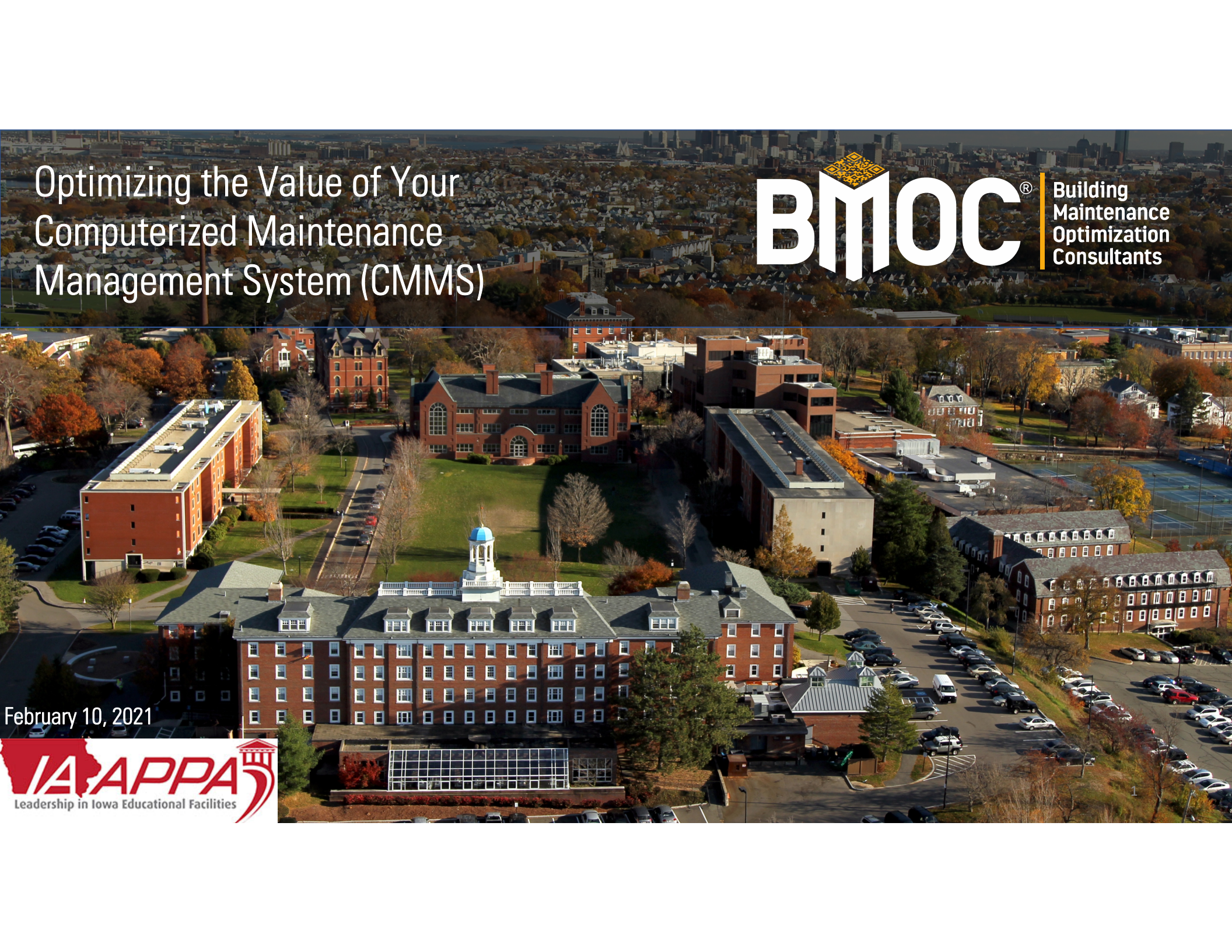


Optimizing the Value of Your Computerized Maintenance Management System (CMMS)



February 10, 2021



PRESENTER



Jonathan Thomas, PE, CEM, CRL

President

jonathant@buildingmoc.com | 770.313.1858



- Facilities asset management programmer since 1998
- Extensive experience in asset inventory, PM programming, FCA, capital planning, FM resource estimation, & benchmarking
- Has served higher education, hospital, & government institutions across the country

PRESENTER



Doug Litwiller, PE, CEM

Business Development Manager

douglaspl@buildingmoc.com | 515.233.4400



- Facilities management professional since 1981
- Extensive experience in facilities management, fault detection diagnostics (FDD) program management, and energy management
- Has served higher education, healthcare, and investor-owned utilities

WORKFORCE



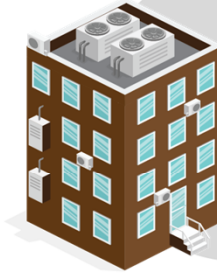
Plumbers,
Electricians,
HVAC Technicians,
Generalists,
Mechanics

MANAGEMENT



Planners,
Schedulers,
Shop Foremen,
up to Administrators

ASSETS



Boilers,
Chillers,
Cooling Towers

CMMS



Work Order,
Maintenance
Management
Software

OPTIMIZATION = COST \$AVINGS

FOR PEAK FM PERFORMANCE

AGENDA


1. Asset Management Introduction
2. CMMS Introduction
3. Asset Management Program
 - i. Establishment
 - ii. Maintenance
4. Summary
5. Q&A


ASSET MANAGEMENT

INTERNATIONAL STANDARD	ISO 55000
<small>First edition 2014-01-15 Corrected version 2014-03-15</small>	
Asset management — Overview, principles and terminology	

INTERNATIONAL STANDARD	ISO 55001
<small>First edition 2014-01-15</small>	
Asset management — Management systems — Requirements	

INTERNATIONAL STANDARD	ISO 55002
<small>Second edition 2010-11</small>	
Asset management — Management systems — Guidelines for the application of ISO 55001	

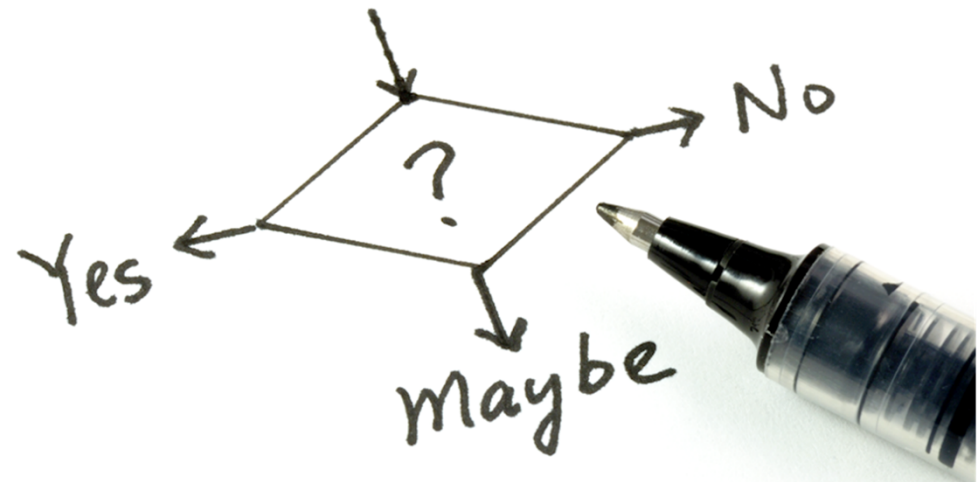

APPA 1000-1 Total Cost of Ownership for Facilities Asset Management (TCO) – Part 1: Key Principles


APPA 1000-2 Total Cost of Ownership for Facilities Asset Management (TCO) – Part 2: Implementation and Data Elements

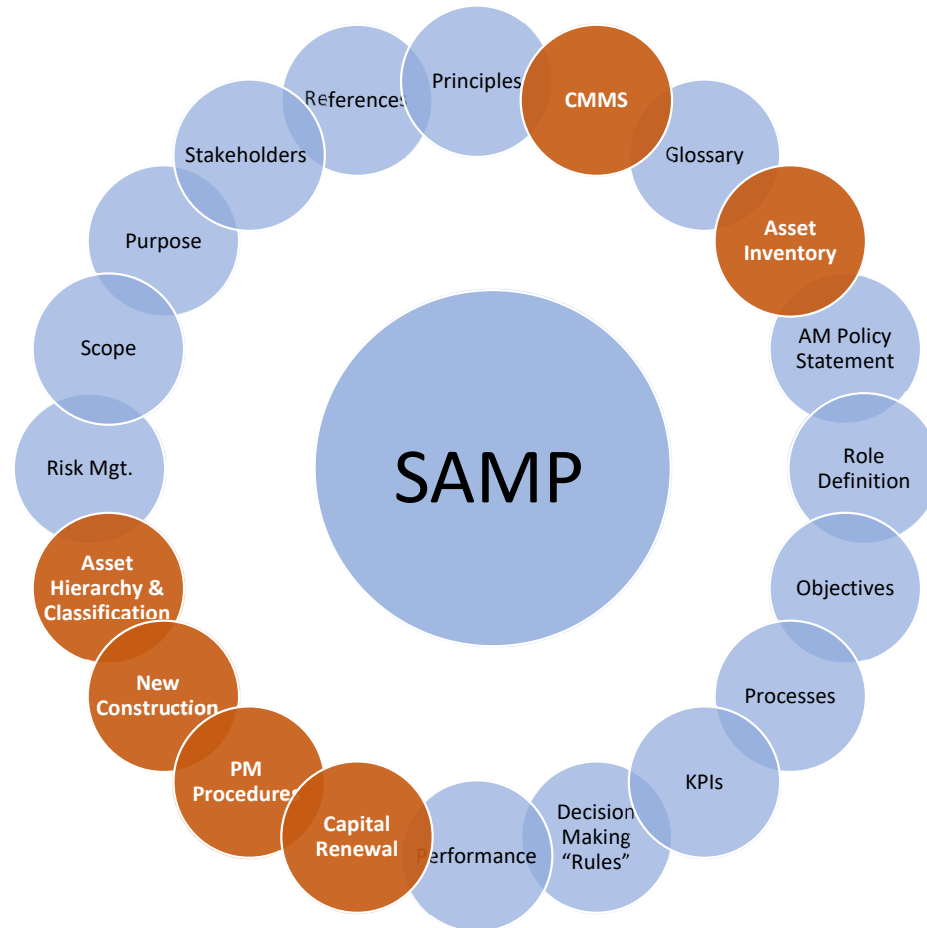
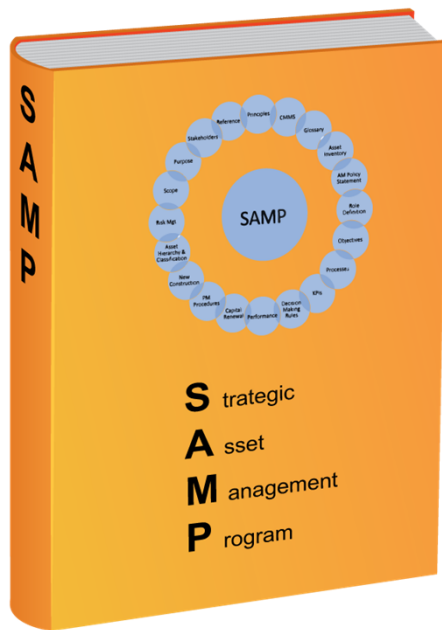
ASSET MANAGEMENT

Enables an organization to examine the need for, and performance of, assets and asset systems at different levels. Additionally, it enables the application of analytical approaches towards managing an asset over the different stages of its life cycle (which can start with the conception of the need for the asset, through to its disposal, and includes the managing of any potential post disposal liabilities).

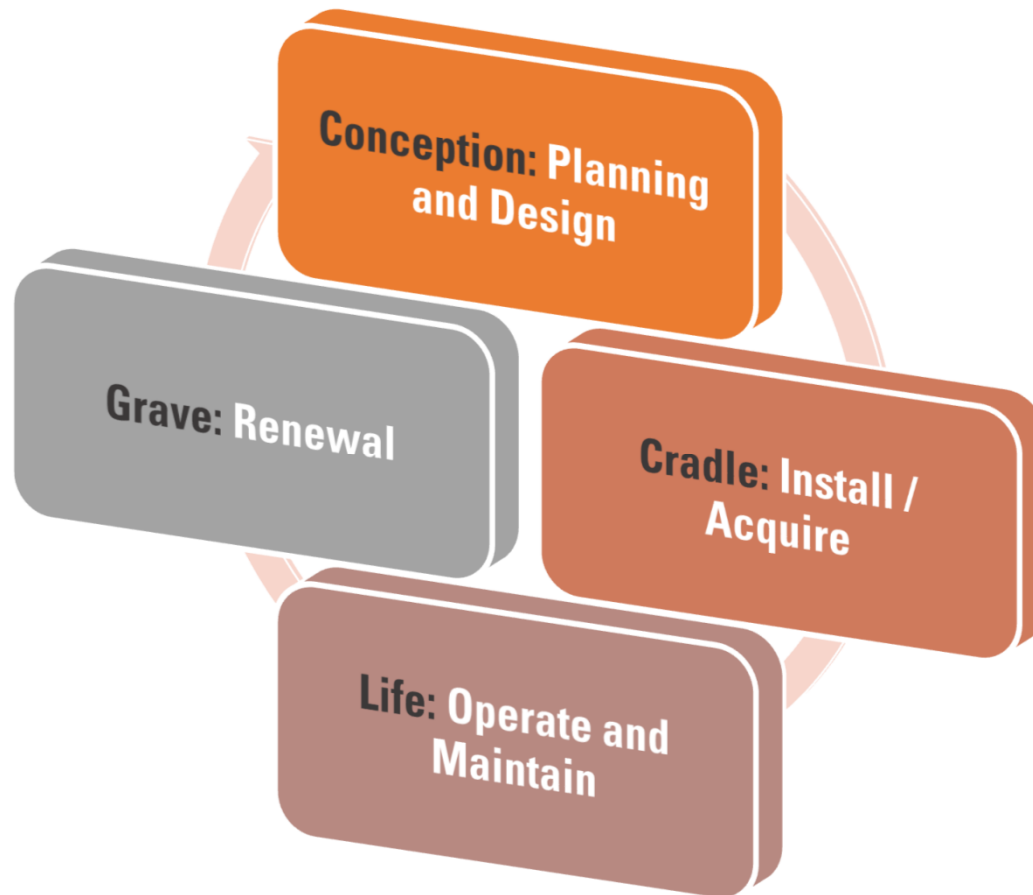
Source: ISO 55000, Section 2.4.1



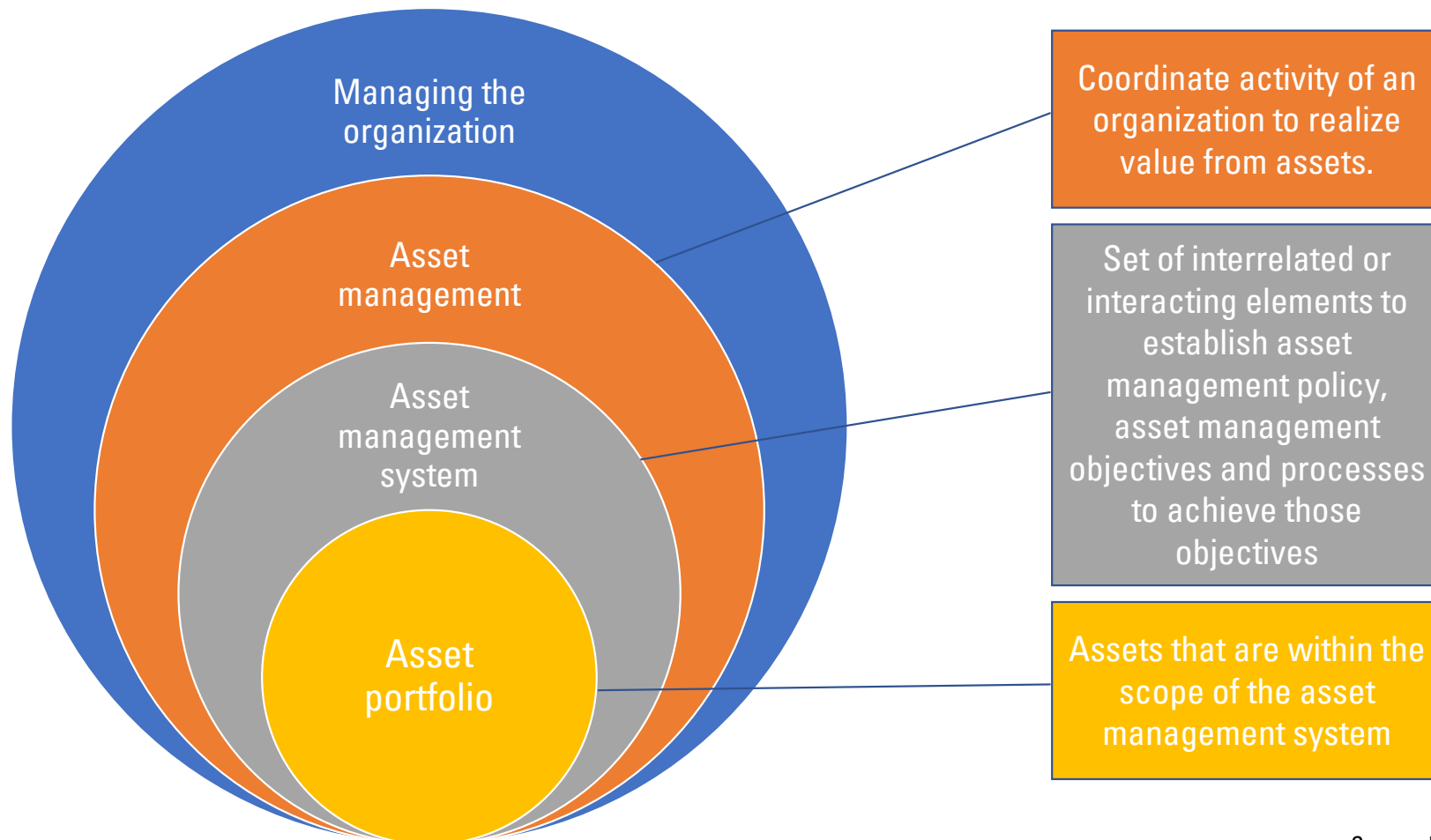
ASSET MANAGEMENT



ASSET MANAGEMENT



CMMS & ASSET MANAGEMENT



Source: ISO 55000, Section 2.4.3

System Context

CMMS

Computerized Maintenance Management System

- Can be a stand-alone software
- Or it can be a module in the following:

ERP

Enterprise Resource Planning

EAMS

Enterprise Asset Management System

IWMS

Integrated Workplace Management System



CMMS Developer Examples

AiM by AssetWorks

Corrigo

eMaint

FacilityDude by Dude Solutions

FAMIS by Accruent

Maximo by IBM

Oracle

Planon

SAP / Plant Maintenance

Tririga by IBM

UpKeep

WebTMA by TMA Systems

CMMS

COMMON CMMS FUNCTIONS

- Asset Tracking
- Parts Inventory
- Service Request
- Work Orders (PM & CM)
- Purchase Orders
- Vendors & Customers
- Project Tracking
- Asset database of record



STATE OF CMMS

Sound Familiar?

"Our preventive maintenance work order completion rate is acceptable; but I don't know if we're scheduling the right work or if the work is actually getting done."

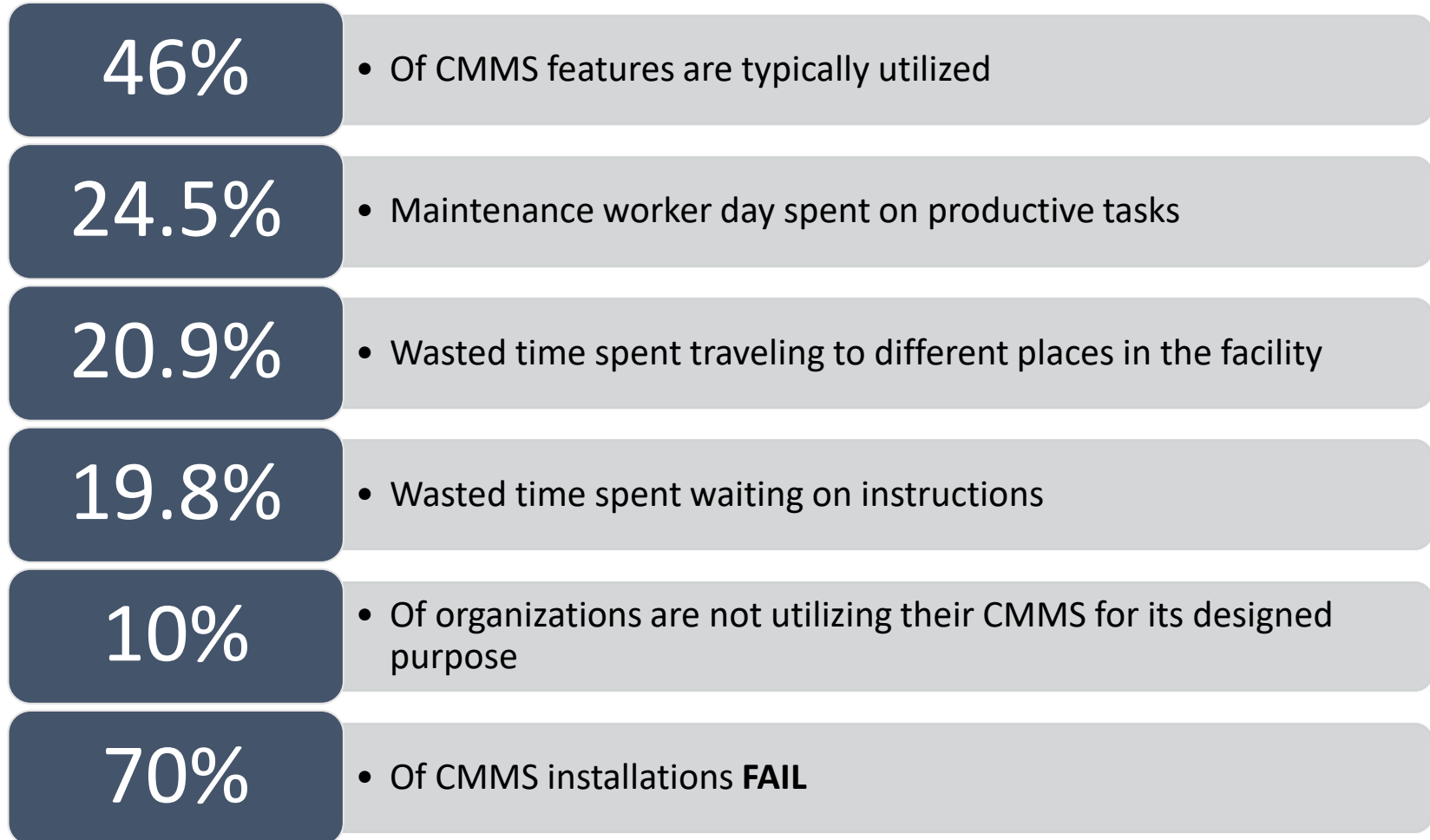
"We plan for 1,400 hours of wrench time per FTE year, but I perceive that I am getting about 600."

"We don't use our parts inventory module... yet."

"We think it would be great to leverage this CMMS feature / workflow, but IT says it can't be done."

"Our techs have been working on improving the asset inventory for years."

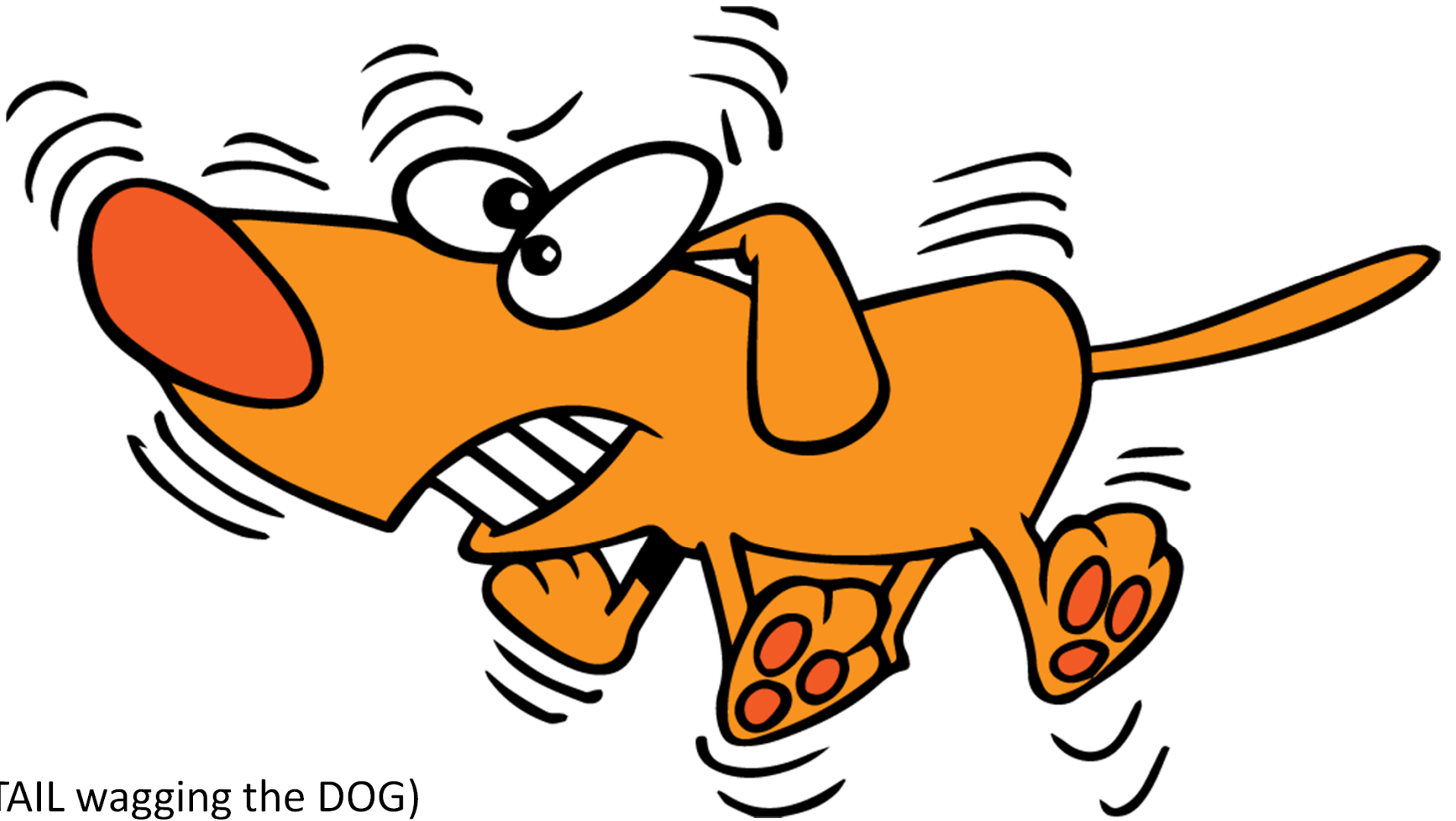
STATE OF CMMS



STATE OF CMMS

- Distrust in reporting at the management level
- Little confidence in effectiveness of technical staff
- General distrust and disinterest in CMMS
- Data without strategic direction
- Stalled out and incomplete asset inventory
- Adversarial relationship between operations and IT
- Over-reliance on CMMS vendor for guidance on content





(TAIL wagging the DOG)



STATE OF CMMS

Solutions

- ✓ Don't take CMMS **content** for granted
- ✓ Realize your **Asset Management Program**
- ✓ **Optimize** your CMMS prior to implementing or deciding to change applications
- ✓ Convert your **CMMS deficiencies** into **added value**

ASSET MANAGEMENT PROGRAMMING

Establishment

1. Data Schema
2. Asset Data Collection
3. Preventive Maintenance Programming



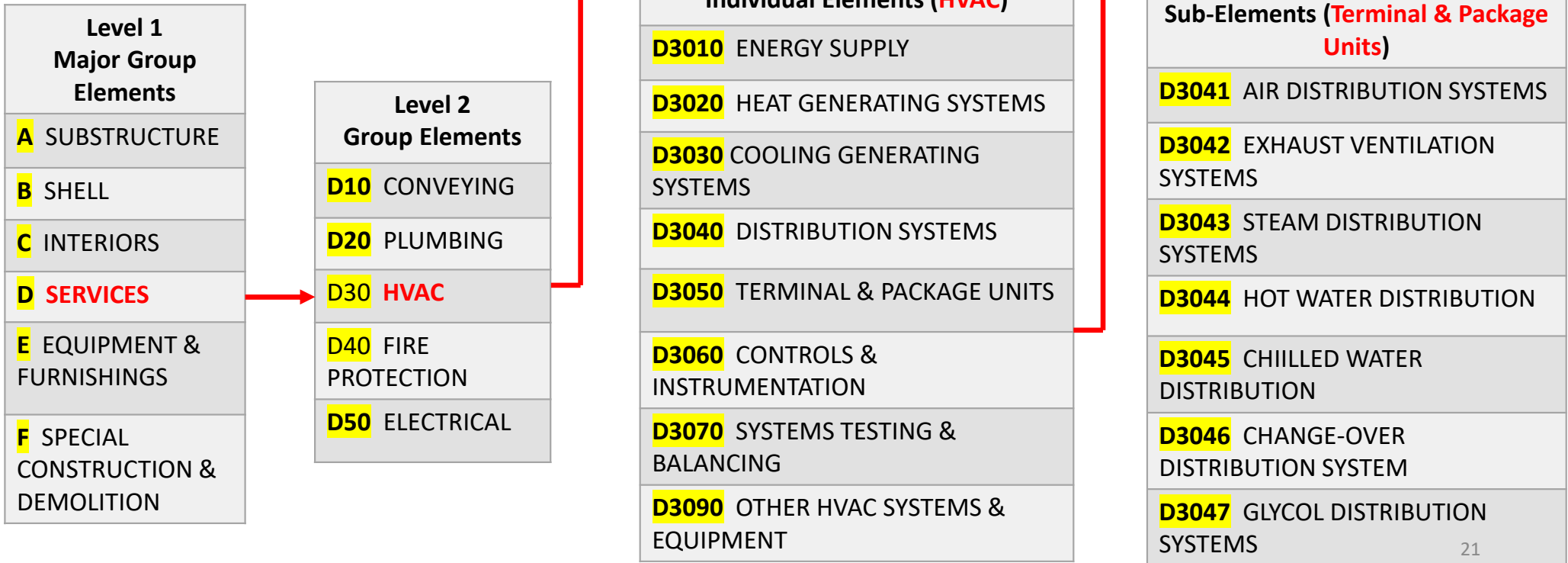
ASSET MANAGEMENT PROGRAMMING



ASSET MANAGEMENT PROGRAMMING

Data Schema

1. Taxonomy



ASSET MANAGEMENT PROGRAMMING

Data Schema:

2. Hierarchy

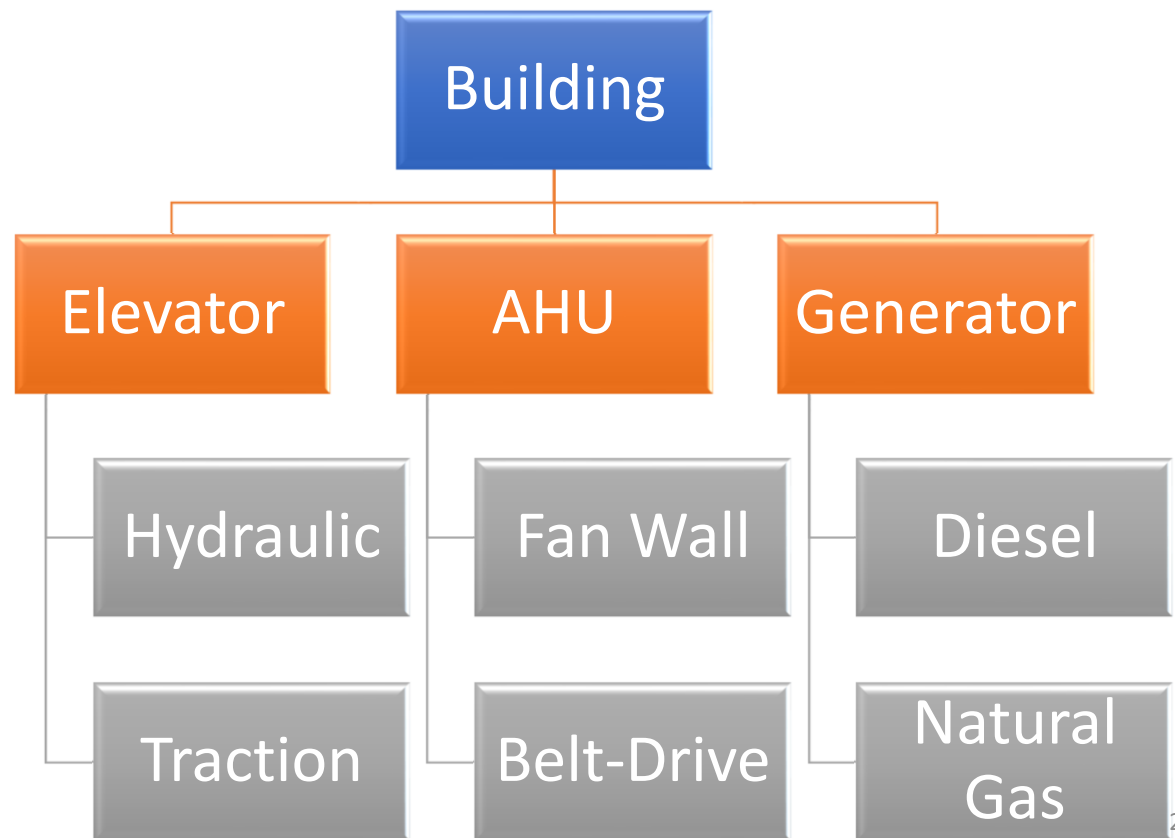
Building/Property/Location:

Asset Group/Class/Type:

(Recommended to be UDF-dependent)

Asset Record Descriptors:

(Tie to PM program when applicable)



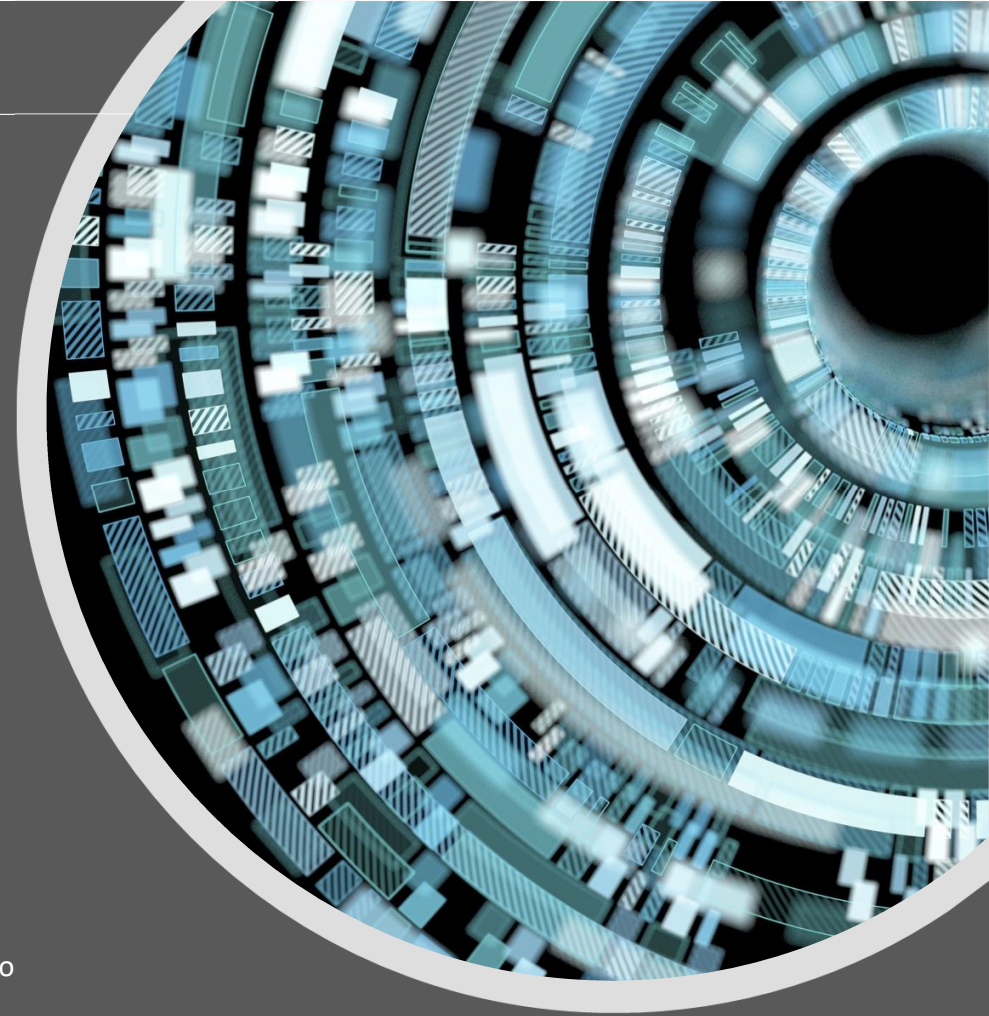
ASSET MANAGEMENT PROGRAMMING

Asset Data Schema:

3. User-Defined Fields (UDF)*

- Basic Fields: Make, Model, Serial, Location
- Extended Field for Operational Support:
 - Capacity (MBH, CFM, HP, Tons)
 - Power supply (Voltage, Phase, Amps)
 - Motor data (M/M/S, HP, Voltage)
 - Consumable Parts
- Advanced Fields for Renewal:
 - Date Basis
 - Expected Useful Life
 - Renewal Cost
- Only include data that can be captured across your entire portfolio

*Some CMMS applications may have programmed fields for certain data; learn what these are and use them accordingly.



ASSET MANAGEMENT PROGRAMMING



The House of CMMS
WITHOUT the Asset Database Foundation!

ASSET MANAGEMENT PROGRAMMING

Asset Inventory & Data Collection:

- Not easy or fast
- Analyze available construction and form a plan prior to working
- Data is portable now; use systematic photography as your data collection method
- Enter data from an office using trained but low-opportunity cost staff
- Load all collected data in the right place in your CMMS
- Assets should be physically labeled when applicable.



ASSET MANAGEMENT PROGRAMMING

Barcode / QR Code Labeling

- Needed for location in field even if CMMS is GIS-based
- Recommend **simple serialized** Asset Identification
 - fixed digits
 - next number up
- Recommend conversion to **simple serialized** from **“smart” numbering**
 - Concatenation of building number, asset type, and sequence
 - Example: B001-BLR-003
- Avoid using self-printing systems
- Use a durable label and avoid label maintenance



ASSET MANAGEMENT PROGRAMMING

Preventive Maintenance Procedures:

Includes the following maintenance activities:

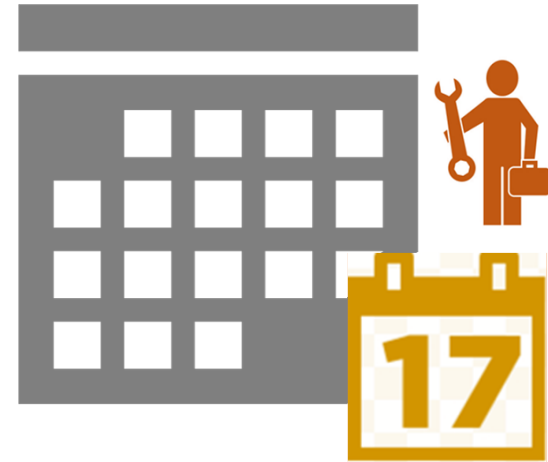
- Routine
- Preventive
- Predictive
- Compliance

PM Benefits:

- Ensure uptime
- Improve customer service
- Efficiently plan & schedule staff
- Preserve energy efficiency
- Extend asset life cycles
- Reduce costly unplanned maintenance

Procedures should be characterized by:

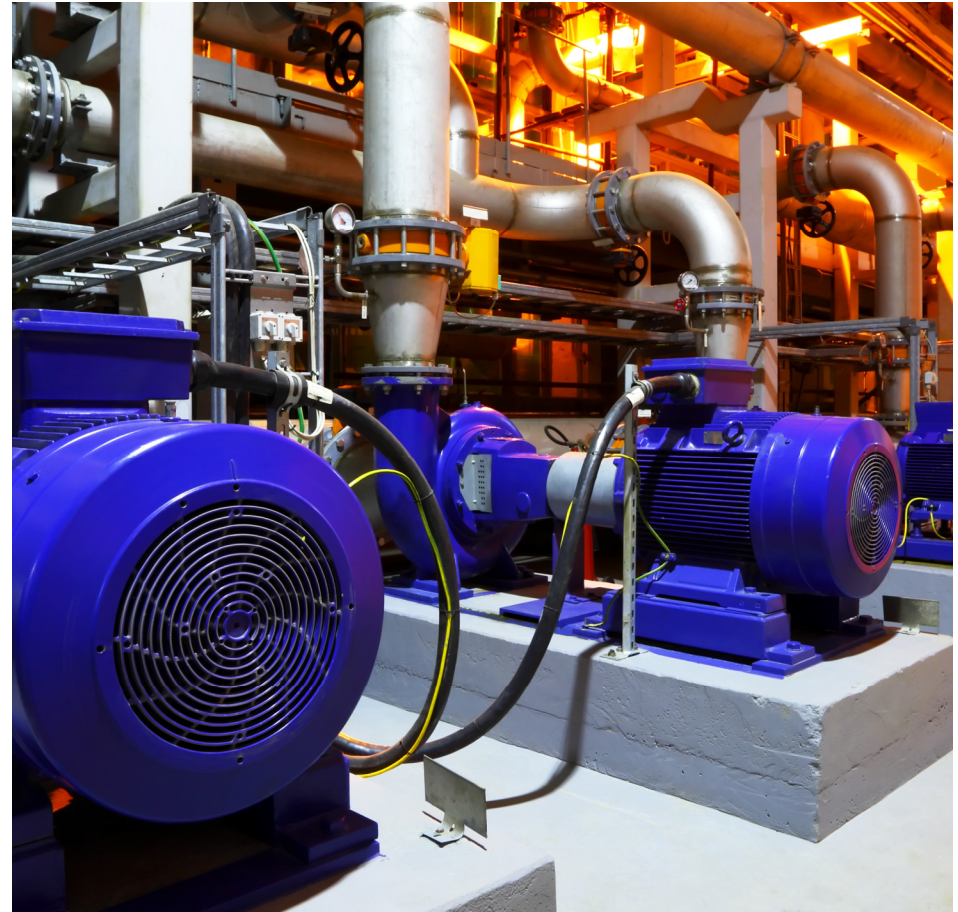
- Technical accuracy
- Scalability across your portfolio



ASSET MANAGEMENT PROGRAMMING

Maintenance

1. Work Order Closeout
2. Staff Engagement
3. Asset Management Staffing
4. New Construction Asset Investiture



ASSET MANAGEMENT PROGRAMMING

1. Work Order Closeout:

ALL work orders closed out with:

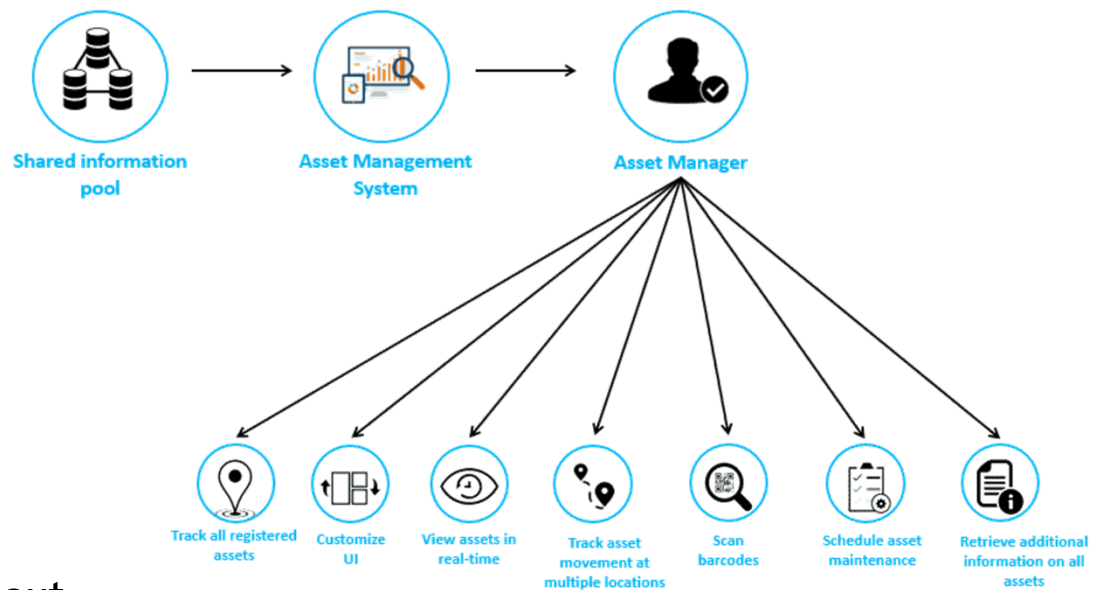
- Internal labor
- Contractor labor
- Parts & materials
- Asset affected (lowest level of hierarchy)

Corrective work order notes:

- As-found condition
- Problem / Remedy
- Retroactive asset appendage

Use your mobile applications for WO closeout

- Train your staff on utilization of software
- Train your staff on using tablets in the field



ASSET MANAGEMENT PROGRAMMING

2. Staff Engagement:

- Make the CMMS a **conduit to O&M Manuals and Construction Diagrams**
- Prioritize through **maintenance histories**
- Support accurate asset location through **good information and photos**
- Allow for **participation in reliability-centered maintenance** strategies after data has been accumulated



ASSET MANAGEMENT PROGRAMMING

3. Asset Management Staffing:



Ongoing asset database improvements & adjustments



KPIs should be established for work order closeout compliance.



Establish work order quality assurance treatments.



Incentivize staff to closeout work orders per requirements.



ASSET MANAGEMENT PROGRAMMING

4. New Construction Asset Investiture:

- **Understanding of asset data schema in advance**
- Strategic consulting
- Preparation of CMMS for new data
- **First-hand data collection**
- **Data loaded into CMMS in context with the rest of the campus**
- Collection of consumable parts information
- Photos loaded into CMMS
- Capital planning projections included
- PM program developed and loaded into CMMS
- **Completed in advance of building turnover**



ASSET MANAGEMENT PROGRAMMING

Advanced Considerations:

Lock out/tag out procedures

Planning, scheduling and shutdown considerations

Warranty management

Reliability-centered maintenance processes

Condition-based maintenance work management (IIOT & FDD)

Asset failure mode selections

Disaster recovery modes of operation

Make informed repair / replace decisions



Recognize, define,
and improve your
Asset
Management
Program

Identify ways to
get **more value**
out of your
CMMS

Don't take **CMMS**
content for
granted

Engage on a
CMMS
optimization
project

Understand that
asset inventory
work is not fast or
easy

Enable the **CMMS**
to be a **source** for
critical technical
information

Make work order
closeout a
strategic priority

Establish an **Asset**
Management
Team



Q+A

& next steps



Real content. Real planning. Real Results.

Building Maintenance Optimization Consultants Inc.
2321 Fourth Street • Suite 203 • Tucker, GA 30084
(770) 313.1858

buildingmoc.com

ADDITIONAL RESOURCES

Reliabilityweb.com	https://reliabilityweb.com/
Association of Asset Management Professionals	https://www.maintenance.org/
Institute of Asset Management	https://theiam.org/
Life Cycle Engineering	https://www.lce.com/
Reliable Plant	https://www.reliableplant.com/
ReliabilityX	https://reliabilityx.com/contact/
ASTM Uniformat II	https://www.uniformat.com/index.php/unifrm-t-ii/past-site-articles/99-background-on-uniformat-ii-the-astm-e1557-building-standard
CMMS Platform List	https://www.capterra.com/cmms-software/
APPA Total Cost of Ownership Standard	https://www.appa.org/appa-total-cost-of-ownership-tco-part-1-key-principles/
ISO 55000 Standards	https://webstore.ansi.org/Standards/ISO/ISO550002014?gclid=Cj0KCQiA_rfvBRCPARIsANIV66N9jYx1-NnmJthBx5Q_3cagI2JNPG9bpH3t9WujAGUTf0aJIDiLUTgaAubSEALw_wcB
University of Tennessee Reliability and Maintainability Center	https://rmc.utk.edu/

ADDITIONAL RESOURCES



CONTACT



Jonathan Thomas, PE, CEM, CRL

President

jonathant@buildingmoc.com | 770.313.1858



Doug Litwiller, PE, CEM

Business Development Manager

douglaspl@buildingmoc.com | 515.233.4400