MAYO CLINIC

2024 MHCEA FALL CONFERENCE

COLLECTING KNOWLEDGE AND MAKING DATA VISIBLE IN GIS

Anne Morris & Ceirra Burke

Rivers Edge Convention Center
9:30 am – 10:30am

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OUR TEAM

Anne Morris
GIS

Tom Walker
GIS

Ceirra Burke
Quality

Tonya Kaufman
Program Manager

Zack Armstrong
Program Manager

Joe Elsinger
Quality

Our Mission

We will create a digital twin of the Mayo Clinic facilities so technicians and management can clearly see the complex world we work in. Integrating with existing Mayo systems, GIS will provide a more enriched and user-friendly platform to perform the daily tasks of our staff.

Objective statement:

Support enterprise facilities infrastructure planning and operations by effectively displaying operational data in a geospatial enviroment.

Creating compelling data and mapping visualizations.

Coordinating with other stakeholder groups in the GIS initiative to cohesively bring Mayo Clinic system and asset management together in a visual and geospatial environment.

Providing technical support on all GIS related tasks, such as development of new visual data applications based on user need.

LEARNING OBJECTIVE

- Describe a geographical information system
- See how Mayo Clinic uses GIS and integrated it with other systems
- Understand how GIS can be used in an indoor environment
- Finding quality relations using GIS

AGENDA

- Welcome and overview 10:30-10:35
- Anne and GIS 10:35-10:50
- Ceirra and Quality 10:50-11:20
- Questions and Answers 11:20-11:30

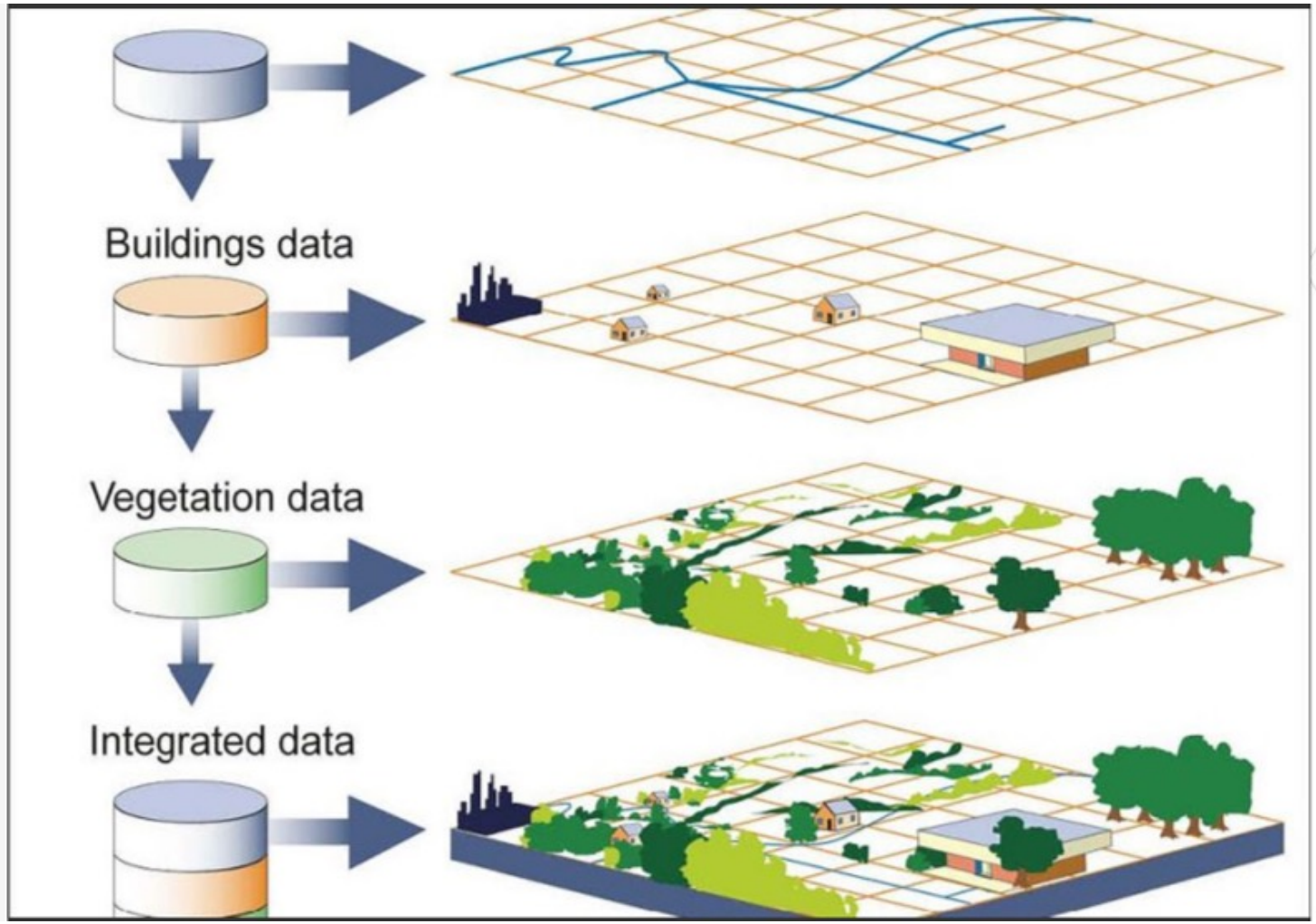
1 DESCRIBE GIS

PHOTOGRAPH

GIS

A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. GIS can show many different kinds of data on one map, such as streets, buildings, and vegetation. This enables people to more easily see, analyze, and understand patterns and relationships.

ILLUSTRATION COURTESY OF U.S. GOVERNMENT ACCOUNTABILITY OFFICE



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Have you heard of GIS (Geographic Information Systems)

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WHAT IS GIS

GIS stands for **Geographic Information Systems**.

Geographic Information Systems is a way to combine spatial data (rooms) with other operational data such as assets, work orders, utilities, and other information about our buildings and grounds.

WHY IS GIS IMPORTANT? VENDOR VIDEO

https://mediaspace.esri.com/media/1_5co1qddp

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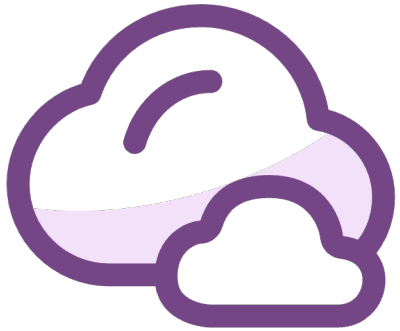

What kinds of tasks do you perform that involve location-based data or spatial information?

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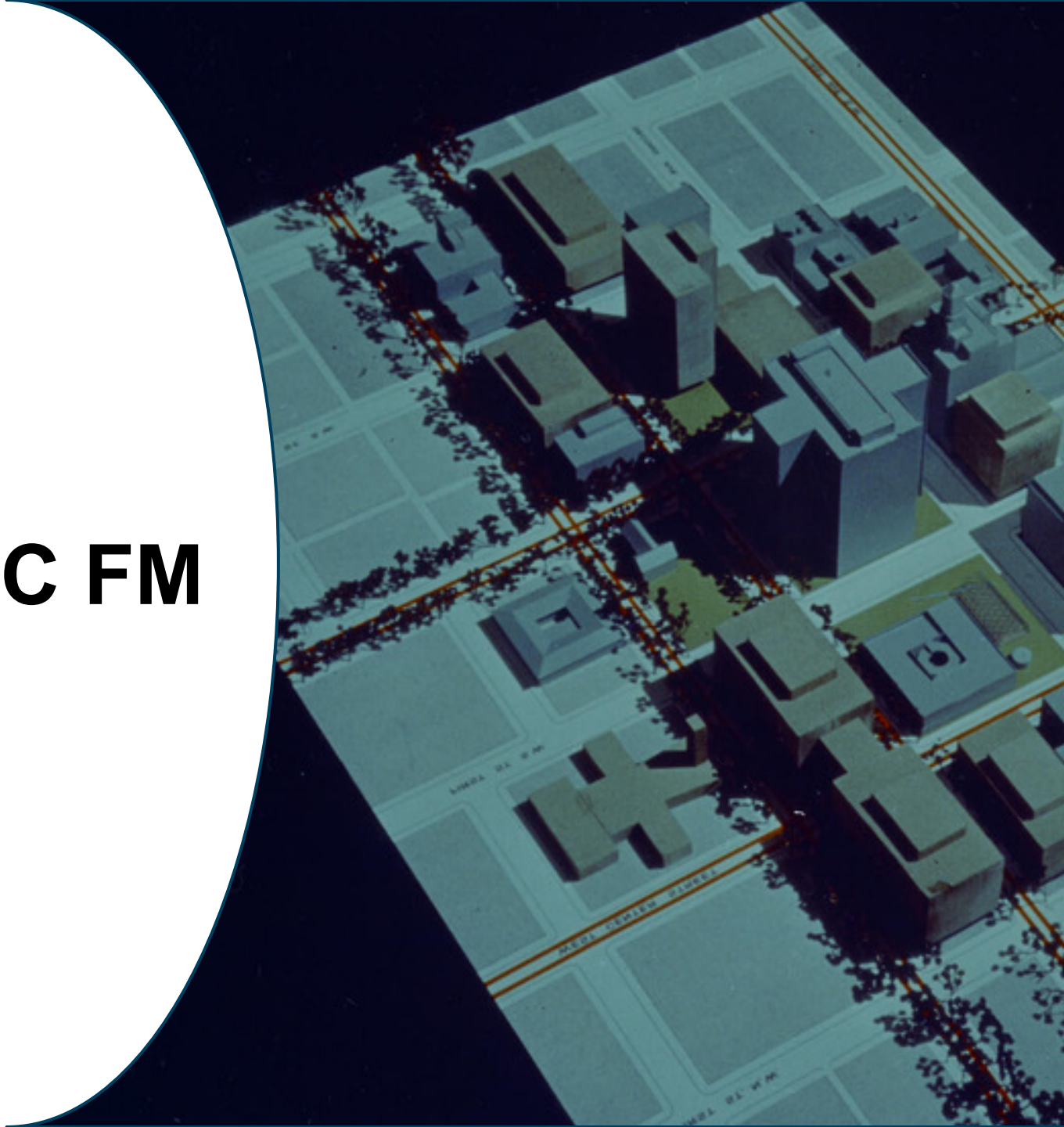
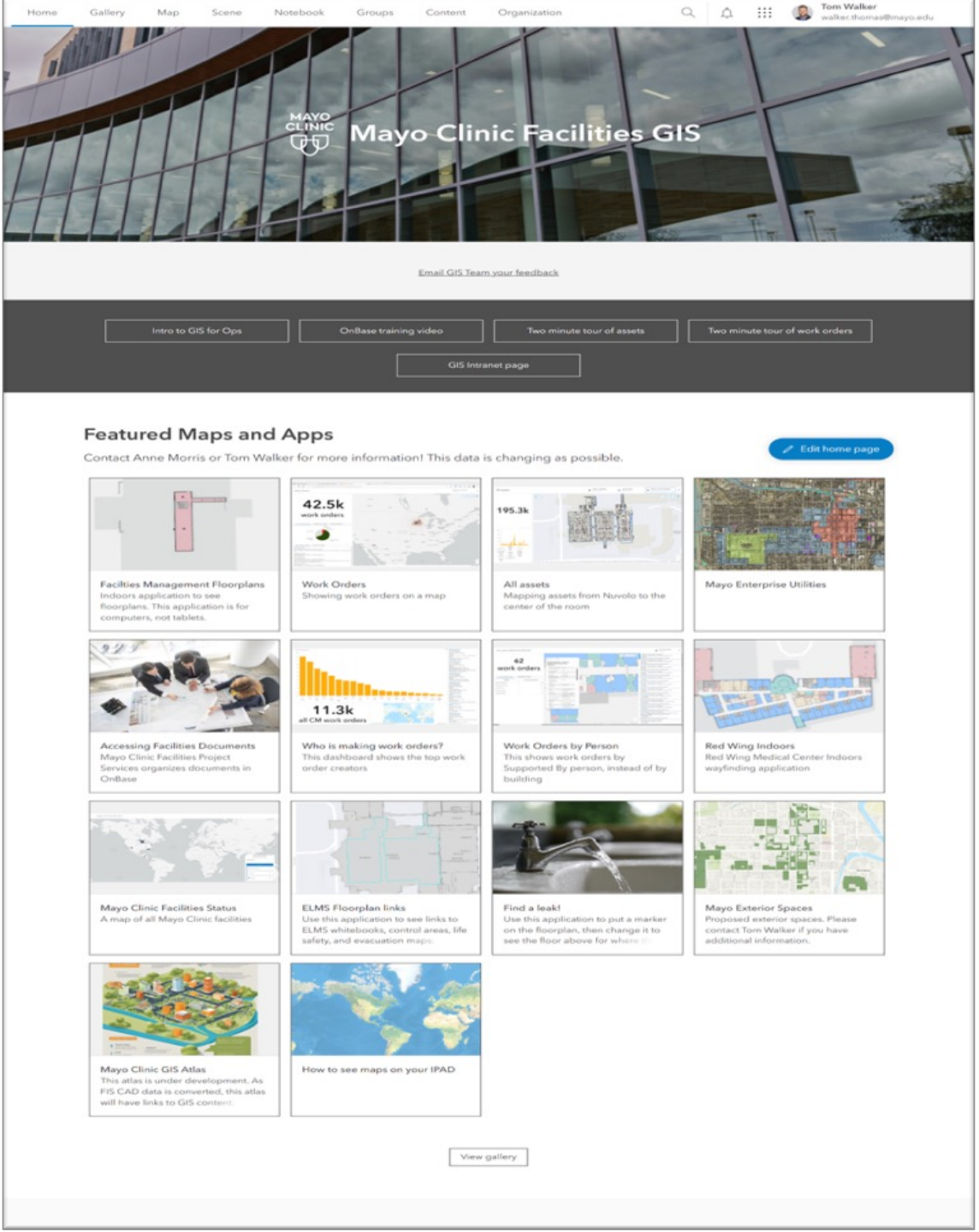
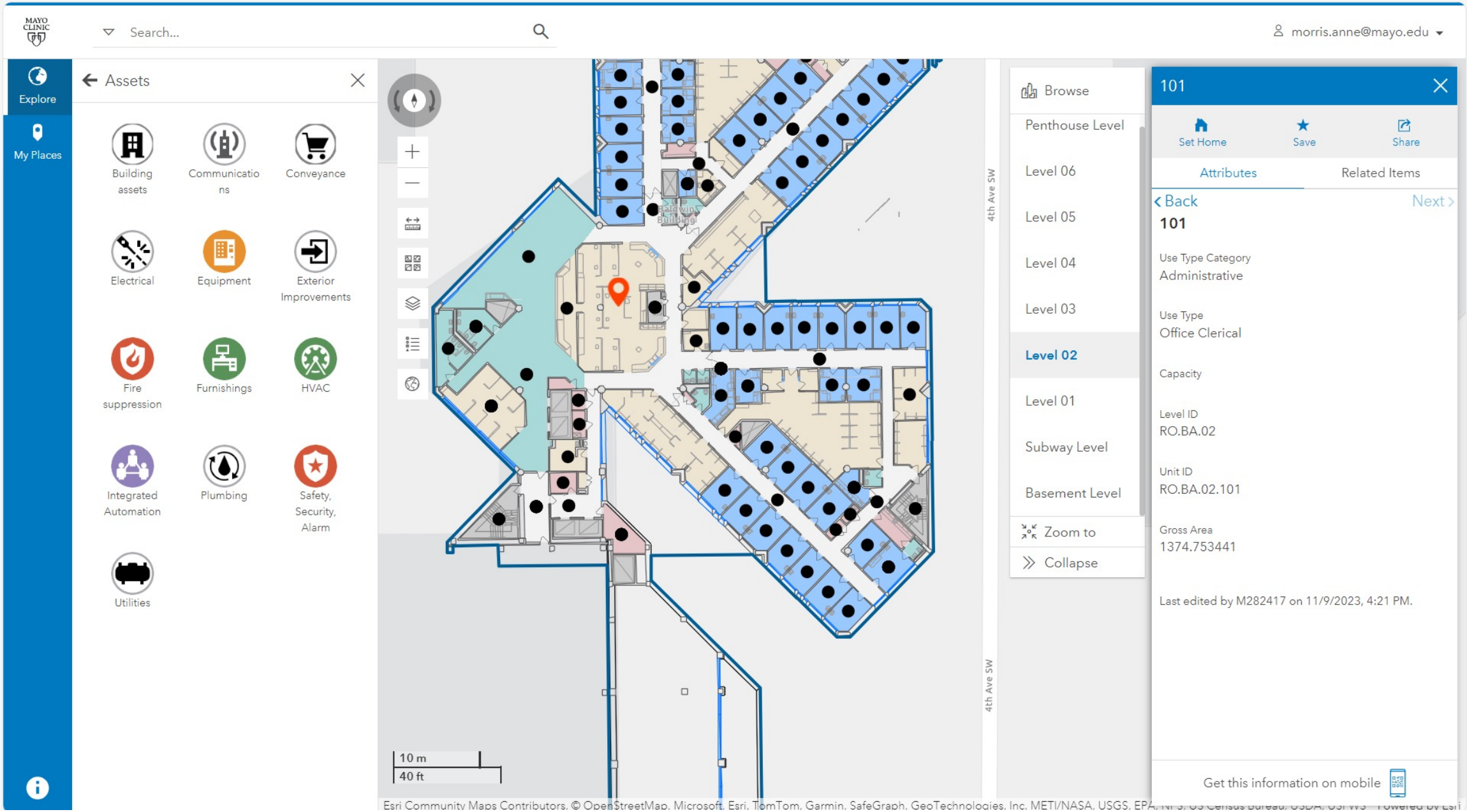
2 HOW DOES MAYO CLINIC FM USE GIS





3

UNDERSTAND HOW GIS CAN BE USED IN AN INDOOR ENVIRONMENT



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Can you share any examples of situations where having access to spatial data or mapping capabilities would have been beneficial?

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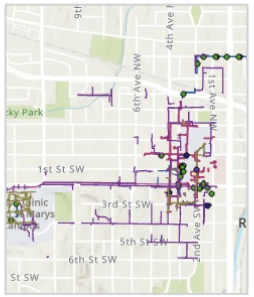
4

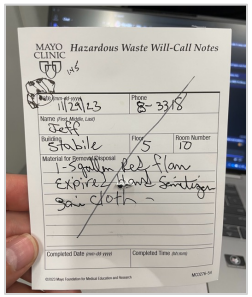
FINDING QUALITY RELATIONS USING GIS

WASTE STREAMS ADDRESSED BY GIS



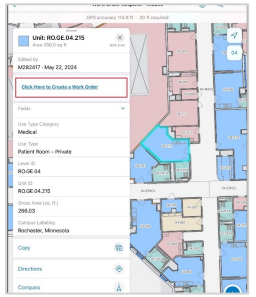
Waiting
(Under ground utilities)

Transportation
(Black Bins)



Overprocessing
(Hazardous waste will calls, organizing work documents

Inventories
(Hand Sanitizer containers, Sharps, Bins, Interior Finishes)



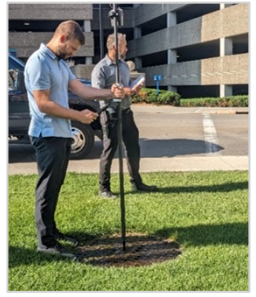
Defects
(Creating a work order, Find a Leak)

Motion
(Mapping work order, connecting different platforms)

Over Production

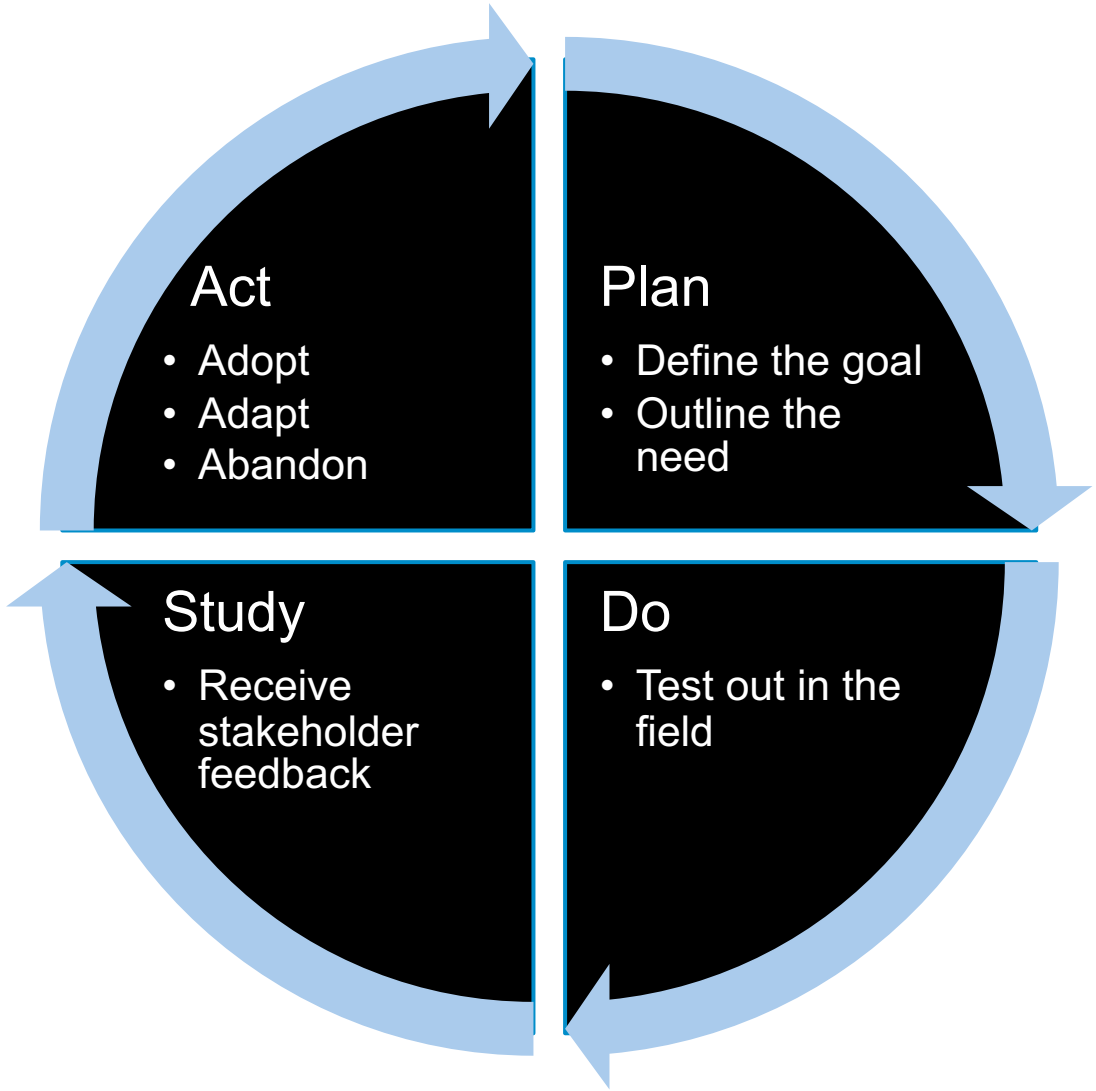
Reprioritization
Naming the outside spaces

Misutilization of skills
(Floor finishes to EVS staff)



Compliance
(LOTO, confined space, black bins)

PDSA AND VOC



Key Questions:

- Who are the stakeholders for GIS?
- In these projects how do we collect the VOC (Voice of the Customer)?
- When should we collect the VOC?
- Can you have more than one PDSA cycle?

LockOut TagOut Procedures for Facilities Management

Ceirra Burke M.H.A, Daryl Felt, Pat Hlavka, M.S., CSP, Dan Northrop, M.S., Anne Morris, M.S., and Tom Walker M.S.
Division of Facilities Management
Site: Enterprise

DEFINE

BACKGROUND

One of the most common workplace hazards is the release of hazardous energy during maintenance or repair work on machinery or equipment. This can result in serious injuries or even fatalities if proper safety practices are not followed. One important safety measure to prevent such accidents is the implementation and use of lockout-tagout (LOTO) procedures.

A LOTO procedure is a list of steps taken by trained personnel ensure equipment is stopped, isolated from hazardous energy sources, and locked out (inoperative and safe) prior to conducting potentially harmful maintenance or repair work. Currently, the accessibility of the LOTO procedures needs to be increased for Facilities Operations staff who are performing this work.

GAP IN QUALITY

The gap in quality is the limited accessibility of LOTO procedures to all staff performing equipment maintenance or repair work out in the field.

AIM STATEMENT

We will improve the accessibility of Lockout Tagout (LOTO) safety procedures to staff by 75% from 155 employees to 272 employees by 03/31/2024 without adversely impacting the administrative process time.

STAKEHOLDERS AND THEIR INPUT

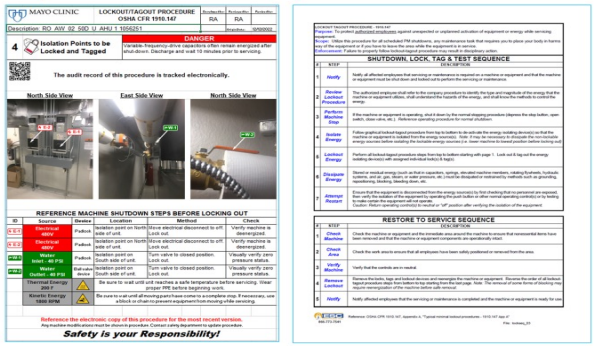
- Facilities Operations Technicians
- Supervisors
- Unit Heads
- Ring of Support Teams Members

When we interviewed the Facilities Operations technicians regarding the LOTO procedure accessibility, the project team learned that the end users are not using mobile devices (iPads, cell phones) when out in the field. The preference of the end users is laptop devices instead of mobile devices to do their work out in the field. We learned that the Geographic Information Systems (GIS) platform provides access to LOTO procedures using mobile devices and laptops so that the procedures are available in the field when needed.

INSTITUTIONAL SIGNIFICANCE

Mayo Clinic must comply with the Occupational Safety and Health Administration (OSHA) standard, The Control of Hazardous Energy, 29 CFR 1910.147. Failure to comply with the OSHA regulation can result in citation and fines as well as potential bodily harm to employees. This project helps improve compliance and safety and it also reduces the potential for regulatory penalties by OSHA.
This project extends across all Rochester and SEMN locations.

FIGURE 1:
Mayo LOTO Procedure Example



MEASURE

IMPROVEMENT MEASURE BASELINE AND SAMPLE SIZE

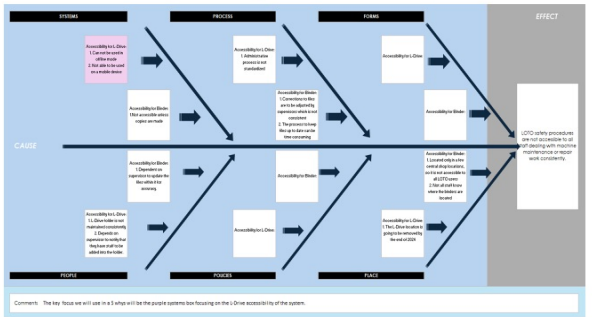
Staff with access to LOTO safety procedures: The number of staff performing work that requires use of LOTO procedures. The numeric baseline is 155 and the target measure is 272.

ANALYZE

POTENTIAL CAUSES

1. System: The L-Drive cannot be used in offline mode or with mobile devices.
2. System: Printed procedures are in binders and would have to be copied or removed and taken to the site if needed in the field.
3. Process: The L-Drive administrative process for staff access isn't standardized (it depends on supervisor to notify that they have staff to be added into the folder).
4. Process: For the binders, the process to update and maintain the printed procedures takes time.
5. People: For the binders it is dependent on supervisors to maintain accuracy by updating and maintaining the printed procedures within it.
6 Place: Most binders are located in the central shop locations, so the printed procedures are not accessible to LOTO users working in the field. Not all staff know where the binders are located.
7. Place: L-Drive storage location is going to be removed by the end of 2024.

FIGURE 2:
Fishbone of Accessibility



KEY CAUSE SELECTED

From the fishbone diagram, we identified the need to focus on the system branch, specifically the accessibility of the LOTO procedures. The L-Drive is not able to be accessed on a mobile device or in an offline mode within that platform.

IMPROVE

INTERVENTIONS ARE SELECTED AND TESTED

1. Review if there is way to host the L-Drive on other platforms.
2. Review if the platform of Nuvolo can work to host the LOTO procedures.
3. Review and perform PDSA trails using Geographic Information Systems (GIS) platform to test the LOTO procedures.

FIGURE 3:
Accessibility Scores Across the Platforms

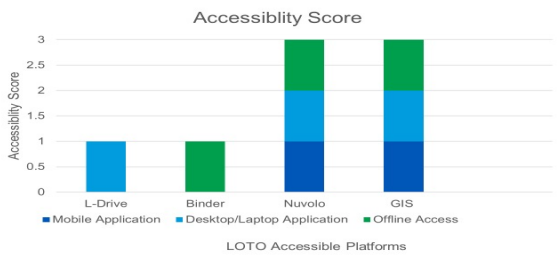
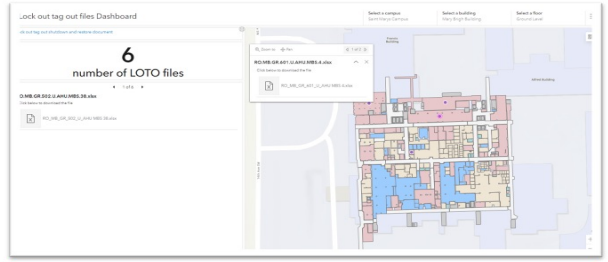


FIGURE 4:
LOTO Procedure Within GIS Platform



CONTROL

LESSONS LEARNED

1. The importance of data integrity throughout this project was clear. By understanding and analyzing the current state of the L-Drive we were able to understand the gap of people who did not have access to the LOTO procedures.
2. The importance of stakeholder feedback in identifying beneficial tools and platforms.
3. The importance of standardization of the data, such as procedure nomenclature, that is being imported into the GIS system.

COMMUNICATION

This project was communicated to key stakeholders through a Division Lunch and Learn and emails. An abstract has been submitted to the Minnesota Healthcare Engineering Association (MHCEA) 2024 fall conference. The LOTO for Facilities Management web page was updated with the new GIS process. Our project sponsors played an active role in the project providing feedback and making sure we maintain compliance standards.

REFERENCES

1. Esri. (n.d.). *ArcGIS Indoors*. Retrieved June 27, 2024, from https://www.esri.com/en-us/arcgis/products/arcgis-indoors/overview
2. Occupational Safety and Health Administration. (2011, May 2). *The control of hazardous energy (lockout/tagout) - 1910.147*. Retrieved June 27, 2024, from 1910.147 - The control of hazardous energy (lockout/tagout). | Occupational Safety and Health Administration (osha.gov)
3. Lockout/Tagout (LOTO) for Facilities Management. (2024, April 9). Mayo Clinic Intranet. Retrieved July 1, 2024, from Lockout/Tagout (LOTO) for Facilities Management – Facilities Management – RST (mayo.edu)
4. Mayo Clinic Occupational Safety. *Lockout/Tagout (LOTO) Procedure* (August 19, 2022), https://mayoclinic.onbaseonline.com/mceidp/docpop/docpop.aspx?KT6110_0_0=DOCMAN-0000216901&clienttype=html&doctypeid=1112

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Can you envision any ways that GIS tools might improve your efficiency or effectiveness in your role?

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Audience Q&A

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