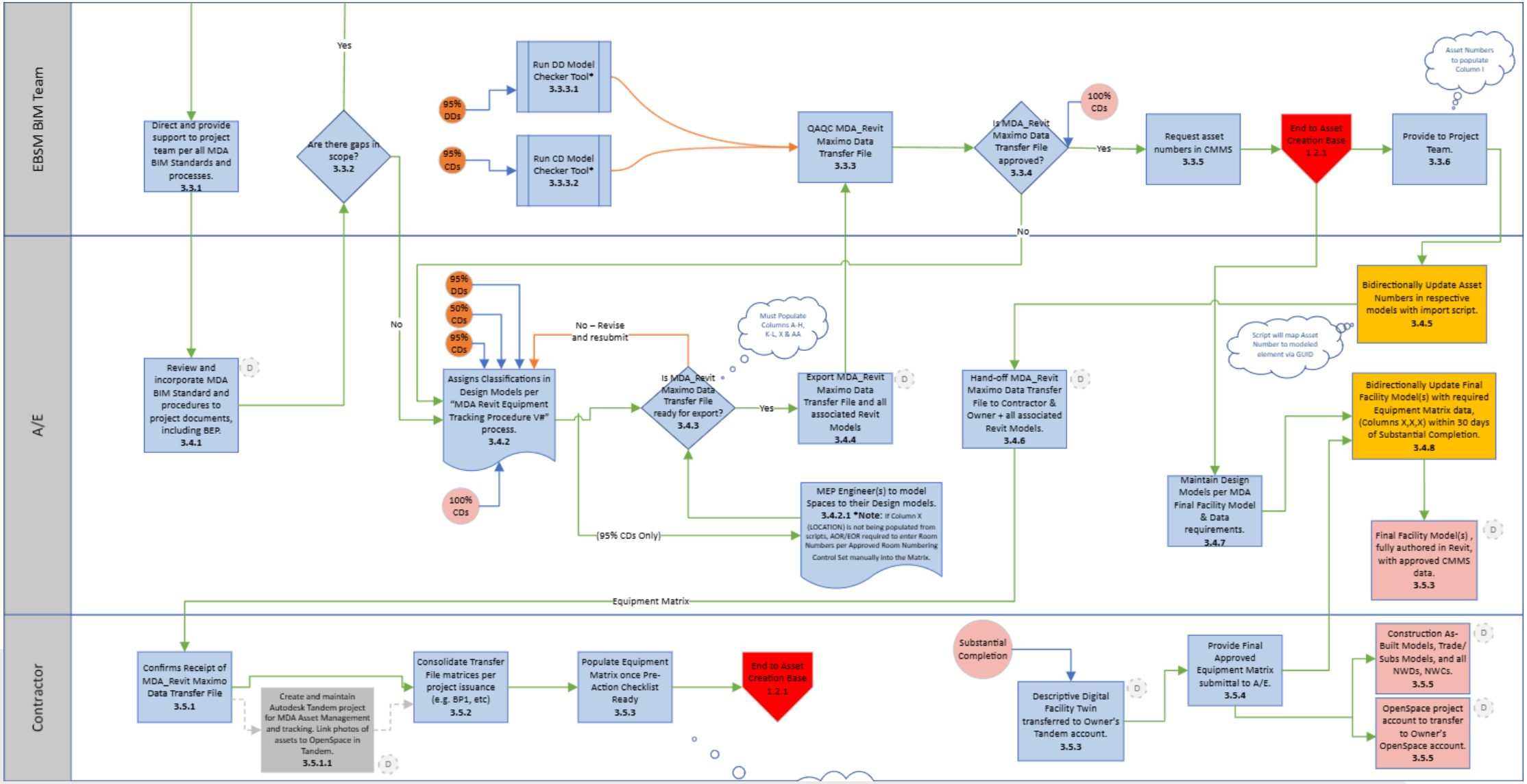
Bringing New Facilities and Assets Online



Establishing a Maintenance Change-to-CMMS Workflow



BIM-Based Asset Extraction




BRF-Biosciences Research Facility
Search BRF-Biosciences Research Facility
Maximo - Asset Numbers
Filters
Assets
Files
Docs
Systems
Connections
Users
Streams
History
Ceilings 415
more
Revit Families (0 of 921 selected)
_CARTTIPPER 2
_TT-CL-Concrete Rectangular 164
00297 - Victaulic - 013009 - Ver1 - FireLock - ... 2
064100_Casework-BaseCabinet-A-111-Single... 2
064100_Casework-BaseCabinet-A-112-Doub... 13
more
MDA_ASSET NUMBER
(2732 of 2733 selected)
M1125890
M1125891
M1125892
M1125893
M1125894
M1125895
M1125896
M1125897
M1125898
M1125899
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M1125902
M1125903
M1125904
M1125905
M1125906
M1125907
M1125908
M1125909
M1125910
M1125911
INVENTORY (138)
(1)
Follow selection
Show tagged assets
Columns (40)
Export
Import
e...
Edited by
Image
Mark
Type Na...
Workset
Host
Level
Moves ...
Schedul...
ElementId
MDA_A...
MDA_CL...
MDA_C...
MDA_D...
MDA_MAXIMO CODE
MDA_PROJECT ID
2 1944 Single Face ELEC-LIGH... Level : LEV... LEVEL 06 2543925 TURNER 2025-01-30 EL-LI-ES 190119
3 1945 Single Face ELEC-LIGH... Level : LEV... LEVEL 06 2543940 TURNER 2025-01-30 EL-LI-ES 190119
4 1947 Single Face ELEC-LIGH... Level : LEV... LEVEL 06 2543979 TURNER 2025-01-30 EL-LI-ES 190119
5 2947 Single Face ELEC-LIGH... Level : LEV... LEVEL 06 2713069 TURNER 2025-01-30 EL-LI-ES 190119
6 2948 Single Left... ELEC-LIGH... Level : LEV... LEVEL 06 2713102 TURNER 2025-01-30 EL-LI-ES 190119
7 2951 Single Left... ELEC-LIGH... Level : LEV... LEVEL 06 2713194 TURNER 2025-01-30 EL-LI-ES 190119
8 2952 Single Rig... ELEC-LIGH... Level : LEV... LEVEL 06 2713261 TURNER 2025-01-30 EL-LI-ES 190119
9 1924 Single Face ELEC-LIGH... Level : Lev... Level 04 2543192 TURNER 2025-01-30 EL-LI-ES 190119
10 1927 Single Face ELEC-LIGH... Level : Lev... Level 04 2543245 TURNER 2025-01-30 EL-LI-ES 190119
11 2954 Single Rig... ELEC-LIGH... Level : LEV... LEVEL 06 2713378 TURNER 2025-01-30 EL-LI-ES 190119
12 2955 Single Rig... ELEC-LIGH... Level : LEV... LEVEL 06 2713407 TURNER 2025-01-30 EL-LI-ES 190119

Equipment Matrix via MX Loader

	A	B	C	D	G	H	I	K	L	T	X
1	MDA_GUID	will not be included in	will not be included in MXLoader	will not be included in MXLoader	MDA_PROJECTID	will not be included in MXLoader	ASSETNUM	CLASSSTRUCTUREID.DESCRIPTION	MDA_UNITID	SERIALNUM	LOCATION
2	GUID (DO NOT EDIT)	Element ID (DO NOT EDIT)	Family Type, Family Name (DO NOT EDIT)	Revit Model File Name (DO NOT EDIT)	PROJECT ID	PROJECT NAME	ASSET (From MDACC)	CLASSIFICATION	UNIT NAME	SERIAL #	LOCATION
3	8cf9c21f-480d-4f5f-9	4467939	Family Type: Kendo M Recessed, Family: Lighting-Luminii-Kendo_M_Rec	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L25		BRF ENTRY CANOPY
4	8cf9c21f-480d-4f5f-9	4467941	Family Type: Kendo M Recessed, Family: Lighting-Luminii-Kendo_M_Rec	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L25		BRF ENTRY CANOPY
5	8cf9c21f-480d-4f5f-9	4467943	Family Type: Kendo M Recessed, Family: Lighting-Luminii-Kendo_M_Rec	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L25		BRF ENTRY CANOPY
6	8cf9c21f-480d-4f5f-9	4467945	Family Type: Kendo M Recessed, Family: Lighting-Luminii-Kendo_M_Rec	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L25		BRF ENTRY CANOPY
7	27f981c0-8cdf-40e2-a	5259013	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF1.1003
8	27f981c0-8cdf-40e2-a	5259016	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF1.1003
9	27f981c0-8cdf-40e2-a	5259019	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF1.1002
10	27f981c0-8cdf-40e2-a	5259020	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF1.1002
11	27f981c0-8cdf-40e2-a	5259035	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF2.1003
12	27f981c0-8cdf-40e2-a	5259036	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF2.1003
13	27f981c0-8cdf-40e2-a	5259041	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF1.1003
14	27f981c0-8cdf-40e2-a	5259043	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF2.1002
15	27f981c0-8cdf-40e2-a	5259044	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF2.1002
16	27f981c0-8cdf-40e2-a	5259045	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF1.1002
17	27f981c0-8cdf-40e2-a	5259074	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF3.1002
18	27f981c0-8cdf-40e2-a	5259075	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF3.1002
19	27f981c0-8cdf-40e2-a	5259076	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF3.1003
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23	27f981c0-8cdf-40e2-a	5259093	Family Type: L32 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L32		BRF5.1002
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26	27f981c0-8cdf-40e2-a	5259097	Family Type: L30 - TYPICAL 6FT SURFACE MOUNTED STAIRWELL LIGHT FIX	Autodesk Docs://MD Anderso	190119	BIOSCIENCES RESEARC		LIGHTS,EMERGENCY	L30		BRF6.1002

Benefits and Impact

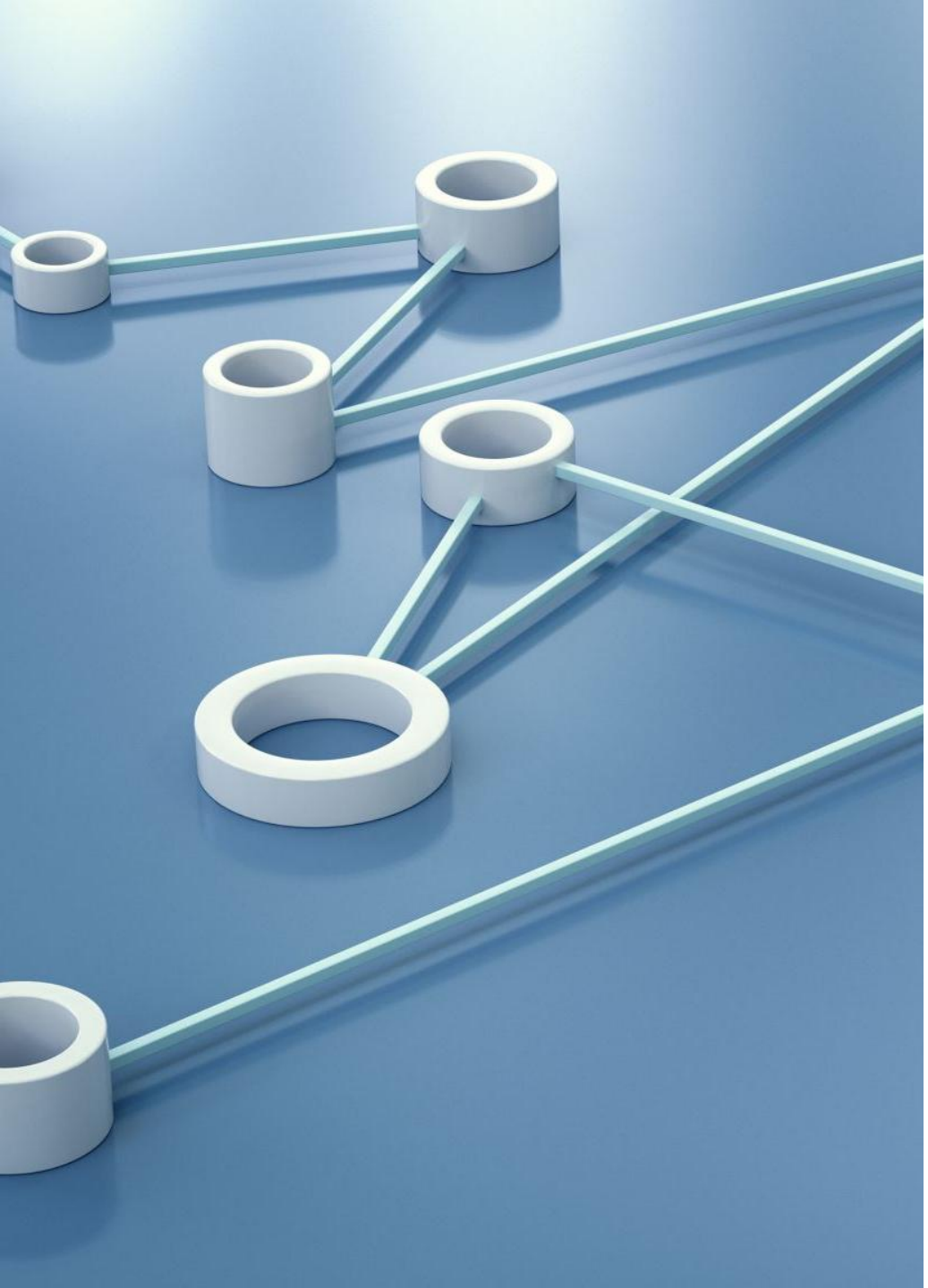
- Hierarchical classification = better reliability tracking
- 95% data readiness across assets
- Attributes to drive predictive maintenance/RCM
- BIM-Maximo integration
  - BIM asset classification crosswalk
  - Ability to buildout equipment list early on in construction
- Electronic asset data collection process

Lessons Learned

Involve field teams earlier

Clean data before integration

Define success KPIs



Looking Ahead

- Asset life cycle management
- Predictive analytics via sensor inputs
- RCM expansion
  - Enhancing fault codes
  - Problem → Cause → Remedy structure
  - Reactive maintenance reduction
- Enhanced job planning with attributes

Thank you and Questions