

BIM-GIS integration: open standards and case studies

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Use Cases for Lifecycle BIM

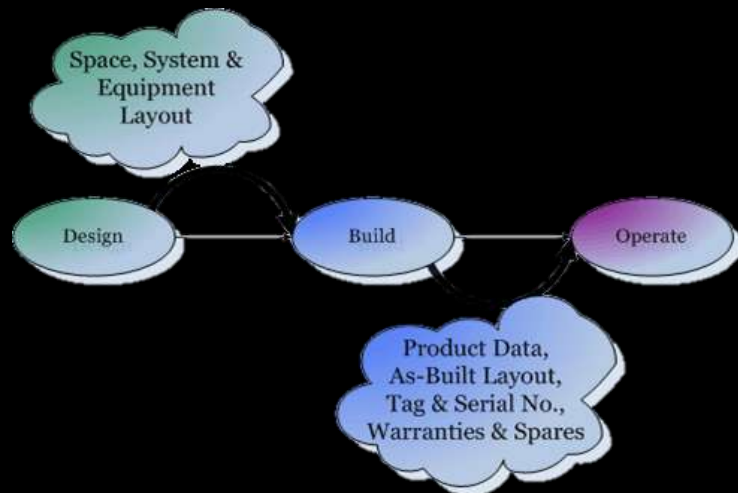
1. FM Labor Utilization Savings (Shorter Work Order Time)
2. Handover QC (Less Expensive, More Reliable)
3. Utility Costs Reduction (Energy Efficiency)
4. Risk Management (Quick Reaction)
5. Business Process Visualization (Sales Dashboard, Logistics)
6. Fuel and Material Savings (Less Travel & Waste)
7. Comfort Management (Improved Productivity)
8. Maintain Data Accuracy (No Need to Re-Survey for As-Builts)
9. Regulations Compliance (Auto-Checking Codes)
10. Space Validation (Building Programming Verification)
11. Improved Inventory Procurement (Spare Parts)
12. Configuration Management (Impact/Functional Conflicts)
13. Shutdown Planning (Renovation)



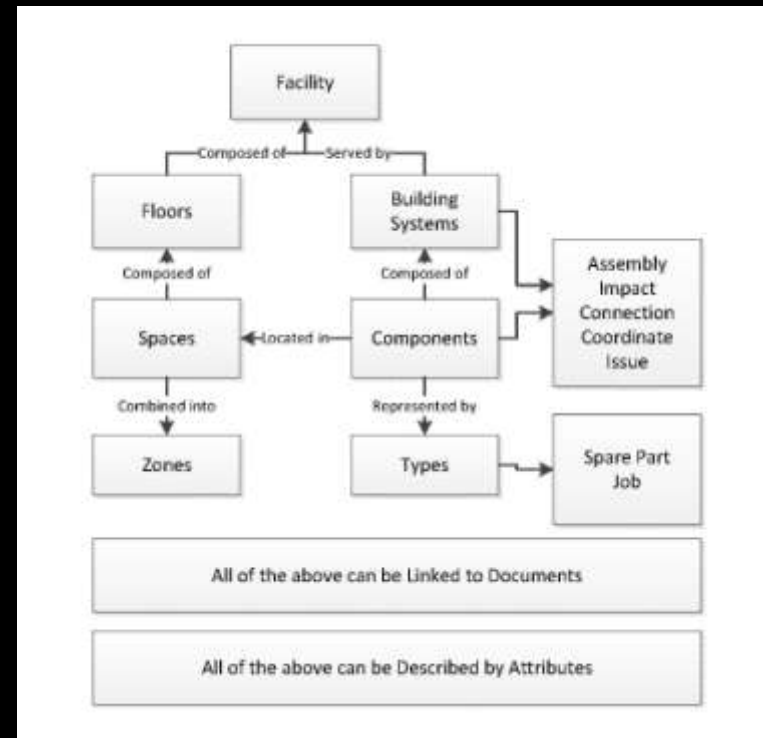
Use cases should drive adoption of standards, i.e. GIS-BIM.
Standards that attempt to drive adoption usually fail.

Using COBie and OmniClass for Lifecycle BIM

- COBie is an open industry standard for data exchange of maintainable assets.
- Driven by the need (use case) for high quality data handover.
- Enables quick upload of handover data into CMMS/CAFM (minutes vs. months).
- Owners learn how to run their facility before moving in.



US Army Corps of Engineers, Engineering Research and Development Center (c)
2009

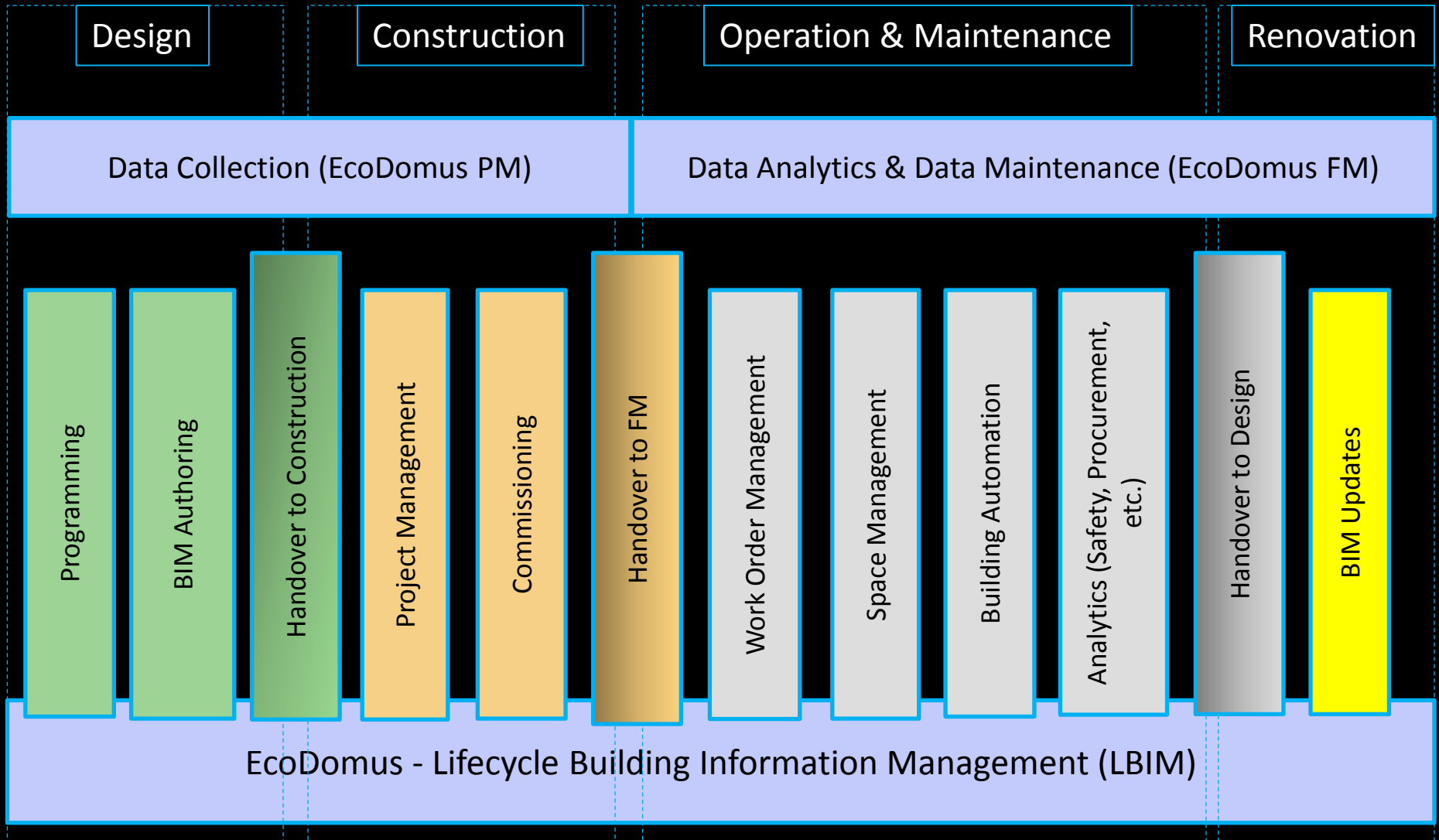


About EcoDomus

- Software and consulting firm with several offices in the U.S. and international partners in Australia, Asia, Europe, and Middle East.
- #1 Provider of BIM for Facility Management and COBie
- Some of our clients:

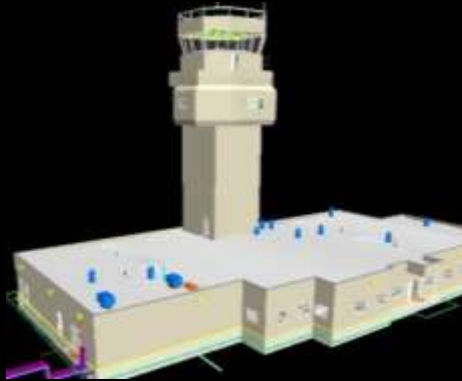


EcoDomus Focus Areas

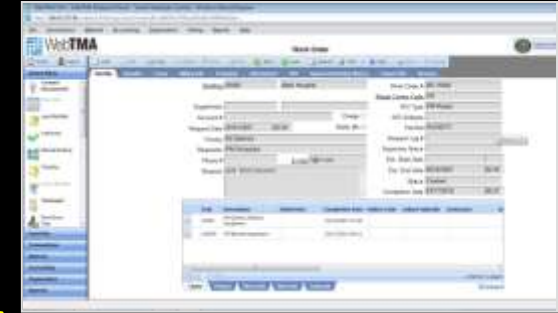
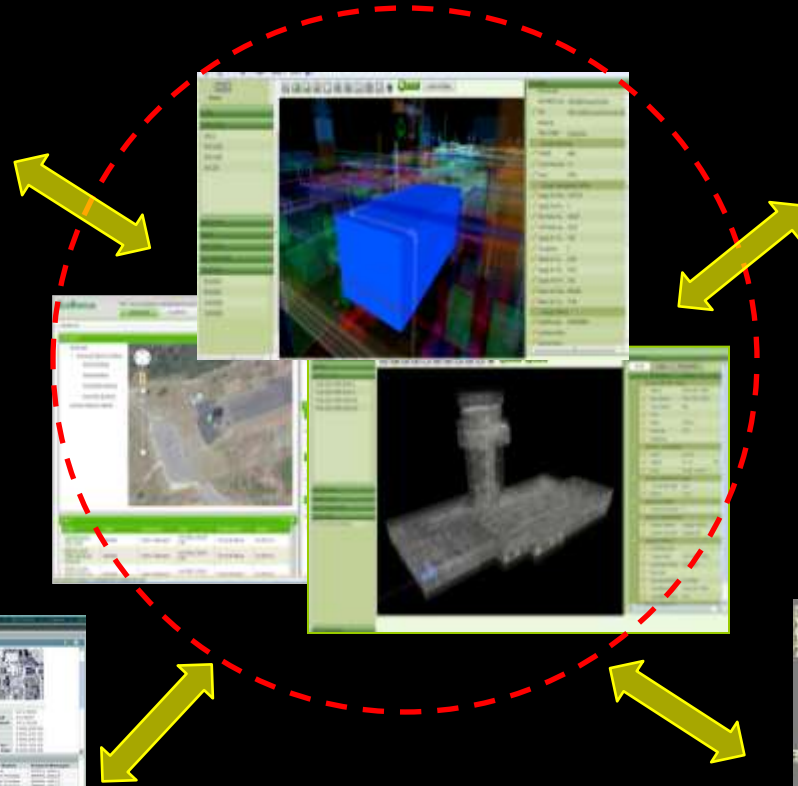


Integration of Facility Lifecycle Solutions

Lifecycle BIM: EcoDomus

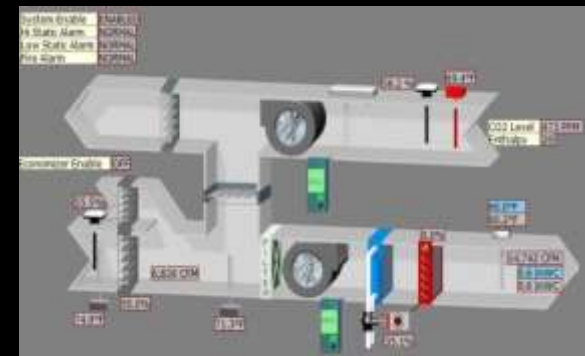


Building Information Model
(BIM): Autodesk Revit



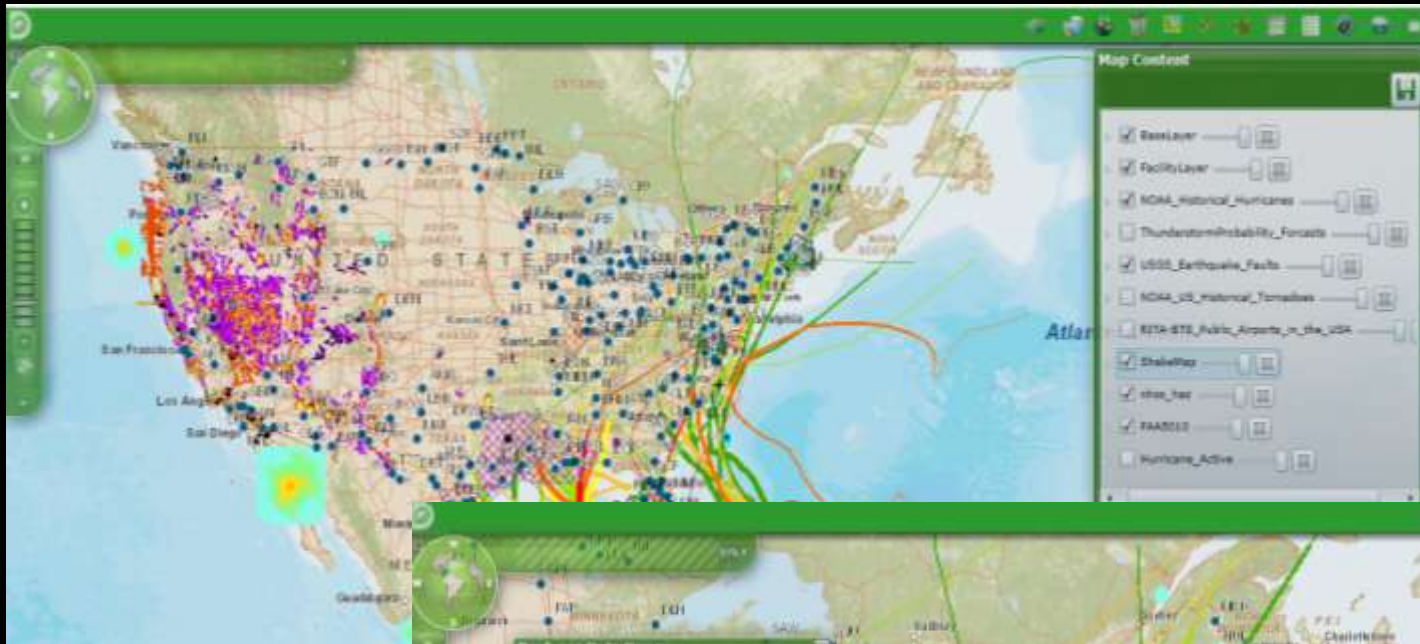
CMMS: TMA Systems

Building Automation System
(BAS): Schneider Electric

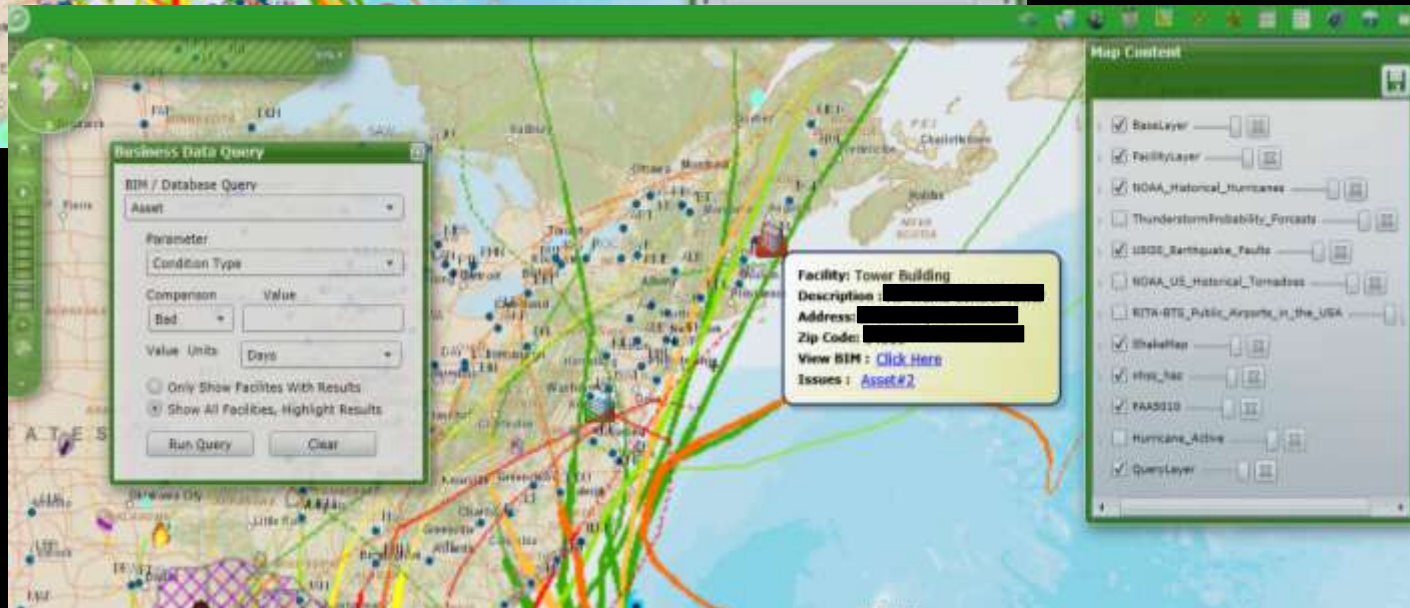


IWMS : ARCHIBUS

GIS FM Sample Workflow



Geographical Information System (GIS): ESRI ArcGIS



Facility data queried and displayed over geographical layers

GIS BIM Sample Workflow

GIS and BIM seamlessly integrated to help you analyze and access facility data

The main GIS interface shows a map of the Northeastern United States. A 'Business Data Query' window is open, with the following details:

- BIM / Database Query:** Fire
- Parameter:** Safety Hazard
- Comparison:** =True
- Value Units:** Days
- Only Show Facilities With Results
- Show All Facilities, Highlight Results
- Buttons: Run Query, Clear

The 'Map Content' window on the right lists various layers, including Basemap, FacilityLayer, and several hazard and flood zones.

A red dashed circle highlights a facility on the map, which is detailed in a popup window:

- Facility:** Tower Building
- Description:** [Redacted]
- Address:** [Redacted]
- Zip Code:** [Redacted]
- View BIM:** [Click Here](#)
- Issues:** Fire#1

Below the main GIS interface are three smaller screenshots:

- Issues Table:** A table with columns: Issues, Type, Location, Assigned To, Credits, Created On, and Status. The first row shows 'ISSUES#1006' with a type of 'BRANCH RAMPBOARD-MINI HONEY-25A' and a status of 'Open'.
- BIM Model:** A 3D rendering of a tower structure.
- BIM Properties:** A detailed view of the BIM model's properties and data.

BIM BAS Sample Workflow

- Find the VAV box in the EcoDomus BIM Portal.
- Review its set points vs. actual data and compare with design properties.
- Trace the other components of the same air supply system.
- Review any previous work orders performed on the equipment.

The screenshot displays the EcoDomus BIM Portal interface. On the left, a navigation pane shows a tree view with 'VAV-130' selected under 'Rooms'. Below this, there are sections for 'System', 'System Asset', and 'Work Orders'. The 'System Asset' section lists 'AHU-2', 'SFPV-130A', 'SFPV-130B', and 'VAV-130'. The 'Work Orders' section lists 'BB-184215', 'BB-184221', 'CAAN3025', and 'CAAN3026'. Red arrows point from these sections to the 3D model and the properties panel. The 3D model shows a blue VAV box in a complex, multi-colored environment. On the right, a 'Properties' panel is visible, containing various data points. A red circle highlights the 'Properties' panel, and a red arrow points from the 'VAV-130' label in the top left to the 'Properties' panel.

Group	Property	Value
Area served	ARCIBUS Link	ARCHIBUS Asset Profile
	URL	http://testfm.ecodomus.com/
	Edited By	
	TMA CMMS	Profile link
Group: Electrical	POWER	480V
	Circuit Number	12
	Panel	PPC1
Group: Mechanical Airflow	Supply Air Flow	23333.70
	Supply Fan St...	1
	Hot Water Su...	140.29
	Cold Water Su...	43.25
	Supply Air Te...	1.80
	Occupancy	1
	Mixed Air Te...	62.82
	Supply Air Te...	45.32
	Supply Fan VF...	0.62
	Return Air Flow	9424.94
	Return Air Te...	71.56
Group: Others	SerialNumber	004G05006A
	InstallationDate	
	WarrantyStart...	

BIM and GIS Integration

Quickly find the assets and facilities via web portal, then drill down into the data using BIM interface

The screenshot displays the EcoDomus web portal interface. The top navigation bar includes the EcoDomus logo, a dashboard menu, and user information: "Igor Starkov - EcoDomus - System Admin Client: EcoDomus LOGOUT". The main content area is titled "Building 05" and features a "Profile" tab. The profile information includes:

- Site Name:** none
- Description:** none
- Address:** 1203 Union St
- Category:** N/A
- Location Hierarchy:** North America > United States > Irvine > Park Place

The central part of the interface is a 3D visualization of Building 05 overlaid on a Google Earth satellite map. The building is segmented into different colors: purple, yellow, and green. A context menu is open over the building, showing a thumbnail image of the building facade and three buttons: "BIM", "PROFILE", and "DOCUMENTS". The left sidebar contains a "Locations" tree with various assets like "SCA Building D", "TEKLA_HOOPS F...", and "Terminal A", along with "Asset Data" and "File Management" sections.

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Integrating Laser Scans with FM

The screenshot displays the EcoDomus software interface. The top navigation bar includes the EcoDomus logo, user information (Igor Starkov - EcoDomus - System Admin), and client information (EcoDomus). The main content area shows a 3D laser scan of an industrial facility with two assets highlighted: a blue cylindrical tank labeled "AHU" and a light fixture labeled "Tower Light2". The interface includes a left sidebar with navigation options like Viewpoints, Asset Search, and Locations. A right sidebar displays asset data for the selected items.

Parameter	Value
Group: Identity Data	
Name	AHU
Descripti...	Roof top unit
Asset Id...	
Barcode	1221
Conditio...	Good
Installati...	2014-07-16T00:00:00
Location	1XS2
Serial N...	S12231
Tag Nu...	

Parameter	Value
Group: Identity Data	
Name	Air Handling Unit
Descripti...	
Manufac...	
Expecte...	
Model N...	
Part Nu...	

Pros: cheaper than creating full 3D BIM; highly realistic view;
ability to measure distances; link to asset data.

Cons: cannot isolate (hide / show) objects or systems like BIM.

Thank you!



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