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LEADERSHIP IN EDUCATIONAL FACILITIES

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Technologies and Strategies to Achieve Facility Information Management (FIM) Excellence

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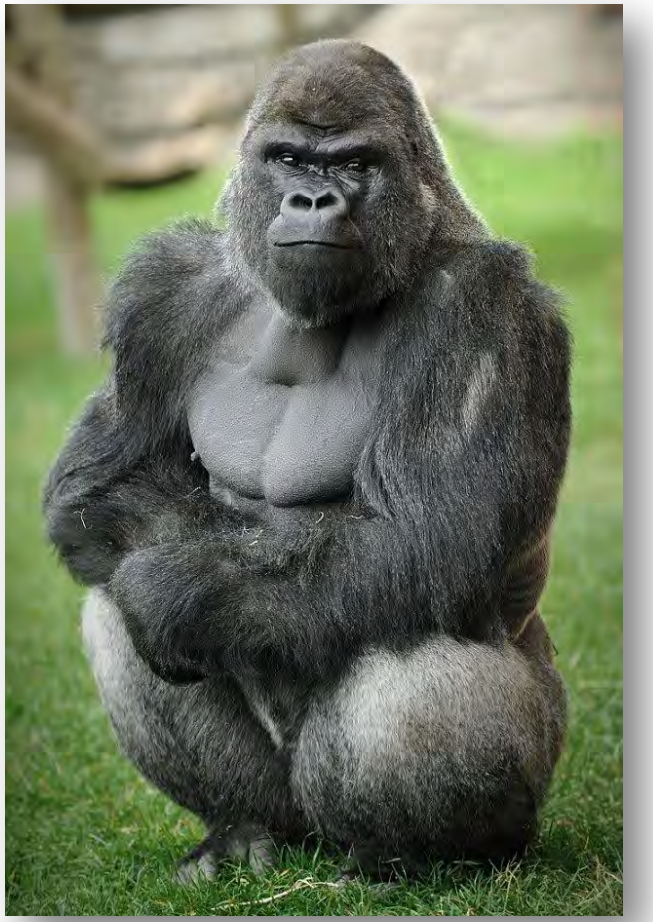
CFTA Campus FM Technology Association
Connecting Leaders in Campus Technology

PRESIDENT
Since 2015

Course Goal

Note: instructional graphics and system screenshots shown in slide deck were created by the University of Kentucky unless otherwise noted

- Discuss FM technology advancements for effectively managing facilities information
- Focus on important components and success pathways of each
- Evaluate organizational management strategies to support successful implementation



Big Gorilla Business

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What Facilities Owners Want

Timely access to **current** information, **when** you want, **how** you want it.

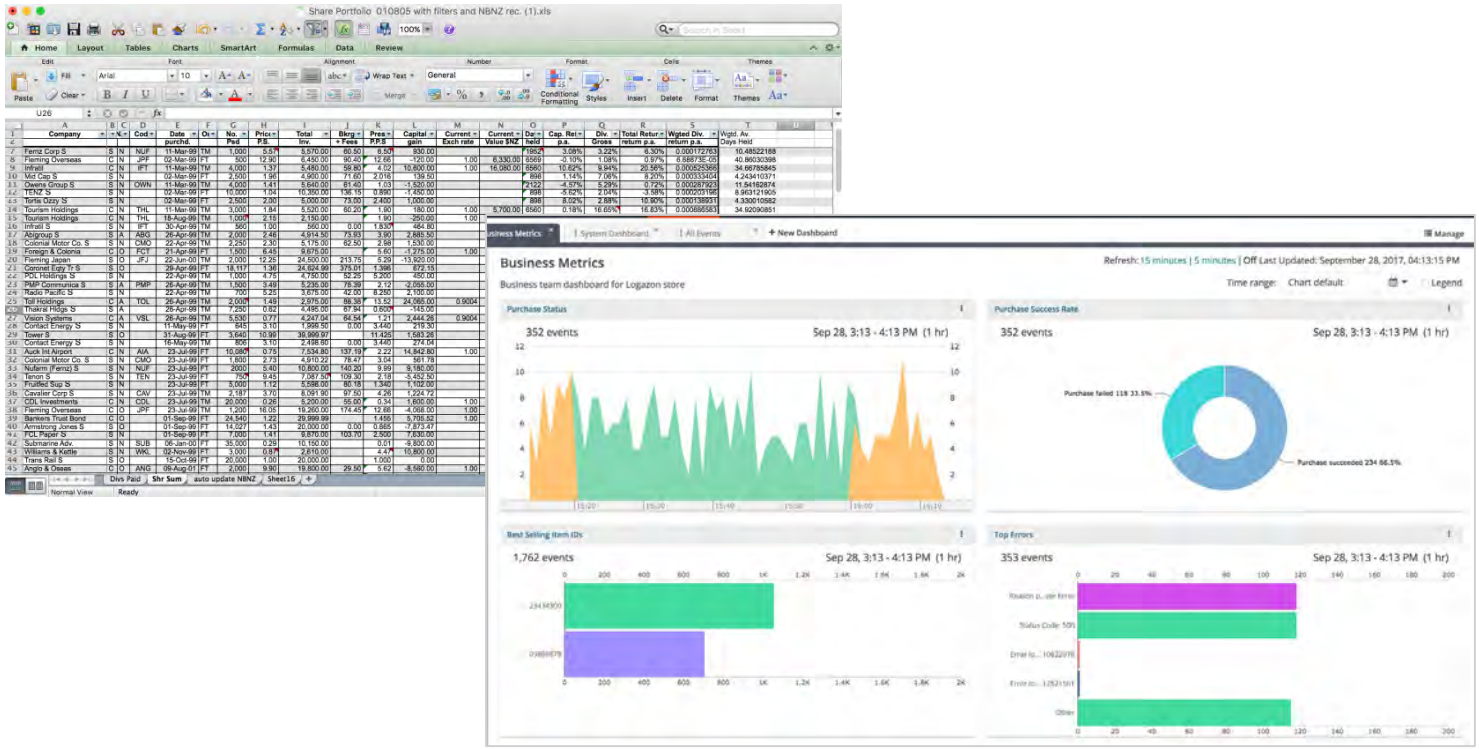


Image Credit: Google Images, University of Kentucky

Goal: System Utopia

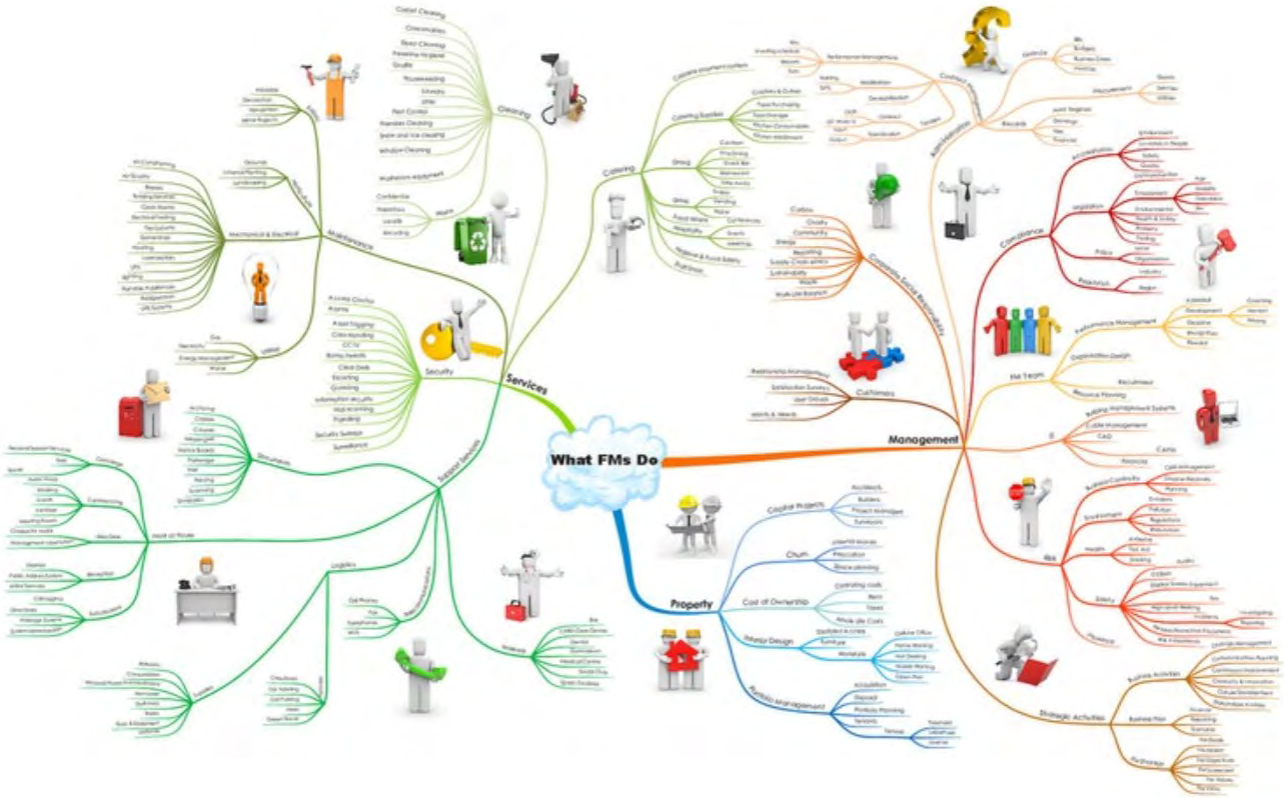
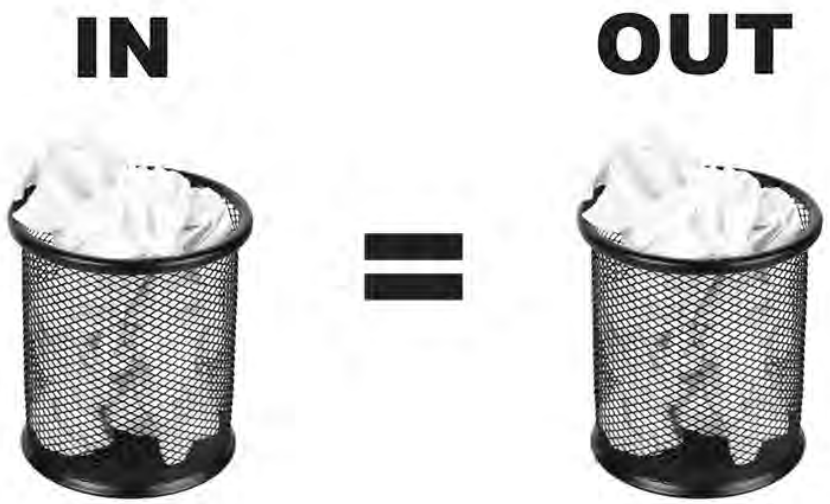


Image Credit: Google Images

Challenge

The quality of the input determines the quality of the output. In other words, in a processing system, the data's quality coming out cannot be better than what went in.



Garbage In Garbage Out

Key Elements of FIM Excellence

People | Processes | Technology

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FIM Excellence – Seamless Flow of Facility Information

- **Processes** that support system development
- **People** dedicated to *continuously* improving systems and data
- **Technologies** that support your people, processes, and information needs

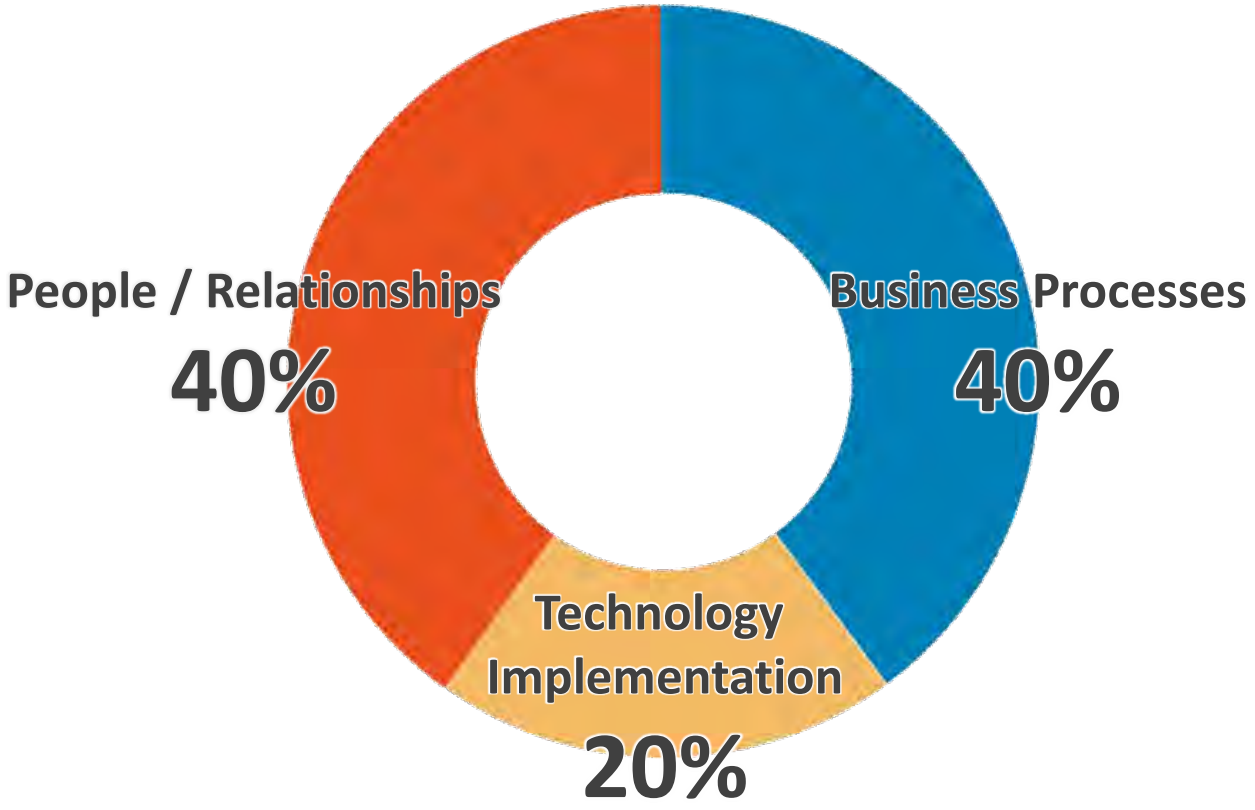
Managing Change --- Smart Campus Design --- Standardization --- System Integration ---System & Data Governance

--- Employee Empowerment --- Thinking ahead to find ways to use technology to best manage facility information

Key FIM Elements

Percentage breakdown of each?

Key FIM Elements



Technology has transformed the way higher-ed institutions operate

2018
Strategic Planning Survey

What FM technology advancements are you re-defining internal strategies for?

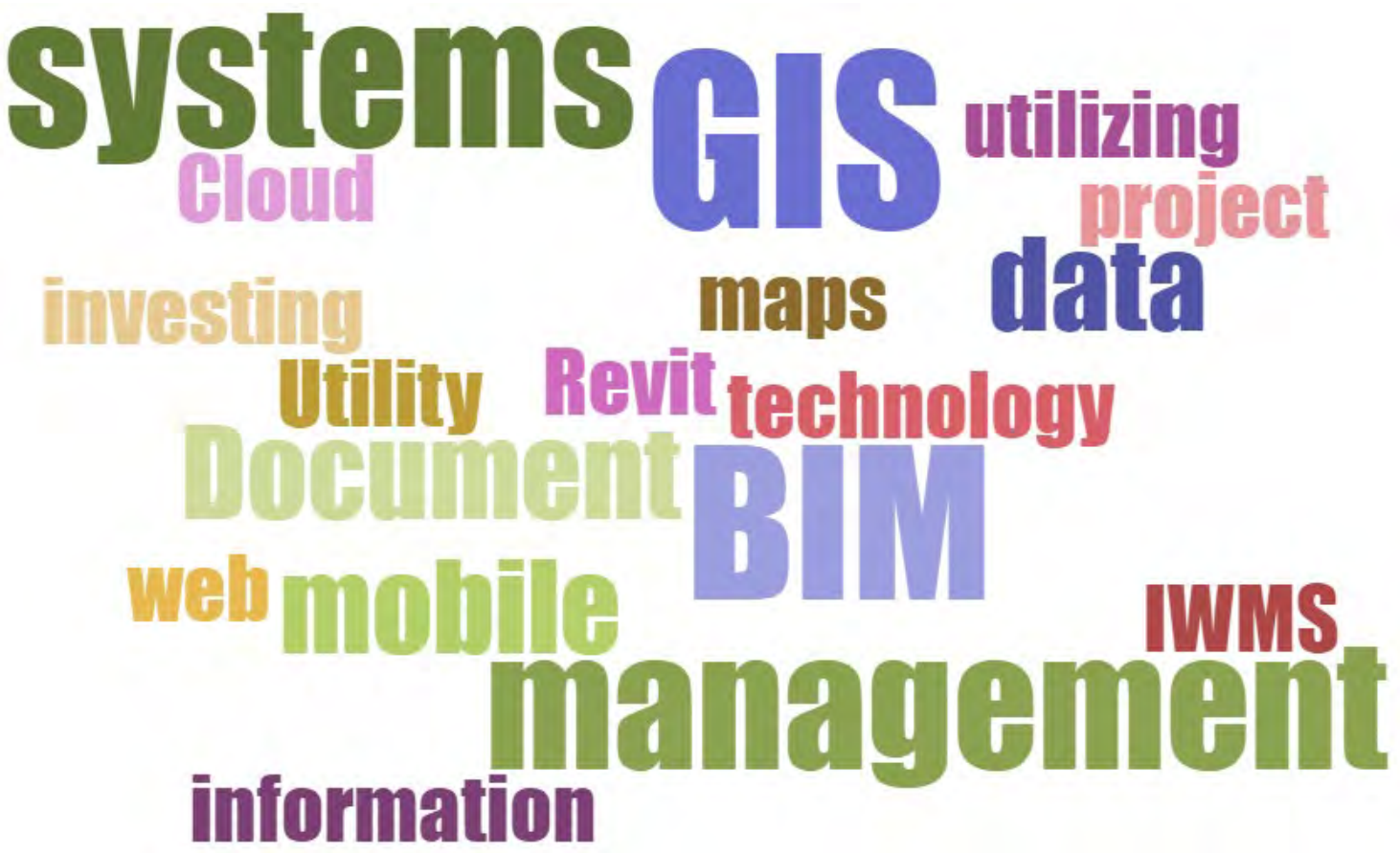


Image Credit: Campus FM Technology Association

FIM is Technology Agnostic

Note: Solutions shown represent a subset of available solutions and are listed for discussion purposes only.

Smartphone

BIM

GIS

ERP

Database

BMS, CAFM, CMMS, IWMS…

Base Your Decision On:

- What information is most important to my institution?
- What enterprise systems does my institution currently use?
- How much can I afford?
- Will the system I want integrate with our existing critical systems?
- What is required to maintain the system information and infrastructure?
- Do I have the right people to manage the system?
- What is our long term plan and will this technology enable our success?

FIM Technology Advancements

Geographic Information System (GIS)

Building Information Modeling (BIM)

Integrated Workplaces Management System (IWMS)

GIS – Geographic Information System

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GIS is….

- A system to capture, store, manipulate, analyze, manage, and present all types of geographic data
- Requires processing methods
- The standard for enterprise mapping and web map publishing

GIS is ***NOT***…

- Just a map or pictures
- A file format (it’s managed as a database)
- Software

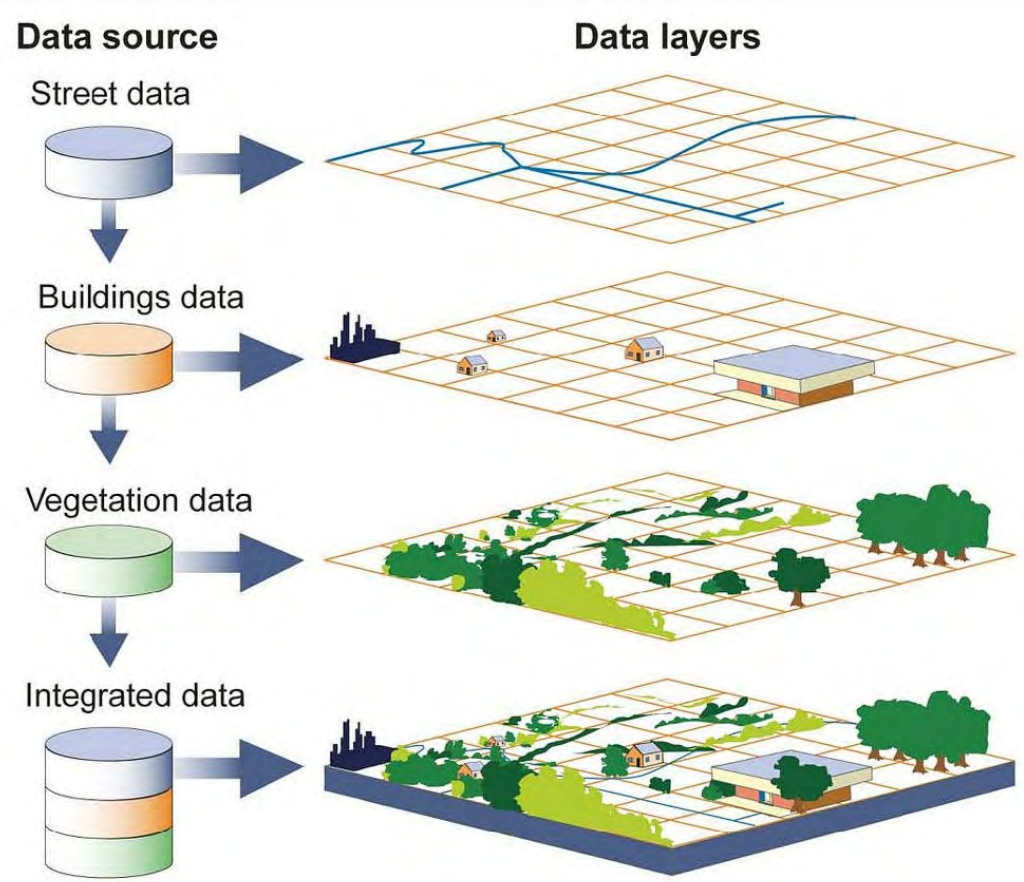
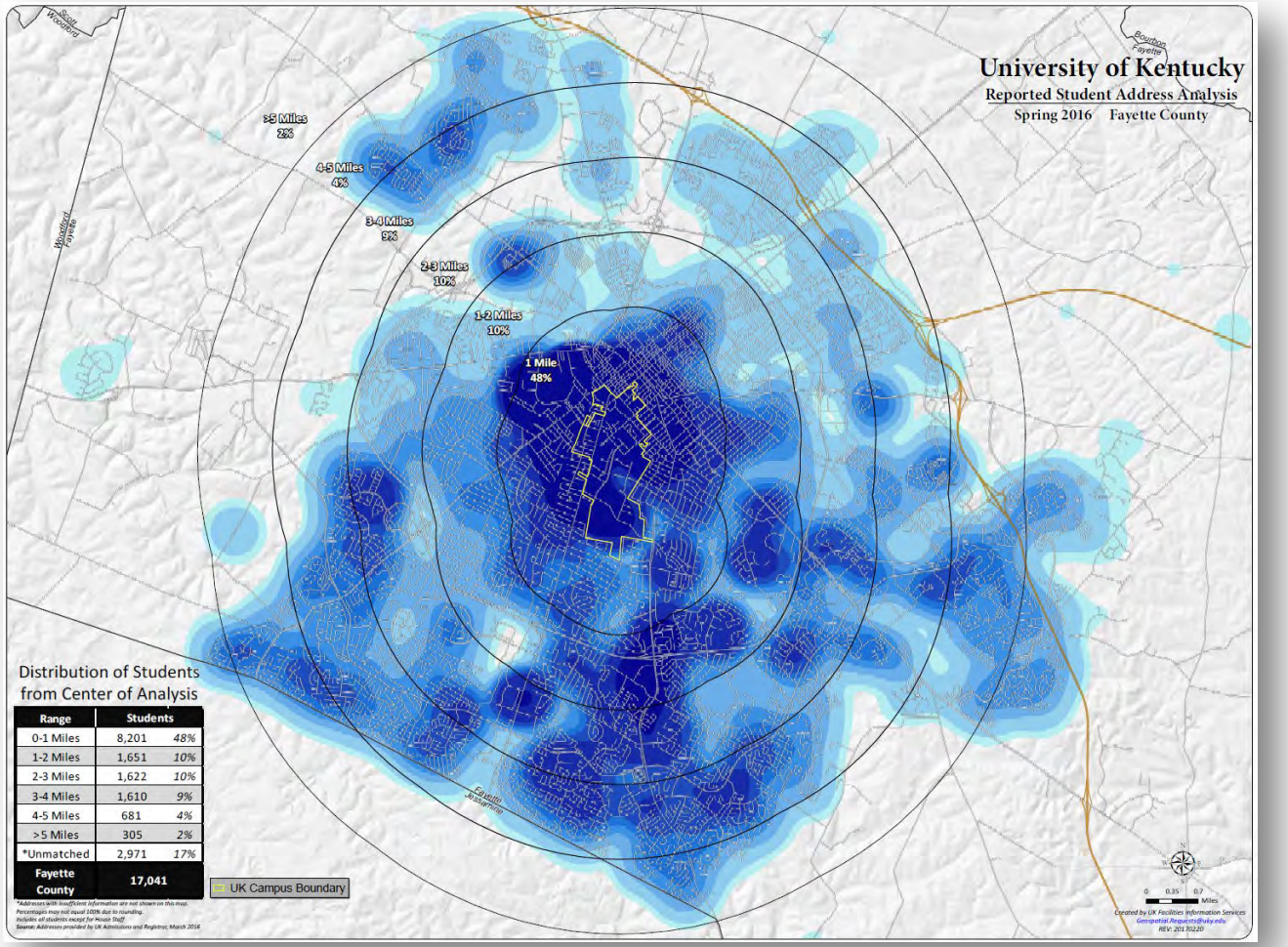


Image Credit: National Geographic Society

Why GIS?

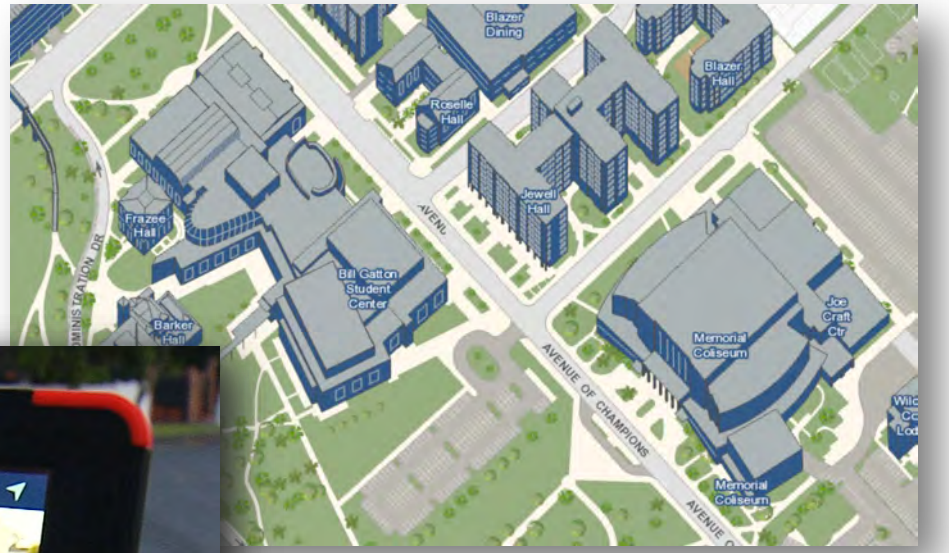
- A living graphical representation of your physical assets for wayfinding and analysis
- Computable Geometry (“geoprocessing”)
- A database that can easily integrate with other databases
- Easily deployed to web and mobile
- Customizable
- Scalable



GIS – Critical Datasets

- Basemap
- Floorplans
- Utilities

…also imagery



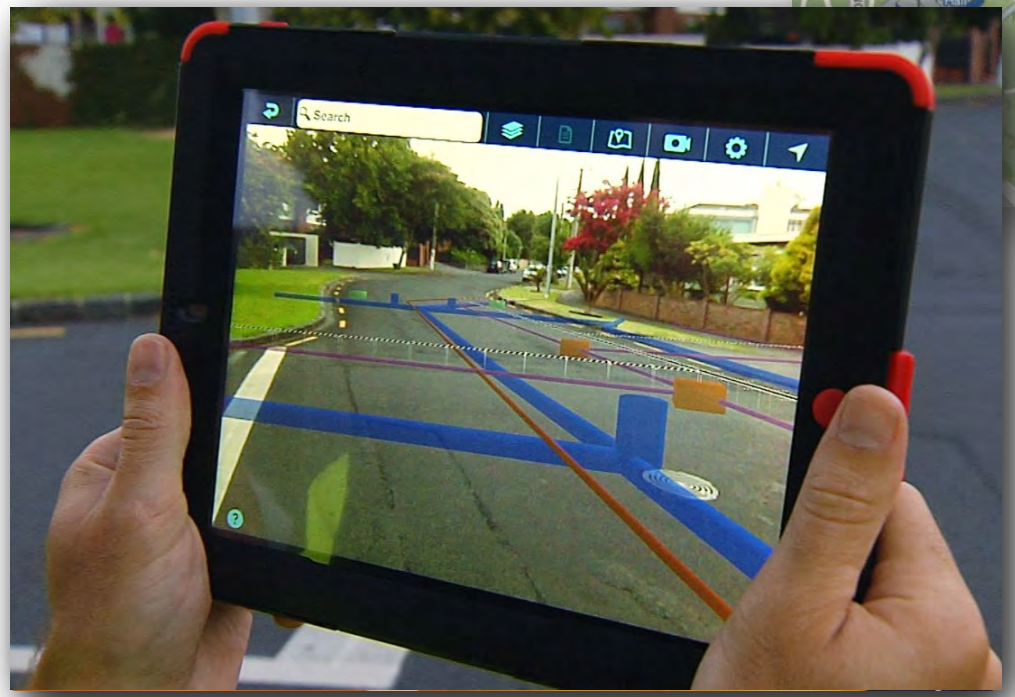


Image Credit: All UK except augmented reality from Google Images

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Use Case: GIS

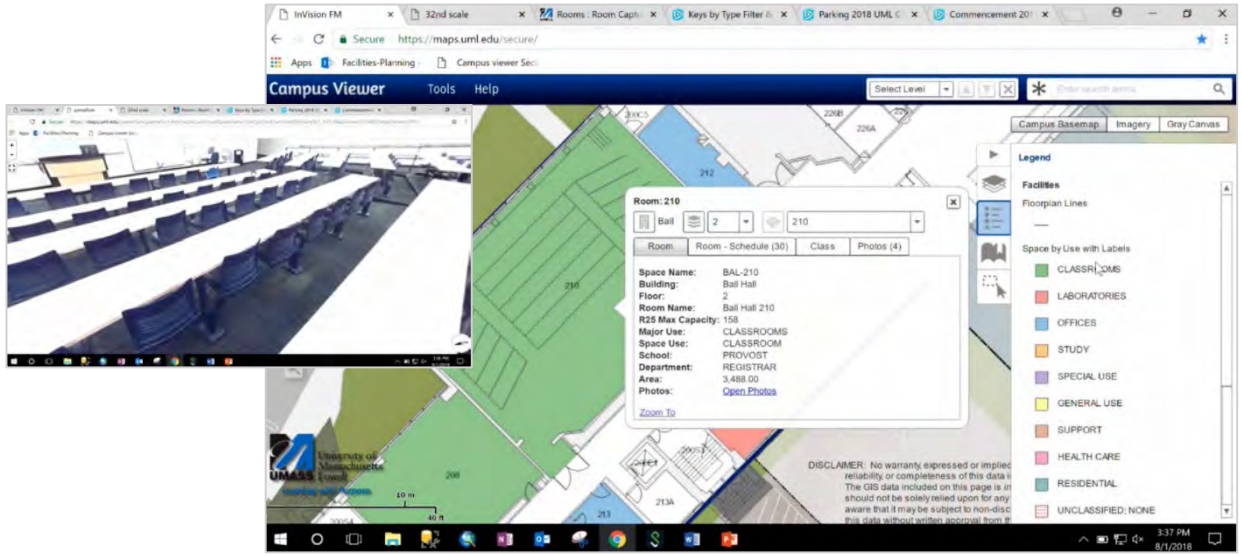
Situation

Wanted to: view *campus level* information including basemap, utilities, and large capital projects. | view *building level* information including occupants, active AEP* projects, floor plan docs, building archives. | view *room level* information including usage, ownership, room schedules, utilization studies, classroom capacities, seating types, photos.

Result

Created Campus Viewer web application to pull all information together. System integrated with existing floor plan and building archived documents. Used 360 camera to capture room photos.

**Accelerated Energy Program*



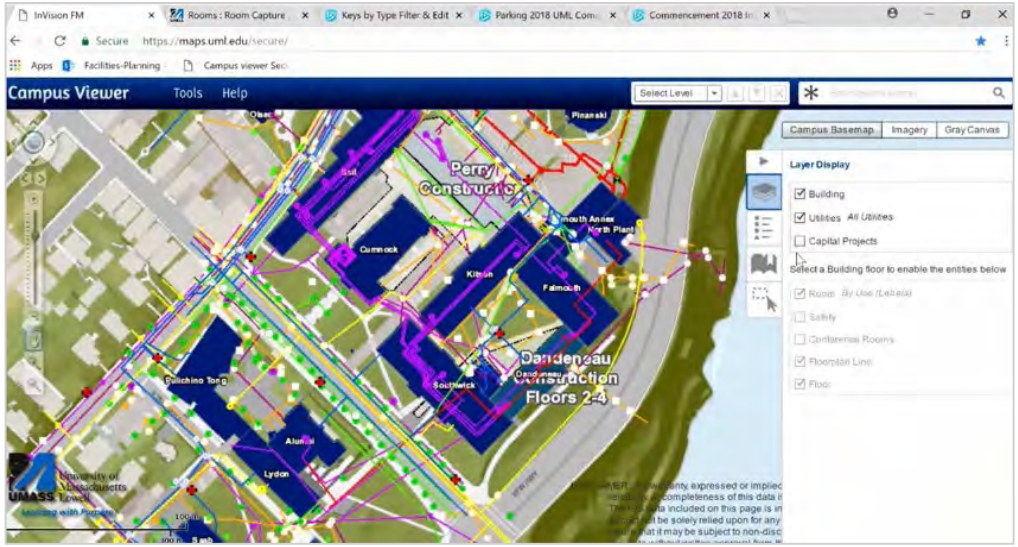


Image Credit: University of Massachusetts Lowell

Use Case: GIS

University of Colorado Boulder

Situation

Wanted to create a tree inventory system to track ownership, maintenance, tree zone, storm damage (moderate-severe), trees with memorial/donation plaque. Planned for digital transfer from paper archives, managing treatment of infestations, measuring canopy coverage for the Tree Campus USA certification.

Result

Tree inventory effort launched in Spring of 2012. Was complete in time to be proactive with responding to the Emerald Ash Borer (EAB) infestation alert in September 2012. GIS enabled Grounds to be proactive with treatment and efficiently plan, budget, strategize, and deploy treatment effort.

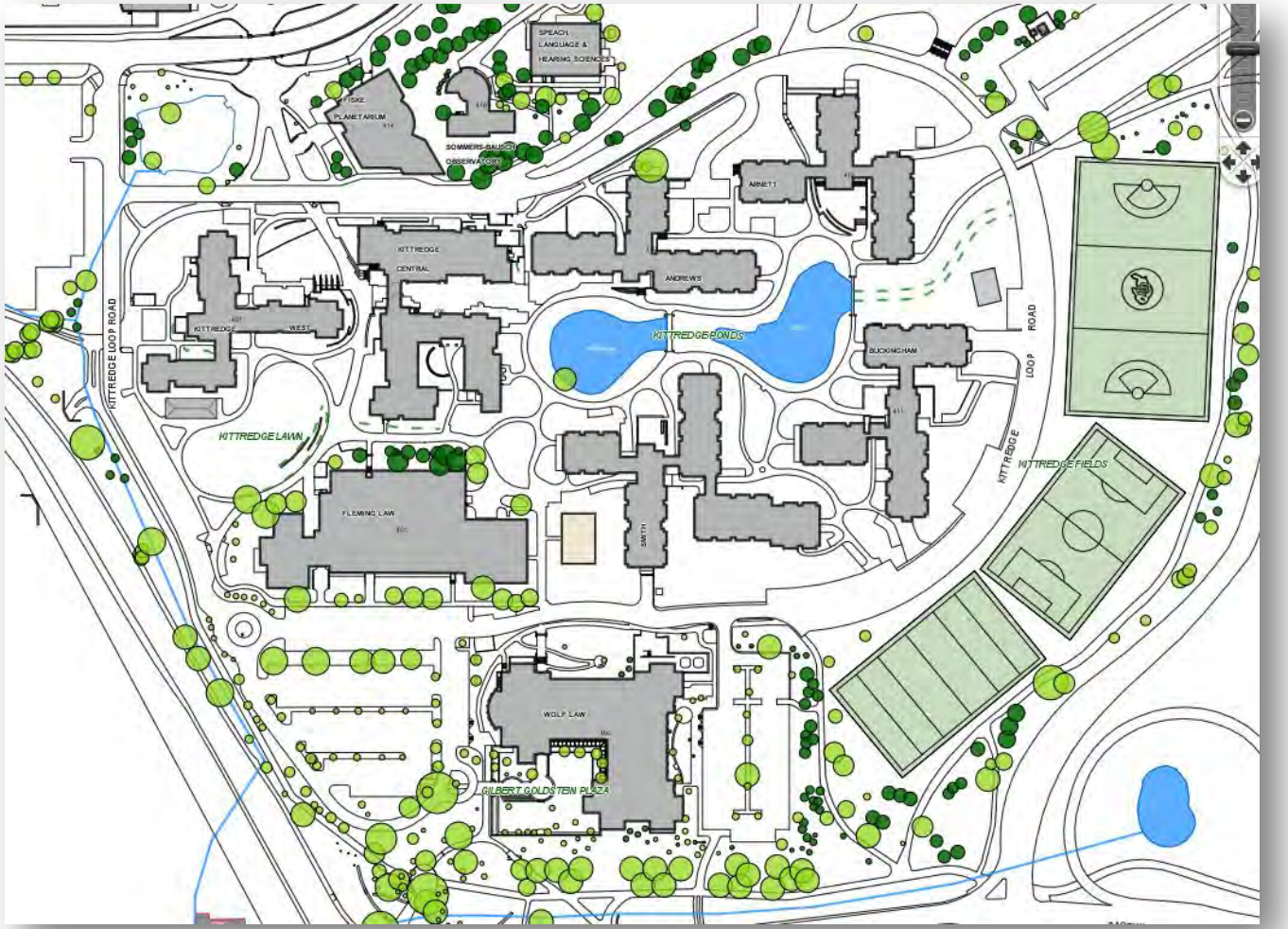


Image Credit: University of Colorado Boulder

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GIS – Key Strategies

- Identify Internal Champion
- Create “One Map” [Audit]
- Main Campus Website Integration
- Partner with IT
- Implement Processes and Procedure [Process]
- Standardize [Standardize]
- Deploy Enterprise Solutions [Automate]
- Collaborate & Integrate
- Outreach and Education

! Beware of systems that look like GIS but aren’t

BIM – Building Information Modeling

\'bim\

BIM is….

- A business model defined by processes and workflows
- The standard for building design, construction, and operation
- Integrated geometry & facility information
- Mandated in many countries*

BIM is ***NOT***…

- Just 3D modeling
- A file format
- Software

**Global BIM Standards: Is Your Country Next*
https://constructible.trimble.com/construction-industry/global-bim-standards-is-your-country-next
Tennessee State Government
https://www.tn.gov/osa/capital---real-estate/capital-projects/bim-standards.html

Image Credit: Google Images

Why BIM?

- Risk Mitigation
- Higher Quality
- Increased Productivity
- Streamlines Handover

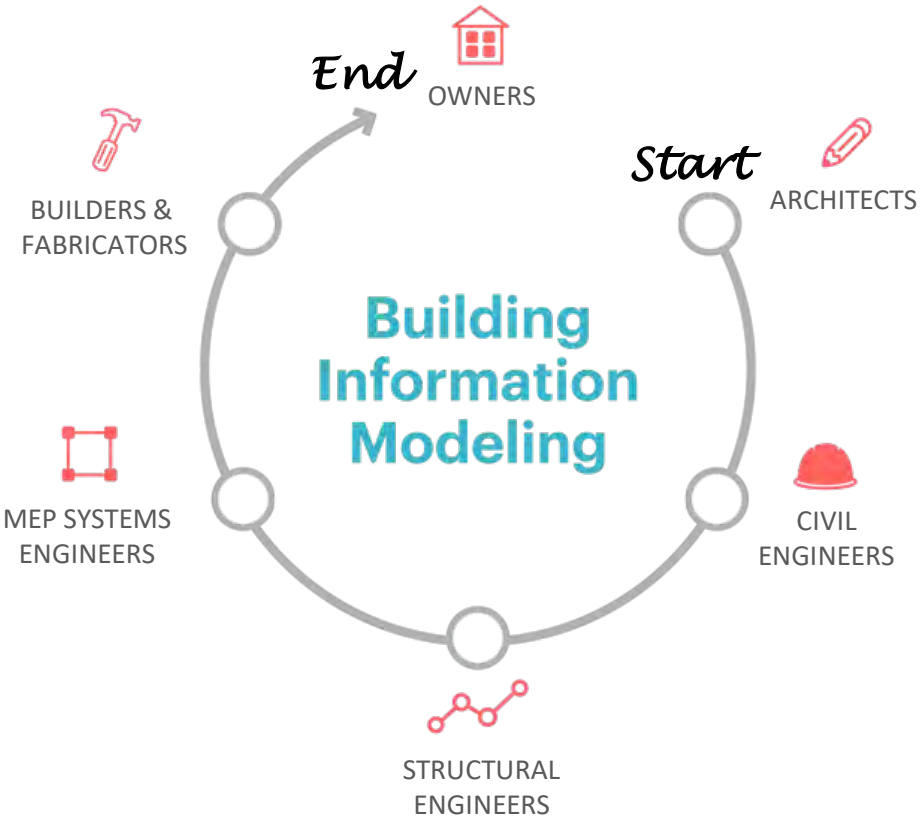
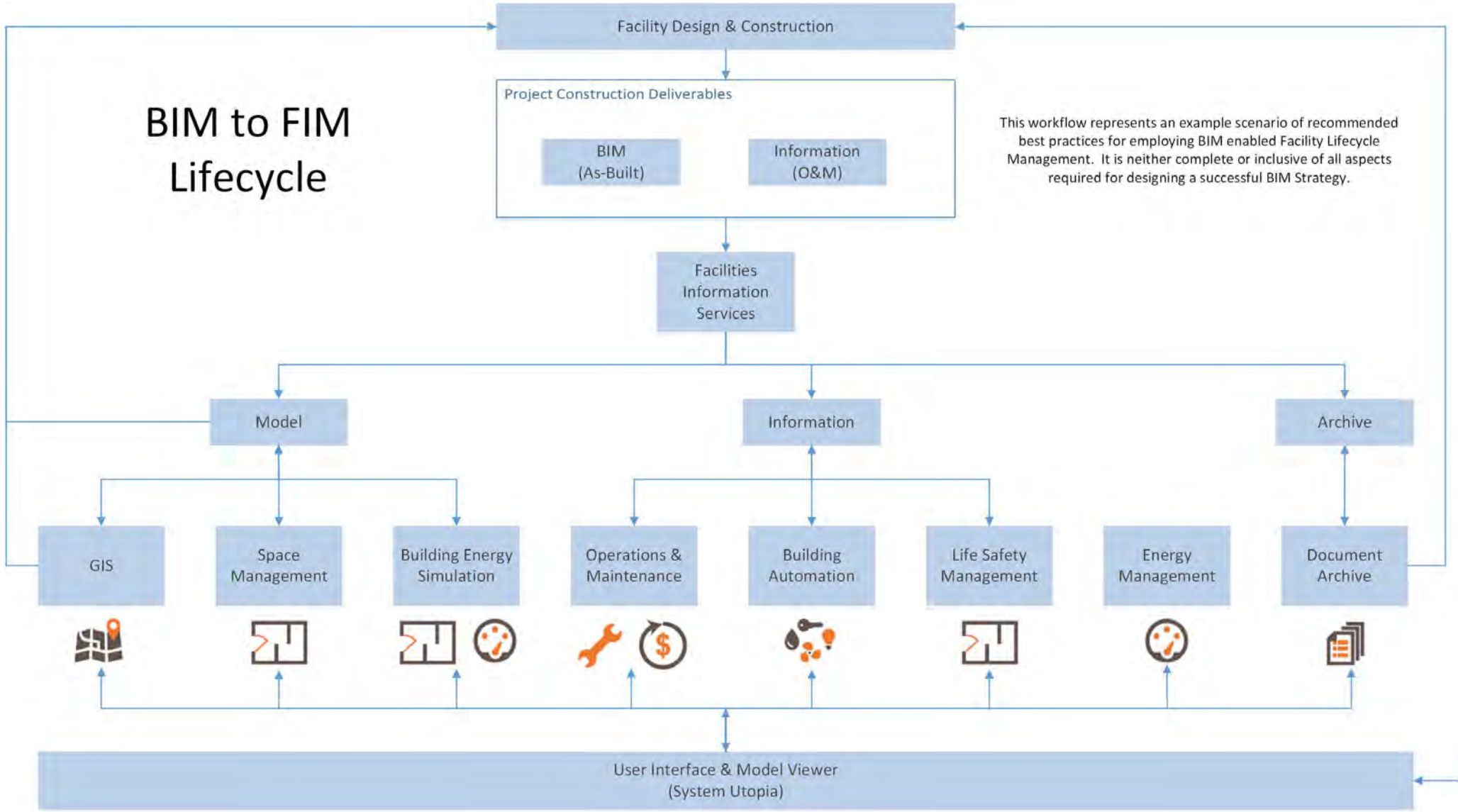


Image Credit: Google Images

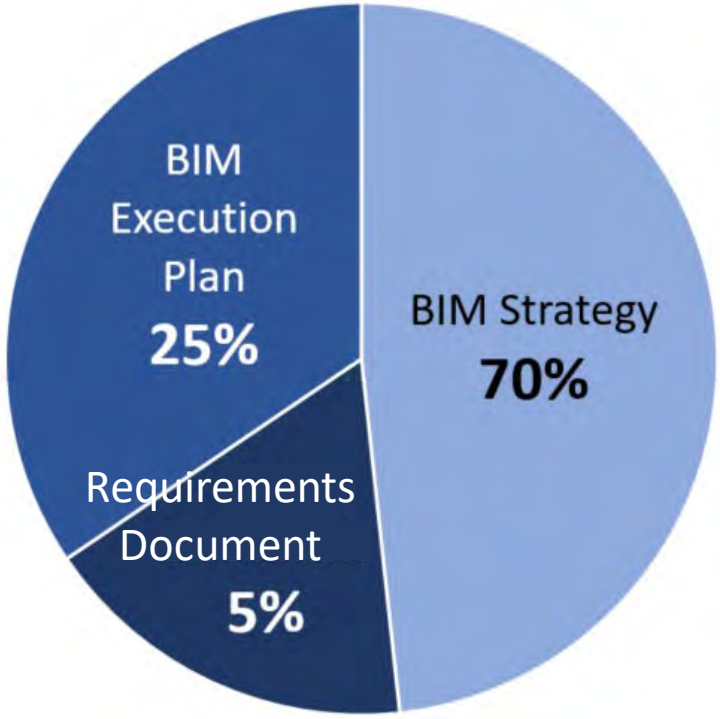
BIM – Architecture Strategy



Developed in partnership between Messer Construction and the Campus FM Technology Association

BIM – 3 Main Components

- BIM Strategy
  - Define Goals & Metrics
  - Layout Tactics
  - Develop Roadmap
- Requirements Document
- BIM Execution Plan

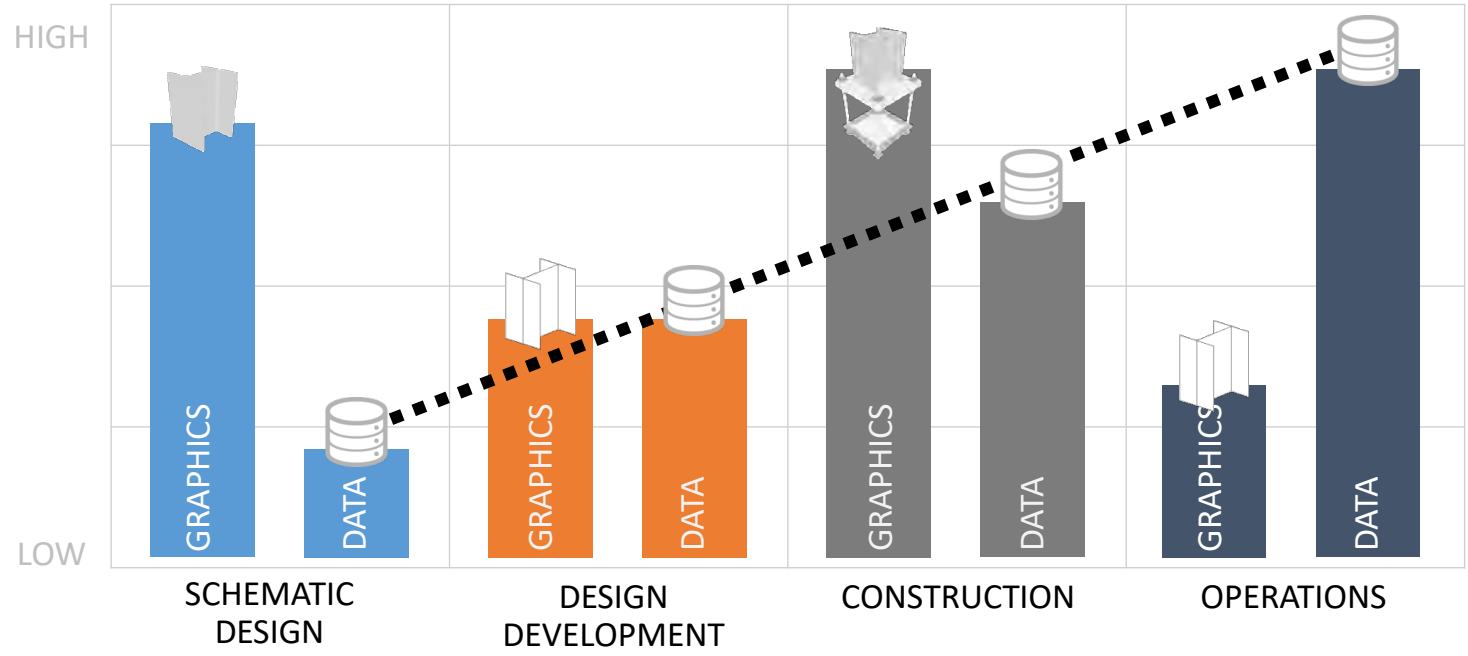


Other useful components include a feasibility study and "BIM 101" session for administrators

BIM – Level of Development (LOD)

- Construction Needs
  - Maximum graphics
  - Minimum data
- Owner Needs
  - Minimum graphics
  - Maximum data

Avoid “Model Bloat” by determining what you *don’t* want in the model (BIM Strategy)



Graphic provided by:

CADD MICROSYSTEMS

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Use Case: BIM

Overriding Objective

- Streamline work order process for skilled trades personnel
- Improve information gathering process to ultimately save resources and increase efficiency across Operations Division

Solution

- Modeled 150 campus building with high detail exterior, low detail interior
- Added mechanical equipment requiring routine maintenance to model
- Standardized critical CMMS attributes and information and automated flow from CMMS to BIM
- Removed information access barriers and replaced with visualization and planning tools
- ROI: Field verification reduced (less gas and time costs), facilities library staff time reduced (searching/printing), paper no longer needed

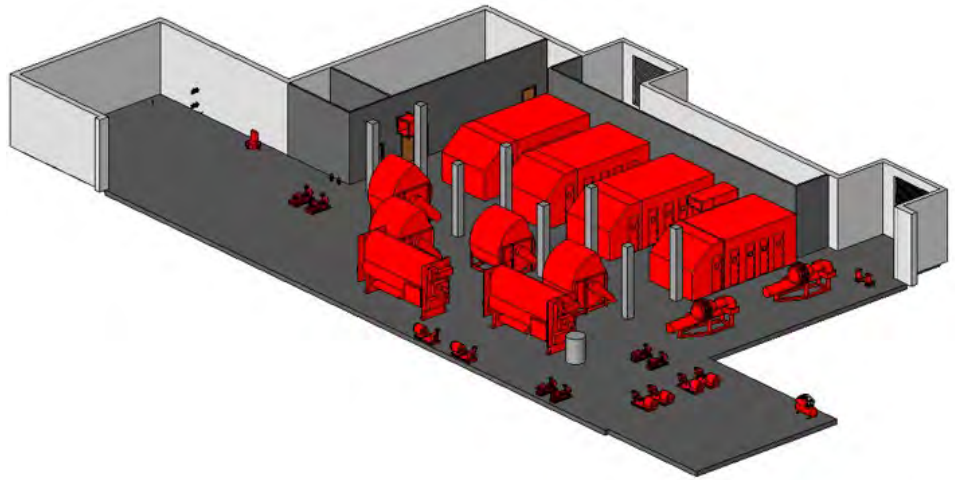


Image Credit: Western Michigan University

Use Case: BIM

THE OHIO STATE UNIVERSITY

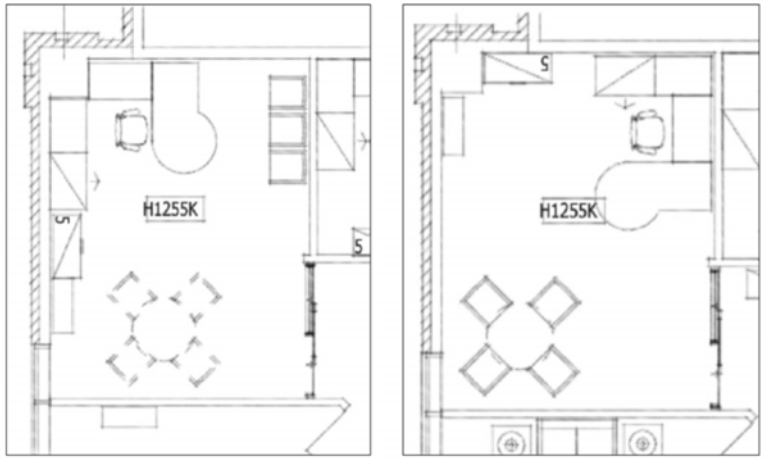
Overriding Objective

- Enhance planning and communication resulting in improved quality and speed of decision-making
- Better quality and more current drawings and data; improved ability to communicate space data and design intent

Solution

- Customers easily share furniture layouts, minor renovations, signage, etc. in 3D without engaging consultant
- More effectively communicate office layout options to incoming senior leaders

Before



After

Image Credit: The Ohio State University

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BIM – Key Strategies

- Establish Leadership (direction) and Department (data) Alignment
- Determine What "I" is Needed [Audit]
- Develop Roadmap
- Define Processes and Procedures (two way information exchange) [Process]
- Partner with IT
- Develop Design Deliverable Standards and System Standards [Standardize]
- Automate workflows [Automate]
- Outreach and Education

Graphic created by:

AUTODESK.

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IWMS – Integrated Workplace Management System

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IWMS is….

- A single platform software that streamlines processes for end-to-end facilities management
- Designed to offer robust reporting to define KPIs and strategically improve operations
- Consumes and gives meaning IoT big data
- Integrates five functional domains:
  Real Estate & Property Management | Facilities & Space Management
  Operations & Maintenance | Capital Planning & Project Management
  Energy Management & Sustainability

IWMS is ***NOT***…

- Just a CAFM
- A software for integrating silo systems
- GIS, BIM, or BAS (integration may require customization)

IWMS is a CAFM plus

Graphics	Content	Functionality
CAD	Space Management	Planning Tools
GIS	Real Estate Planning	Performance Metrics
BIM	Project Management	Integrated
	Building Operations	Workflow
	Preventative Maintenance	Advanced Functionality
	Energy Management and Sustainability	

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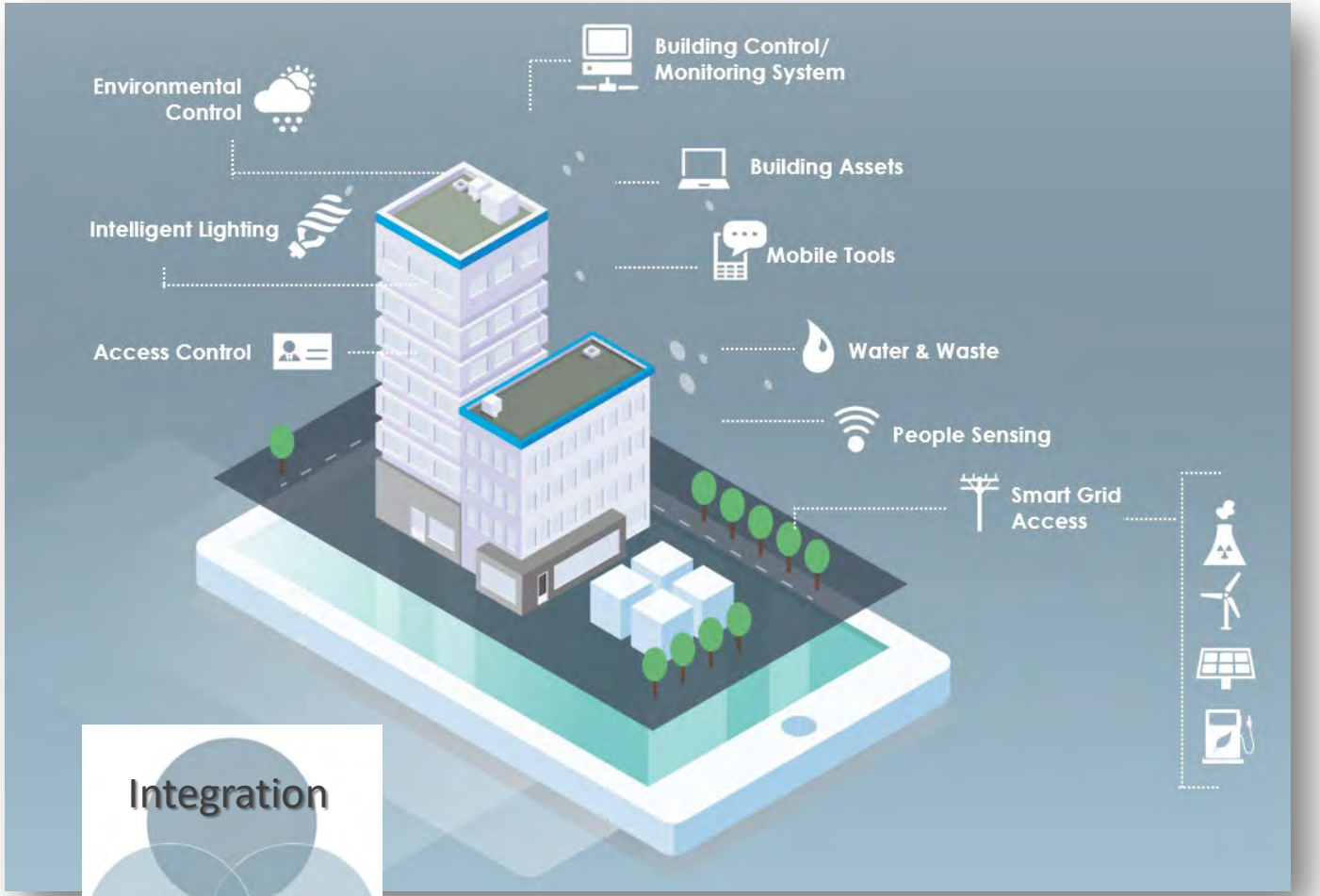
Why IWMS?

- Cost Containment
- Turns Data Into Information
- Data Drives Decisions
  Information → Optimization
- Enables Transition from Reactive WO State to Predictive
- Reduces Silo Systems



Graphic provided by:

FM:Systems

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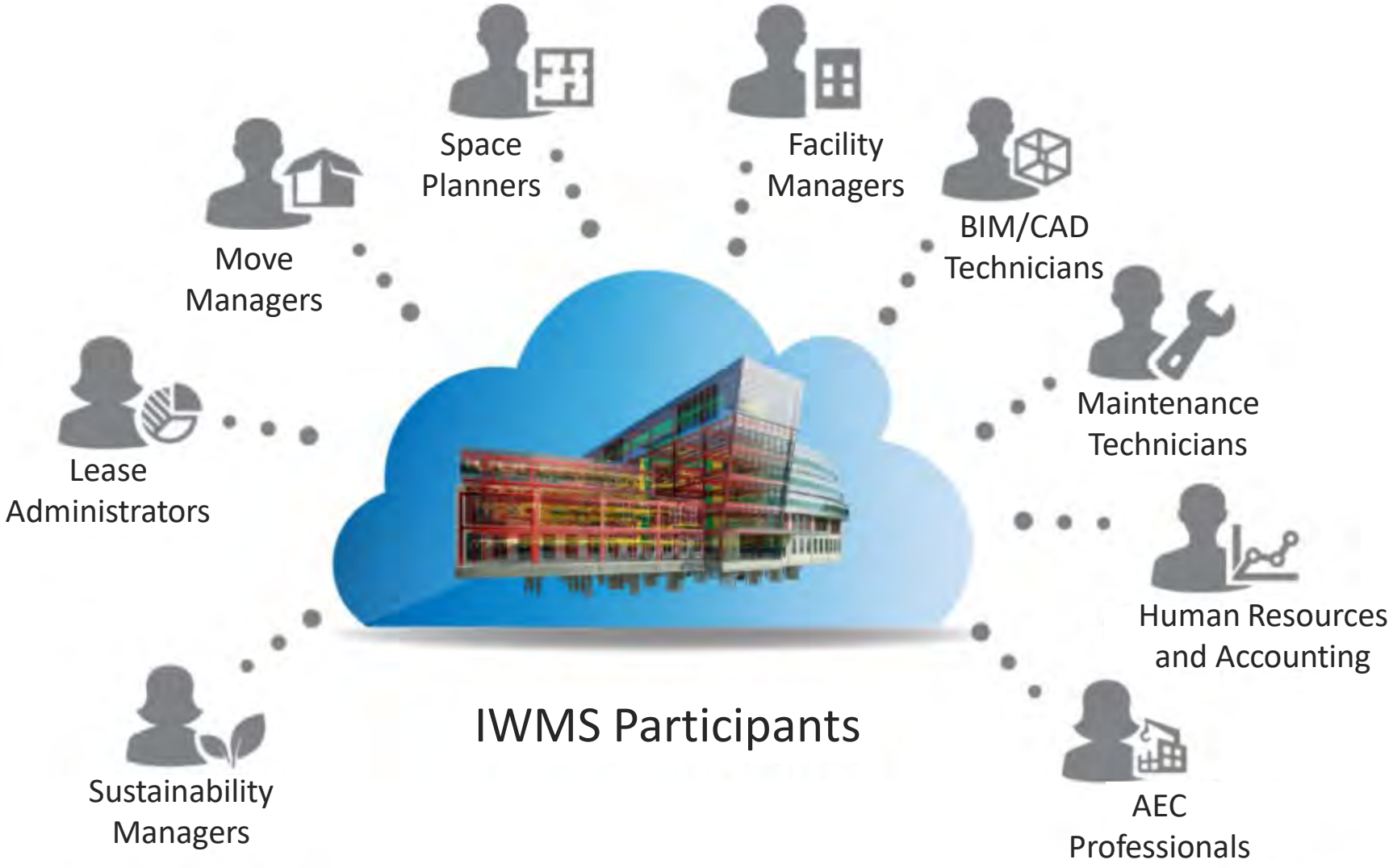
IWMS – Participating Stakeholders



Graphic provided by:

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Use Case: IWMS

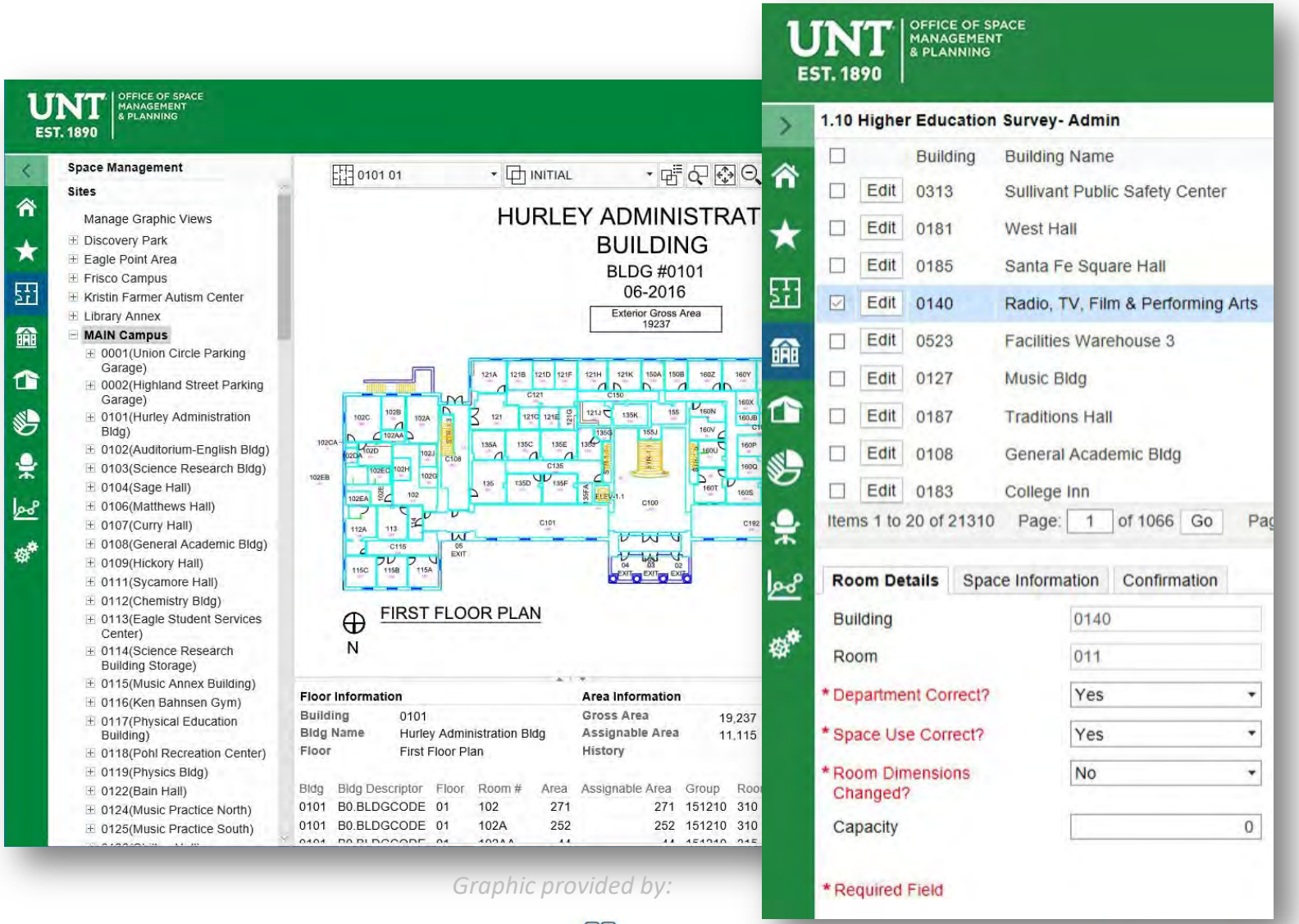
UNIVERSITY OF NORTH TEXAS

Situation

Strict reporting requirements to the State and Federal government that determine funding for the institution and negotiation of the facility and administrative rate for federal grants.

Result

IWMS implementation has allowed UNT to track locations of their research space and equipment and use it to associate grants to space and private investigators to help with both federal reporting and determination of productivity of existing research space.



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Use Case: IWMS

Situation

Wanted to improve control over maintenance practices with accurate, detailed records of reactive maintenance workload. Needed to measure effectiveness, identify capacity gaps, and connect internal and external trade engineers to help dispatch and execute work more efficiently.

Result

System offers transparency into maintenance backlog, health & safety issues, compliancy risks, and capacity gaps and has moved from a reactive to preventative maintenance model. Maintenance backlog reduced by 50% within 3 months.

Graphic provided by:

IWMS – Key Strategies

- Identify Internal Champion
- Define Vision that Aligns with your Campus Mission and Values
- Define Realistic Scope and Strategic Roadmap
- Define Data Ownership and Workflows [Audit]
- Develop Process & Procedures [Process]
- Develop Standards [Standardize]
- Nurture Relationships
- Partner with IT
- Education & Outreach
- Open Visibility
- Configure Reports and Workflows [Automate]

! Beware of systems that say they are an IWMS but aren't

FIM Management Strategies

Lean Management | Continuous Improvement

Organizational Structure

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Lean

/lēn/

Lean is….

- A business methodology that promotes flow of value to the customer through two guiding tenets: Continuous improvement and respect for people
- Long-term management philosophy and organizational culture
- Heavily used in manufacturing, construction, and health care
- Multiple applications *(Lean Manufacturing, Lean Management, Lean Office, Lean Six Sigma…)*
- **Hard work and challenging to maintain**

Lean is ***NOT***…

- About tools but rather how they are applied
- About waste reduction but improving value
- About doing more with less but improving efficiency
- About cost reduction but finding better ways to work
- Rigid but creating a baseline for continuous improvement
- **Not easy to understand or implement**

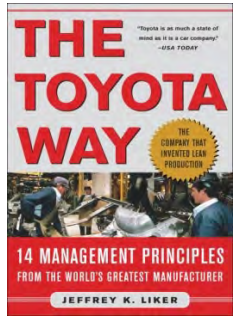
Image Credit: colourbox

Why Lean?

- Process Improvement is Endless
- Propagates Change Management Mindset
- Employee Empowerment
- Scalable
- Long-term Sustainability
- It's the Right Thing (for the customer, for the employee, for the organization…)

The Toyota Way

Note: many others are analyzing Lean in addition to Liker. TTW is just one example.



1. Base your management decisions on a **long-term philosophy**, even at the expense of short-term financial goals.
2. Create a **continuous process flow** to bring problems to the surface.
3. Use **"pull" systems** to avoid overproduction.
4. **Level out the workload** (work like the tortoise, not the hare).
5. Build a culture of **stopping to fix problems**, to get quality right the first time.
6. **Standardized** tasks and processes are the foundation for **continuous improvement** and employee engagement.
7. Use **visual controls** so no problems are hidden.
8. **Use only reliable, thoroughly tested technology** that serves your people and process.
9. **Grow leaders** who thoroughly understand the work, live the philosophy, and teach it to others.
10. **Develop exceptional people and teams** who follow your company's philosophy.
11. **Respect your extended network of partners** and suppliers by challenging them and helping them improve.
12. **Go and see for yourself** to thoroughly understand the situation.
13. **Make decisions slowly by consensus**, thoroughly considering all options; implement decisions rapidly.
14. **Become a learning organization** through **relentless reflection** and continuous improvement.

Lean – Nuts & Bolts

Note: criteria listed represent a subset of available items under the four (4) Nuts and Bolts steps and are listed for discussion purposes only.

1 Audit

- Information
- Data
- Systems
- Resources
- Outputs
- Processes

2 Process

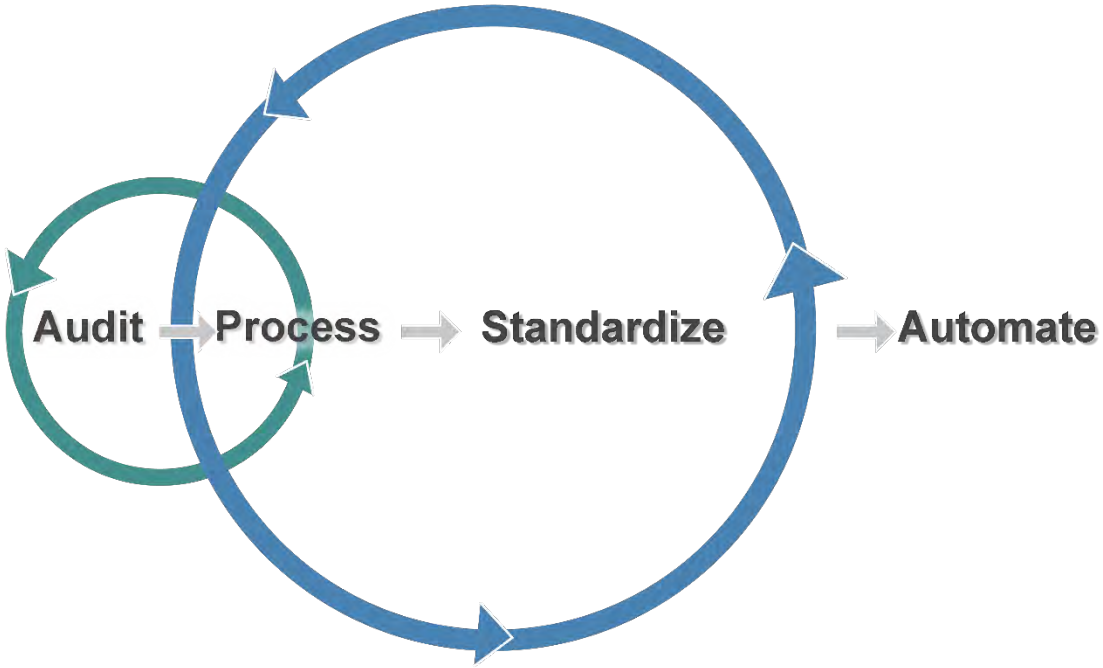
- Workflow diagrams
- Support documentation
- Checklists
- Request forms

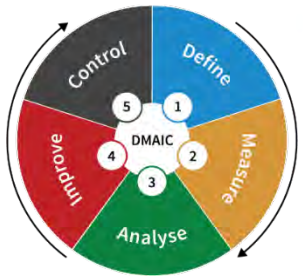
3 Standardize

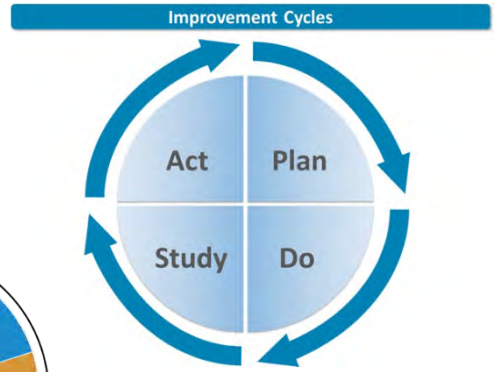
- Libraries
- Templates
- Technical Standards
- Design Standards
- Manuals
- Policies

4 Automate

- Desktop tools
- Web applications
- Mobile apps
- System integrations
- Report generation
- Other customizations







Many different models!

Image Credit: University of Kentucky, Google Images

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Use Case: Lean Office

University of Kentucky

Situation

100's of map requests at varying times throughout the year with various levels of urgency. Many last minute submitted by email or walk-in. Time consuming to make and hard to find errors. Required technical expertise and extensive PM to ensure quality and customer service expectations were met.

Result

Developed standards, templates, workflows, and training pathways to level out the workload and enable student workers with no mapping experience to develop 75% of recurring map requests. Developed self-service solutions for end users to develop maps of interest and access information.

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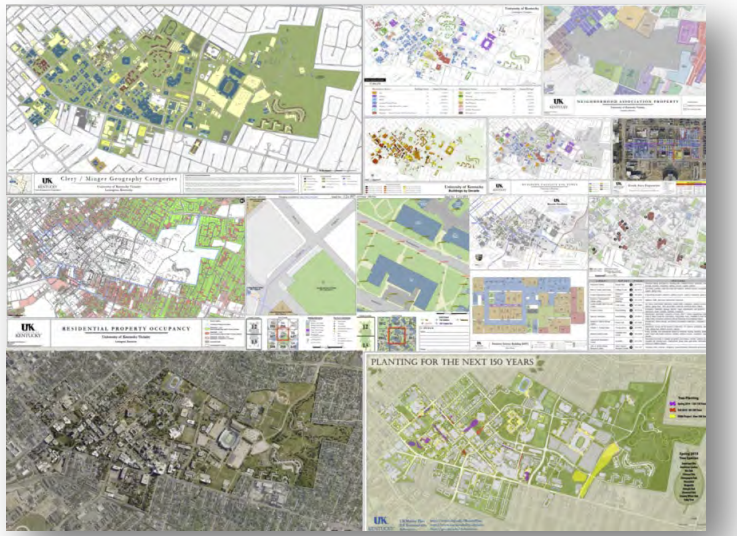
Use Case: Lean Office

University of Kentucky

1 Audit

Document past three years of map products and look for common trends in sizes, colors, map elements, request times, recurring tasks, errors…



Size	Orientation	Style	Collar	Base Map	Color
8.5x11	Portrait Landscape	Decorative Utility Planning Space Usage Map Book	Top Bottom Floating	*2D* *2.5 D* *Aerial*	Grey *Black/White* *Blue/Green* *Blue/Grey* *Lime/Peach* *Tan/Green* *Green/Green*
11x17	Portrait Landscape	Decorative Utility Planning Space Usage Map Book	Top Bottom Floating	*2D* *2.5 D* *Aerial*	*Grey* *Black/White* *Blue/Green* *Blue/Grey* *Lime/Peach* *Tan/Green* *Green/Green*
24x36	Portrait Landscape	Decorative Utility Planning Space Usage Map Book	Top Bottom Floating	*2D* *2.5 D* *Aerial*	*Grey* *Black/White* *Blue/Green* *Blue/Grey* *Lime/Peach* *Tan/Green* *Green/Green*
Custom (i.e. 28x46, 54.5x30)	Portrait Landscape	Decorative Utility Planning Space Usage Map Book	Top Bottom Floating	*2D* *2.5 D* *Aerial*	*Grey* *Black/White* *Blue/Green* *Blue/Grey* *Lime/Peach* *Tan/Green* *Green/Green*

Map Elements:
-Line Weights
-Margins
-Font
-North Arrow
-Scale Bar
-Scale
-Neat Line
-Rev Date
-Data Source
-Created by:
-Labels
-Symbol
-Color Schemes
-Symbol Library
-DRAFT
-Legend
-Grid

Style key

Decorative:	Double, Graded neat line
Utility:	Same as above or solid line
Planning:	Rounded frame
Space Usage:	Existing format
Map Book:	Utility or decorative format

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Use Case: Lean Office

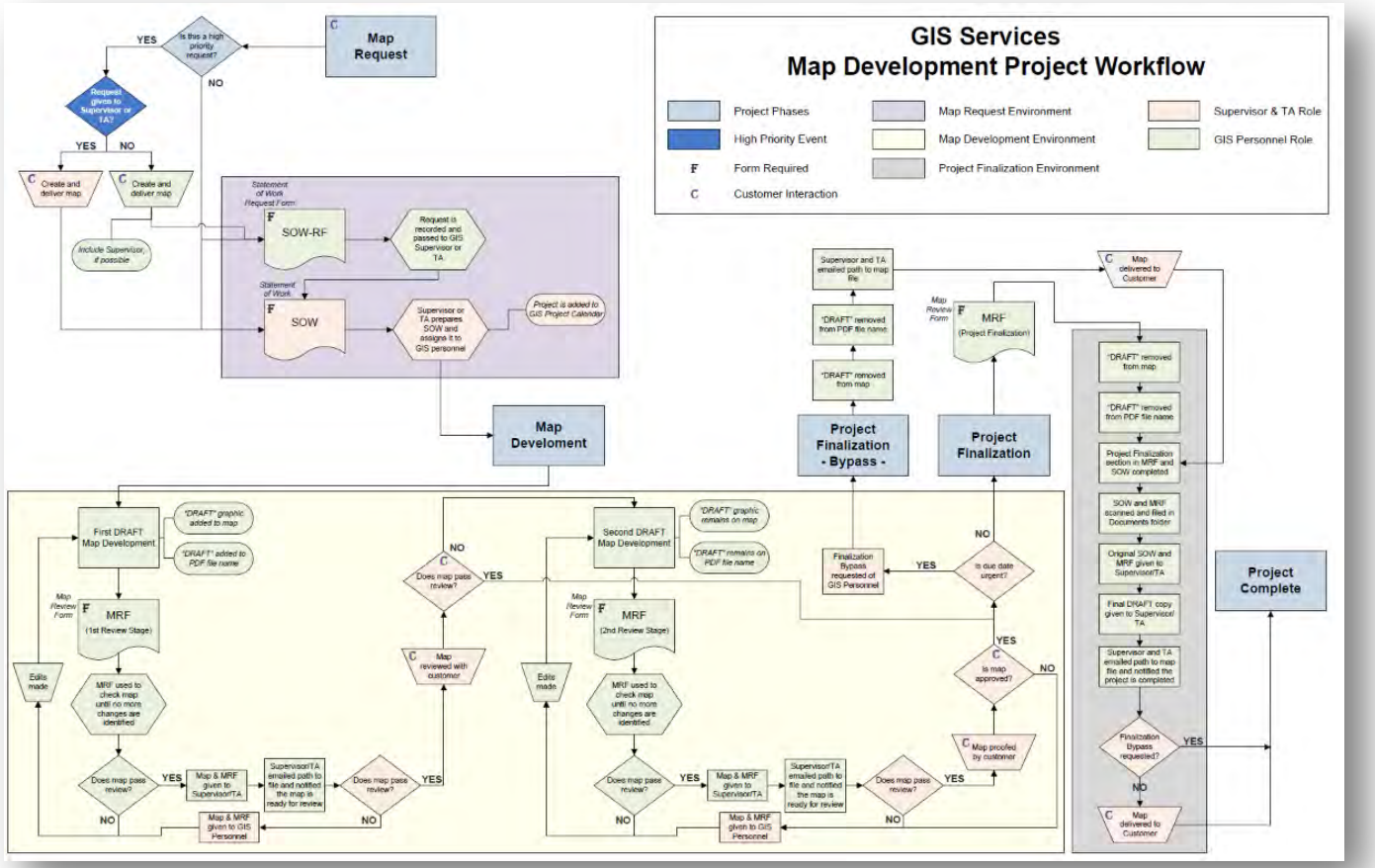
University of Kentucky

1. **Audit**

   Document past three years of map products and look for common trends in sizes, colors, map elements, request times, recurring tasks, errors…

2. **Process**

   Workflow diagram, QC form, PM map request tracking process…



APPA LEADERSHIP IN EDUCATIONAL FACILITIES

Use Case: Lean Office

University of Kentucky

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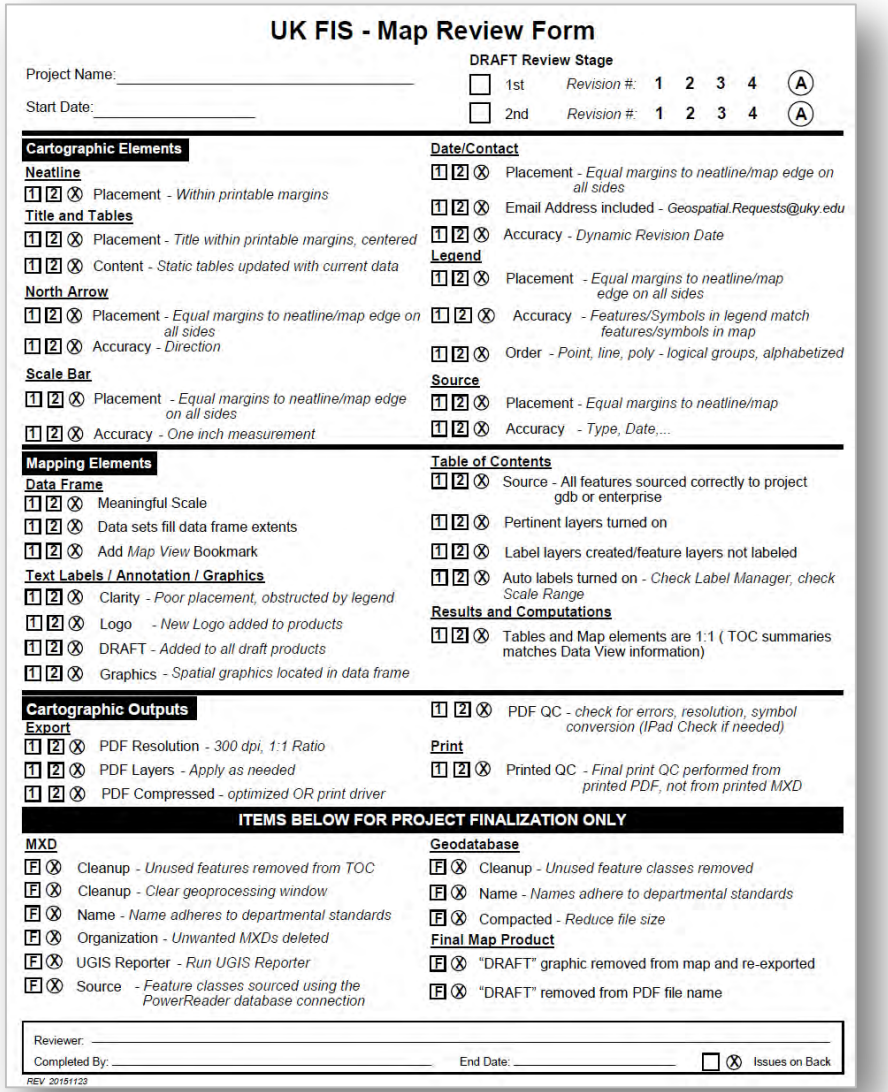

UK FIS - Map Review Form

Project Name: _____
Start Date: _____

DRAFT Review Stage
☐ 1st Revision #: 1 2 3 4 A
☐ 2nd Revision #: 1 2 3 4 A

Cartographic Elements

Neatline
1 2 X Placement - *Within printable margins*

Title and Tables
1 2 X Placement - *Title within printable margins, centered*
1 2 X Content - *Static tables updated with current data*

North Arrow
1 2 X Placement - *Equal margins to neatline/map edge on all sides*
1 2 X Accuracy - *Direction*

Scale Bar
1 2 X Placement - *Equal margins to neatline/map edge on all sides*
1 2 X Accuracy - *One inch measurement*

Date/Contact
1 2 X Placement - *Equal margins to neatline/map edge on all sides*
1 2 X Email Address included - *Geospatial.Requests@uky.edu*
1 2 X Accuracy - *Dynamic Revision Date*

Legend
1 2 X Placement - *Equal margins to neatline/map edge on all sides*
1 2 X Accuracy - *Features/Symbols in legend match features/symbols in map*
1 2 X Order - *Point, line, poly - logical groups, alphabetized*

Source
1 2 X Placement - *Equal margins to neatline/map*
1 2 X Accuracy - *Type, Date,...*

Mapping Elements

Data Frame
1 2 X Meaningful Scale
1 2 X Data sets fill data frame extents
1 2 X Add *Map View* Bookmark

Text Labels / Annotation / Graphics
1 2 X Clarity - *Poor placement, obstructed by legend*
1 2 X Logo - *New Logo added to products*
1 2 X DRAFT - *Added to all draft products*
1 2 X Graphics - *Spatial graphics located in data frame*

Table of Contents
1 2 X Source - All features sourced correctly to project gdb or enterprise
1 2 X Pertinent layers turned on
1 2 X Label layers created/feature layers not labeled
1 2 X Auto labels turned on - *Check Label Manager, check Scale Range*

Results and Computations
1 2 X Tables and Map elements are 1:1 (TOC summaries matches Data View information)

Cartographic Outputs

Export
1 2 X PDF Resolution - *300 dpi, 1:1 Ratio*
1 2 X PDF Layers - *Apply as needed*
1 2 X PDF Compressed - *optimized OR print driver*
1 2 X PDF QC - *check for errors, resolution, symbol conversion (IPad Check if needed)*

Print
1 2 X Printed QC - *Final print QC performed from printed PDF, not from printed MXD*

ITEMS BELOW FOR PROJECT FINALIZATION ONLY

MXD
F X Cleanup - *Unused features removed from TOC*
F X Cleanup - *Clear geoprocessing window*
F X Name - *Name adheres to departmental standards*
F X Organization - *Unwanted MXDs deleted*
F X UGIS Reporter - *Run UGIS Reporter*
F X Source - *Feature classes sourced using the PowerReader database connection*

Geodatabase
F X Cleanup - *Unused feature classes removed*
F X Name - *Names adhere to departmental standards*
F X Compacted - *Reduce file size*

Final Map Product
F X "DRAFT" graphic removed from map and re-exported
F X "DRAFT" removed from PDF file name

Reviewer: _____
Completed By: _____ End Date: _____ ☐ X Issues on Back

REV. 20151123

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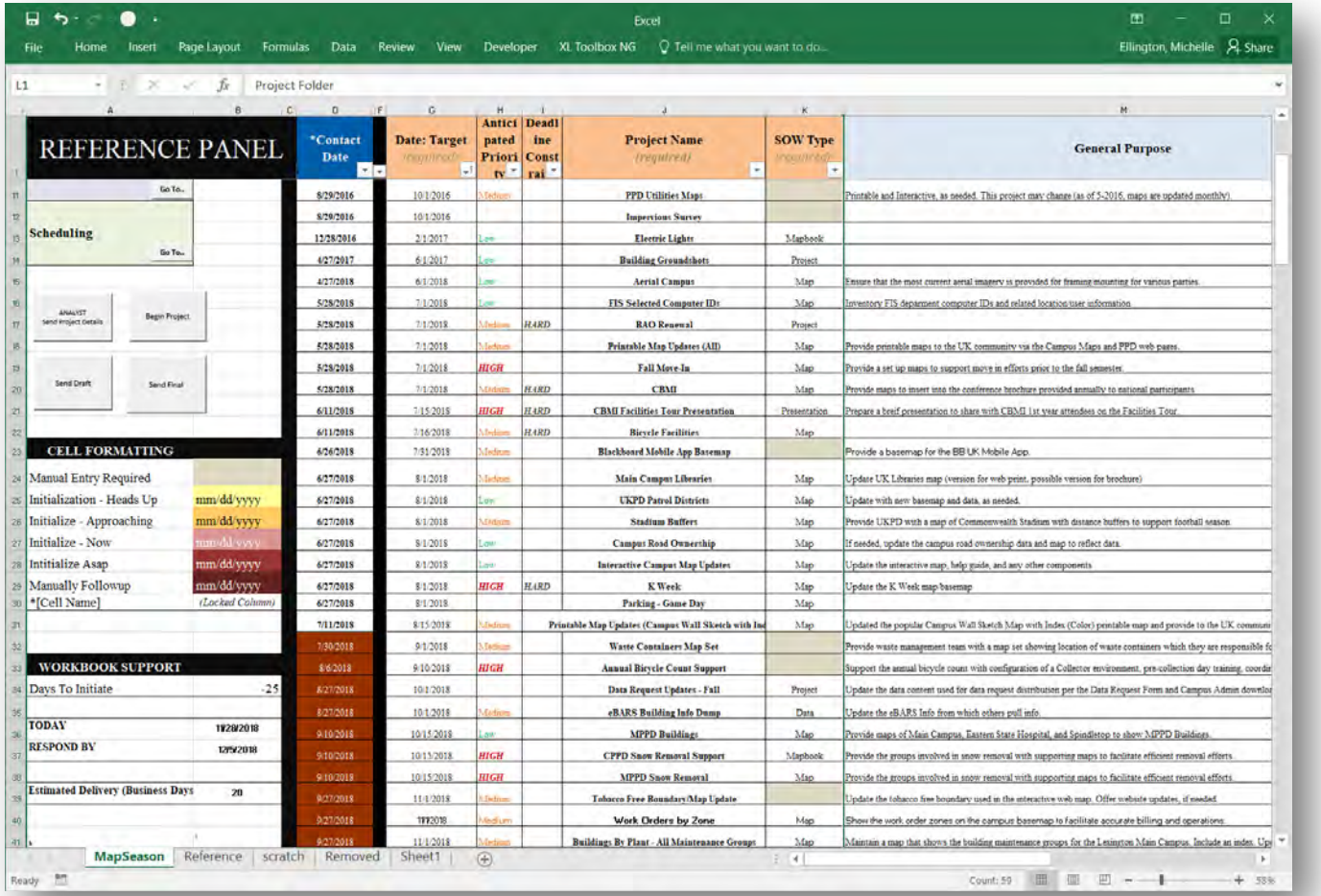

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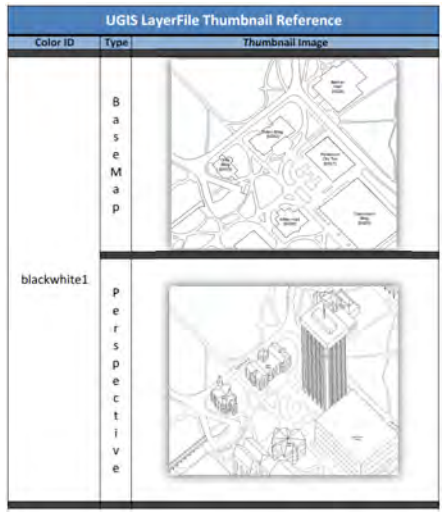
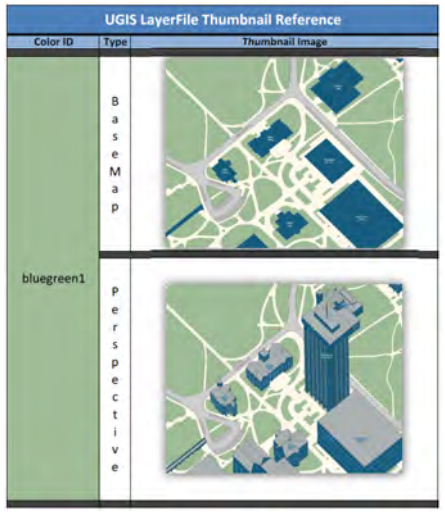
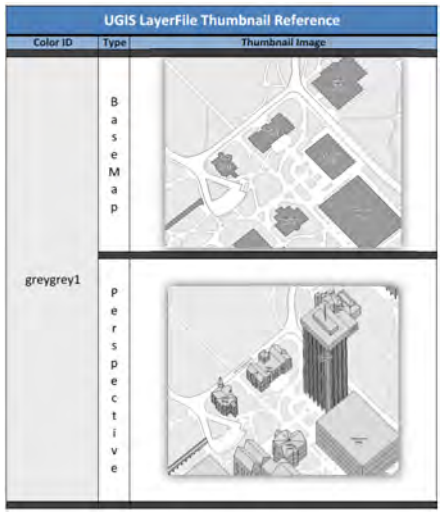
3. **Standardize**
   Color styles, templates, quality…

UGIS LayerFile Reference				
LayerFile ID	Building Color	Building RGB	Campus Color	Campus RGB
blackwhite1	white	255, 255, 255	white	255, 255, 255
bluegreen1	blue	26, 94, 129	green	163, 188, 150
bluegreen2	blue	0, 83, 141	green	180, 215, 158
greygreen1	grey	220, 220, 220	green	134, 156, 84
greygrey1	grey	156, 156, 156	grey	235, 235, 235
greygrey2	grey	104, 104, 104	grey	143, 143, 143
tangreen1	tan	255, 237, 209	green	228, 244, 223
AllUtilities1	N/A	N/A	N/A	N/A
ExtentIndicator1	N/A	N/A	white	255, 255, 255







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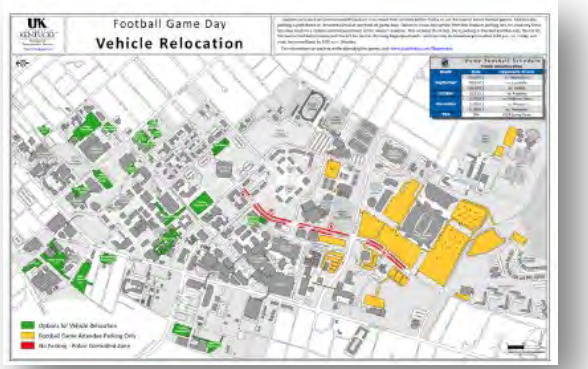
L_Decorative_BottomCollar_8.5x11



L_Planning_TopCollar_11x17

4Panel_Portrait_8.5x11_4

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Map Quality Standards

Purpose
To ensure balance between map development quality and efficiency

Quality Control
Items that pertain to ALL map products:

- MRF Usage
- Clear Information
- Client Satisfaction
- Template Deviations reviewed by the GIS Coordinator

High Priority Requests
If the required reviewers are not available and there is a deadline, handle by requesting a review from someone at the same level or above. Ror example, if the GIS Analyst is not available than the Coordinator can review. If the Cartographic Lead is not available, then the GIS Analyst can review.

Quality	High	Medium	Low
General Criteria	Publication Grade	Working/Planning Map	Working/Planning Map
Example Products	• Visitor Map • Brochures	• Work Order Zones • Parcel Map (for reference)	• Custodial Teams • Parcel/Utilities AOI (quick)
Minimum Reviews	1. PM 2. TA 3. Cartographic Lead 4. GIS Analyst -or- GIS Coordinator	1. PM 2. TA 3. Cartographic Lead	1. PM 2. Cartographic Lead
Comments		• Standard Map Request • Default Quality	• "15 Minute Map" • Must Use Existing Templates

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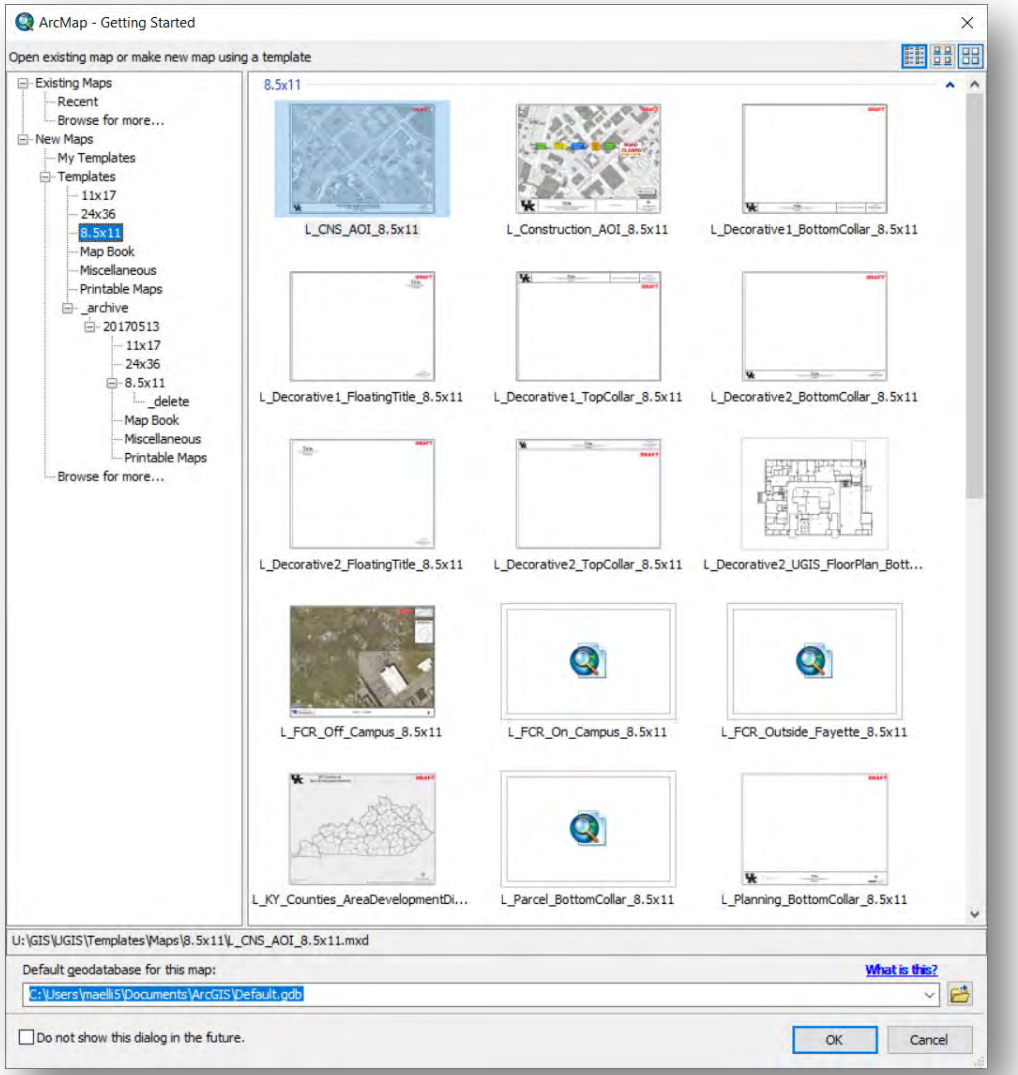
4. **Automate**
   Desktop application customization,
   PM Dashboard, web and map tools…



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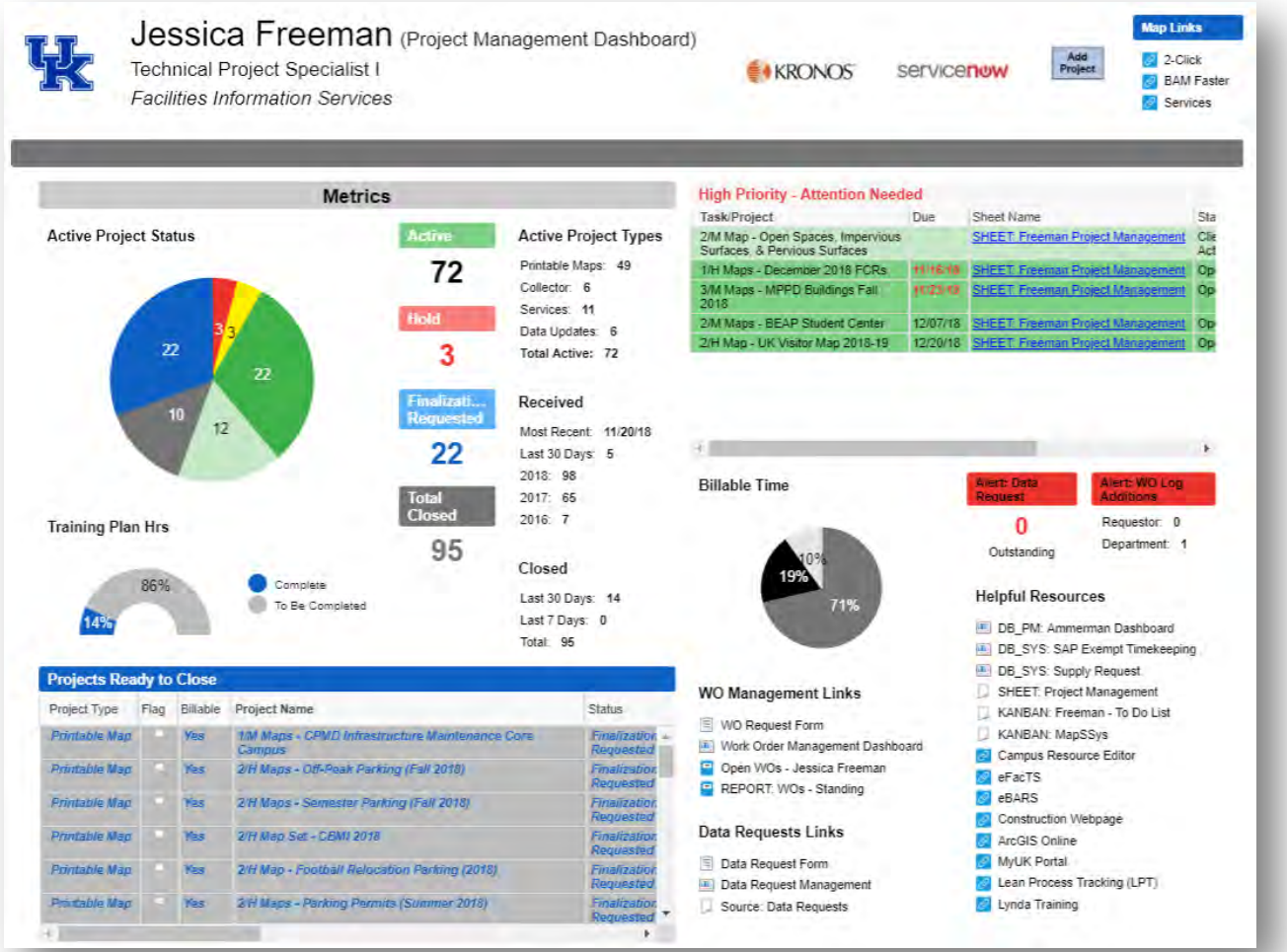

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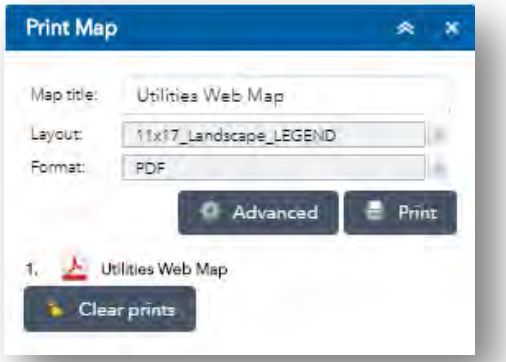


Floor Plan File Formats

0676-Bill Gatton Student Center

Floor Plan PDF	6MB
AutoCAD Drawing	30MB (Requires Authorization)
Square Footage Index	

Building - Level - Space — **Bill Gatton Student Center [0676]**

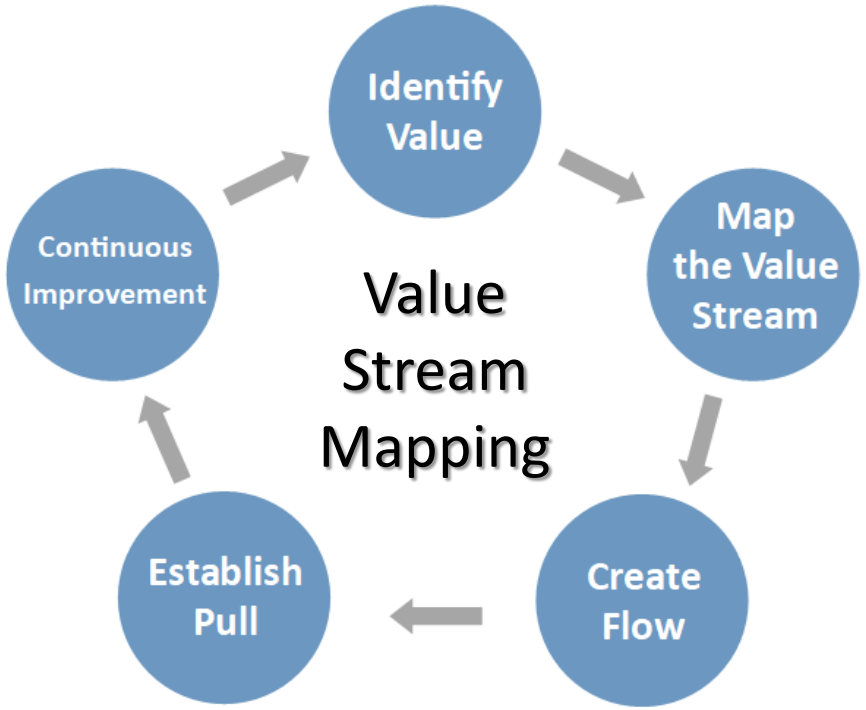
FunctionalLocation	Level	Label	NSF	Assignability
UK-0676-01-A0100A	01	A100A	1,737	Non-Assignable
UK-0676-01-A0100A1	01	A100A1	129	Non-Assignable
UK-0676-01-A0100B	01	A100B	3,284	Non-Assignable
UK-0676-01-A0100B1	01	A100B1	905	Non-Assignable
UK-0676-01-A0100C	01	A100C	2,486	Non-Assignable
UK-0676-01-A0100C1	01	A100C1	214	Non-Assignable
UK-0676-01-A0100F	01	A100F	1,271	Non-Assignable
UK-0676-01-A0100J1	01	A100J1	295	Non-Assignable
UK-0676-01-A0100K	01	A100K	2,815	Non-Assignable
UK-0676-01-A0100K1	01	A100K1	423	Non-Assignable
UK-0676-01-A0100L	01	A100L	628	Non-Assignable
UK-0676-01-A0110	01	A110	9,703	Assignable
UK-0676-01-A0110A	01	A110A	522	Assignable
UK-0676-01-A0110B	01	A110B	696	Assignable
UK-0676-01-A0110C	01	A110C	925	Assignable

Building | Level | Space | REFERENCE

APPA LEADERSHIP IN EDUCATIONAL FACILITIES

Lean – Key Strategies

- Requires Top-Down Support
- Prepare People for Change
- Introduce Lean Principles
- Small Cycles of Change
- Use “Lean Nuts and Bolts” as a Beacon
- Reward Effort
- Celebrate Achievements



Organization Management Strategy



- Information Services Area
- System Technologists
- System and Data Governance
- Operational Standards
- Multiple Funding Sources
- Customer Service Driven
- Facilities Processes Include Support From Information Services Area
- Empower Leadership

Organization Management Strategy

Facilities Information Services (FIS)

This org chart represents one recommendation of a facilities information services department structure. It is neither complete or inclusive of all position types or information areas required for successful FIM execution.

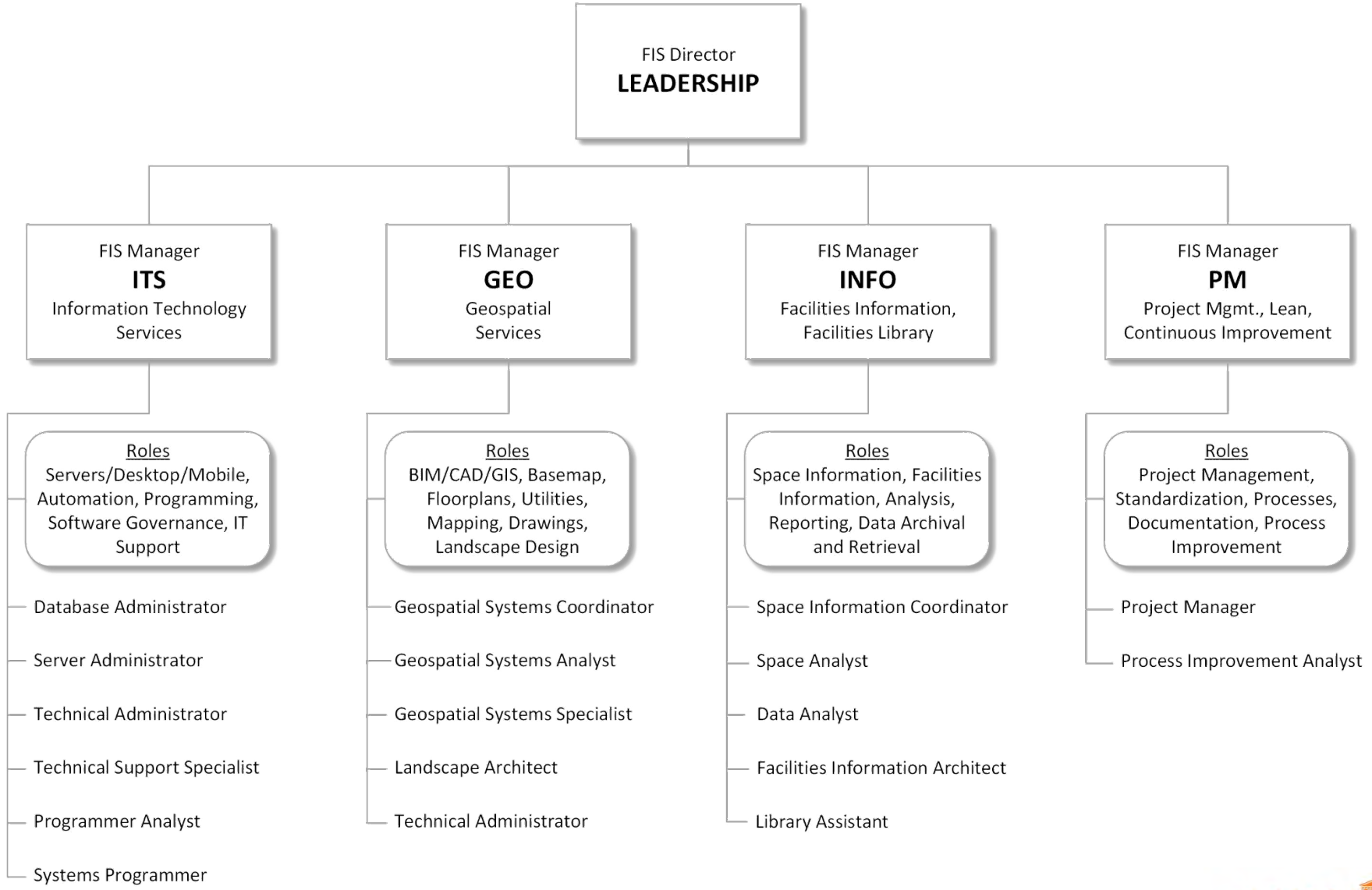


Image Credit: Developed in partnership between the University of Kentucky, Weber State University, and The Ohio State University

Achieving FIM Excellence: Conclusion

Digital Transformation & Smart Campus Design

Final Thoughts

Contributing Thought Leaders

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LEADERSHIP IN EDUCATIONAL FACILITIES

Achieving FIM – Digital Transformation & Smart Campus Design

80% of people who are in a digital transformation process say improving processes that expedite changes is their top initiative.
63% say that culture is the number one barrier.

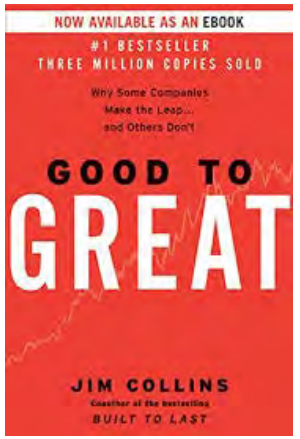
- Results from
The 2014 State of Digital Transformation Survey

2014 Digital Transformation Survey: https://www.slideshare.net/briansolis/infographicthe2014stateofdigitaltransformationaltimetergroup-141020120910conversiongate02-42437176

APPA LEADERSHIP IN EDUCATIONAL FACILITIES

Final Thoughts

- Marathon Not a Sprint
- 90% Planning | 10% Implementation
- Apply *Good to Great* Concepts
- Put Your Best People On Your Biggest Opportunities
- Start Small
- Partner With IT
- Be a Champion



"The enemy of great is good because good is "good enough."

- Jim Collins, *Good to Great*

Contributing Thought Leaders

Organizations
Campus FM Technology Association

IWMS Solution Providers
FM:Systems
Plannon
RSC (Archibus partner)

BIM Consultants
CAD Microsystems
Messer Construction

Universities
The Ohio State University
University of Kentucky
University of Colorado Boulder
University of Massachusetts Lowell
Weber State University
Western Michigan University

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Fort Worth, TX | January 2019

Technologies and Strategies to Achieve Facility Information Management (FIM) Excellence

Michelle Ellington, GISP
FIS Manager
Facilities Information Services
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CFTA Campus FM Technology Association
Connecting Leaders in Campus Technology

PRESIDENT
Since 2015