The Power of GIS

How GIS Makes Facility Master Planning Simpler, Faster, & More Defensible

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AIA: AIA/1LU ERO400

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Sandra March, Associate AIA, Education Leader
Ken Syers, GIS Specialist

Learning Objectives

1. Explore GIS as a faster, easier, and more defensible method for campus facility master planning.

2. Recognize how GIS can foster a clearer understanding of a facility's condition, interrelationship with other facilities, and the risks associated with failure of an asset.

3. Investigate how GIS enables campus planners, designers, and institutional leadership to prioritize maintenance and capital improvement budgets.

4. Demonstrate how to navigate real-time campus building asset data in a GIS dashboard.

AIA Best Practices

- Attendees' earned credits will be reported to AIA CES.
- Certificates of course completion are available on request.
- The company is a registered AIA Approved Provider.
- This is an AIA approved course.
- The educational portion of this course will not be used to market or promote the company's products or services.
- Attendees must add their names to the sign-in sheet to receive course credit.

Course Description

Campus planners, architects, and design teams can leverage GIS by connecting data to an aerial map and integrating asset locations with unlimited descriptive information to help users, stakeholders, campus leadership, and the public understand and communicate data for better facility decision-making.

This presentation shares the experience of an architecture and engineering firm and a university that worked together to stretch capital project building and infrastructure funds through a combination of technical insight and GIS technology. The presenters will also provide a demonstration of GIS.

Unorganized or Deficient Knowledge Leads to:

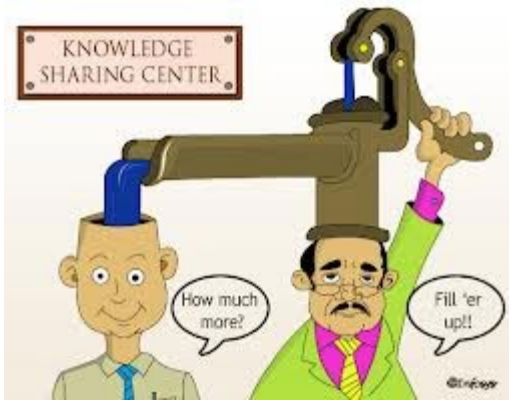
Poor or wrong decisions during critical
- emergency response situations
- project planning
- utilization planning

Lost or misallocated resources (time, people, money) while performing asset
- design
- build
- maintenance

Inability to facilitate transitions in personnel due to
- loss of institutional knowledge
- lost or misplaced documentation
- unavailable personnel for one-on-one training

Elemental Knowledge Exists in All Forms

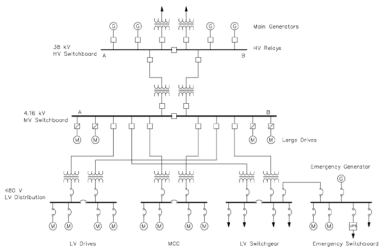
Field Photos



Institutional Knowledge

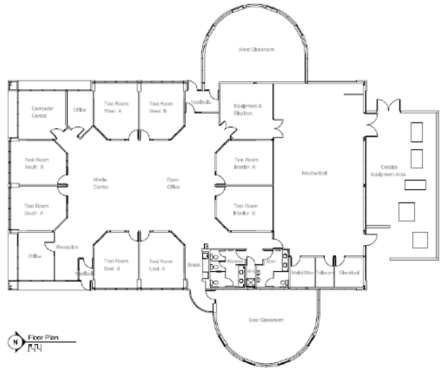
Operation and Maint Docs

Health and Safety Related



Utility Infrastructures

General Archival Information

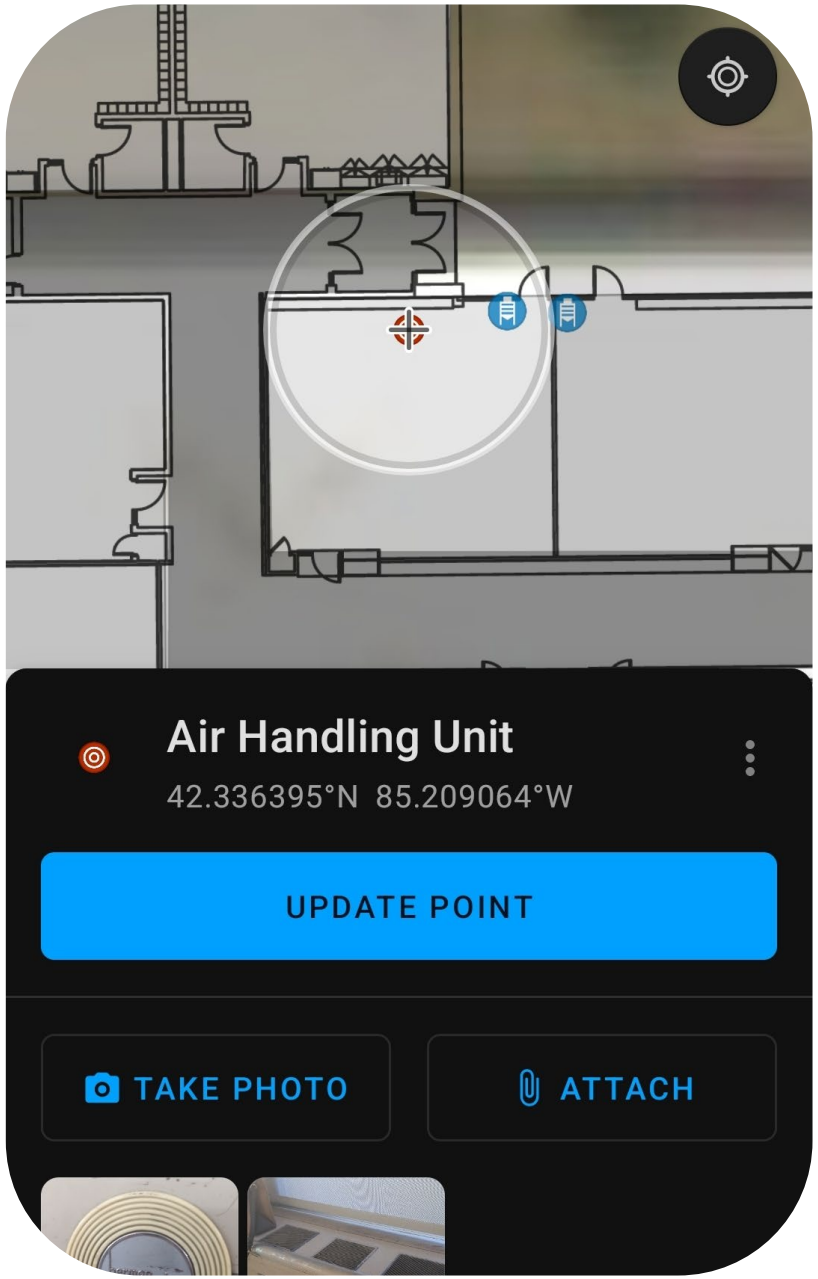


Blueprints

Who here relates to this?

What is GIS?

GIS combines spatial/location data with information and intelligent database design.



GIS Benefits

✓Align existing data with asset assessment

✓Tools for all levels

✓Significant amount of data tied to asset

- Photo, product data/shop drawing, install date, replacement cost, recertification date(s), condition assessments, notes, etc.

✓Replace spreadsheets and paper

✓Easy and intuitive

GIS Benefits

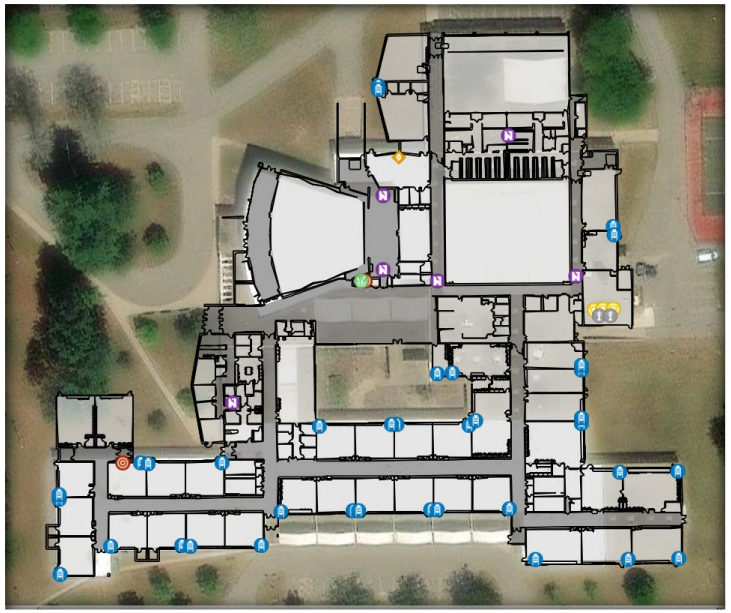
- ✓Cloud-based
- ✓Data visualization
- ✓Use visuals to sell plans and secure funding
- ✓All data in one place
- ✓Extremely customizable

GIS Phases for Asset Management

- Data Collection
- Asset Assessment
- Data Visualization
- AMP & CIP Process
- Ongoing Maintenance

Roof Top Unit

Type	Roof Top Unit
InstallYear	1992
LifeCycle	20
Expiration	2012
PercentLife	10
RepCost	30000
Maintenance	Compressor
MaintenanceCost	3000
Maintenance Date	2014
MaitenanceLife	10
MaintExpiration	2024
PercentMaintLife	20
Manufacturer	



- Asset Inventory
- Data entry from existing and known information

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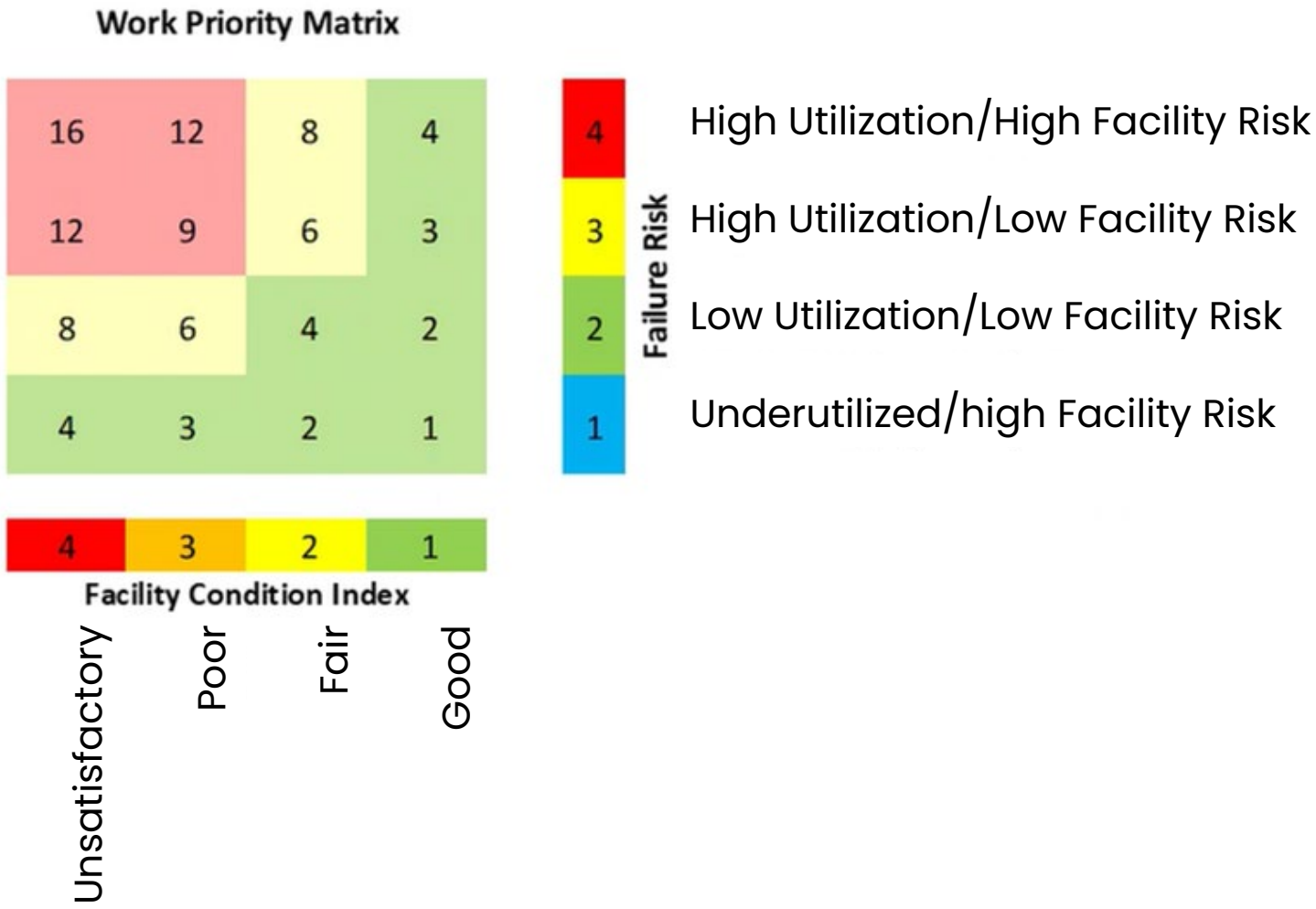

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Asset Name	Allow Maintenance Requests	Risk Factor 1 (Location Utilization)	Risk Factor 1 Score (Location Utilization Score)	Risk Factor 2 (Impact Area)	Risk Factor 2 Score (Impact Area Score)	Risk Factor 3 (Condition)	Risk Factor 3 Score (Condition Score)	Risk Assessment Group Desc. (Potential Failure Modes-In What Ways Can This Item Fail)	Risk Factor 4 (Failure Effect)	Risk Factor 4 Score (Failure Severity Score)	Risk Factor 4 Description(Failure Severity Description)
SNB02 Sealed Concrete Floor		Utilized	3	Administration	2	Minor Defects Only	2	Wear from use	Moderate	6	Item is operable at slightly reduced performance, end user experiences dissatisfaction, minor disruption in operations
SNB02 Painted Gyp Bd Walls		Rarely Utilized	1	Comfort	1	Moderate Wear and Deterioration	3	Wear from use	Very Minor	2	Results in dissatisfaction/discomfort by few end users
SNB01 Acoustic Ceiling Tiles		Rarely Utilized	1	Comfort	1	Moderate Wear and Deterioration	3	Staining from prior leak	Very Minor	2	Results in dissatisfaction/discomfort by few end users
General Room Lighting Fixtures		Highly Utilized	4	Student Life-Education	6	Moderate Wear and Deterioration	3	Blown Lamps or Ballast Failure. Likley partial loss of room illumination	Low	5	Results in comfort and convenience at a reduced level, minor disruption in operations
General Room Lighting Controls		Highly Utilized	4	Student Life-Education	6	Moderate Wear and Deterioration	3	Lighting Control Issues (on/off/dimming/vacancy or occupancy sensing)	Low	5	Results in comfort and convenience at a reduced level, minor disruption in operations
General Room Receptacles		Marginally Utilized	2	Student Life-Education	6	Moderate Wear and Deterioration	3	Individual receptacle failure	Very Minor	2	Results in dissatisfaction/discomfort by few end users
SNB01 Carpet Flooring		Utilized	3	Comfort	1	Moderate Wear and Deterioration	3	Wear from use	Very Minor	2	Results in dissatisfaction/discomfort by few end users

Purchase/Install Date	Average Useful Life (Years)	Years in Operation	Remaining Useful Life (Years)	Remaining Useful Life Score	Priority (Risk Priority Number-RPN)
1/6/1999	40	23	17	2	8
1/6/1999	40	23	17	2	24
1/6/1999	70	23	47	2	16
1/6/1999	25	23	2	4	32
1/6/1999	25	23	2	4	144
	20	5	15	2	1440
	20	5	15	2	1440
1/6/1999	35	24	11	3	648
			0	FALSE	#VALUE!
1/6/1999	20	23	(3)	5	5400

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Use GIS tools to determine:

- What assets or buildings have the **highest need** for replacement
- **Where** exactly these assets are located and how much they **cost**
- A data driven replacement **program**
- What the average **score** for a building is and what is needed to maintain that average or improve it.

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Living data set

Demonstration

Best Practices

Every journey starts with a first step

Don’t do everything in round one. Add data incrementally.

Prioritize the most important data first.

Questions

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Software: $700/year

$350/year - additional users

$300/year - cloud storage

Consultant to assist with setup