ICAMP 2.0
UC’s Integrated Capital Asset Management Program

ICAMP Overview

February, 2021

Building tomorrow’s financially sustainable capital asset portfolio starts today
Why ICAMP?

“Apples to apples” across UC

- Standardize and quantify UC’s deferred maintenance (DM) backlog ($)
- Build credible and justifiable strategies for addressing DM
- Move towards a financially stable portfolio

We need to be able to compare ‘apples-to-apples’ across our portfolio”
ICAMP 2.0
UC’s Integrated Capital Asset Management Program

Optimizing Facility Lifecycle Management

ICAMP’s integrated workplace management and decision support system is helping UC manage its capital asset portfolio, address deferred maintenance and optimize its portfolio’s total cost of ownership

Integrated Workplace
A real property asset management platform
Supports best practices across the asset management lifecycle, facility condition assessments (FCA), and building and space management
Capture, manage, and report standardized portfolio data

Performance
Common performance management dashboard
Establish benchmarks, set targets and compare actual performance across the system
Continuously drive portfolio improvement

Decision Support
Integrated views of the portfolio allow users to turn data into insights and actionable plans
Supports data-driven decision making to maximize value
Develop justifiable capital and operating budgets

Optimization
Manage portfolio risk
Optimize capital allocation, return on investment (ROI) and total cost of ownership (TCO)
Drive sustainable portfolio strategies
Program Building Blocks
The Enterprise Asset Management Platform

- Allows for a portfolio-wide asset inventory collection
- Manage and track asset deficiencies and cost out deferred maintenance backlog
- Integrates facility lifecycle management best practices
- Standardized Facility Condition Assessment (FCA) program across UC

TRIRIGA (IBM)
The UC Asset Catalog

RSMeans Construction Data
RSMeans Facilities Maintenance & Repair Cost Data

Standard Uniformat Classification Framework
Facility and Infrastructure Assets
Unit of Measure
Lifecycle Activities and Costs
Lifecycle Frequency of Activities

UC Asset Catalog

Drives “apples-to-apples” across its asset portfolio
The Facility Condition Assessment Process

1. Inspect Asset
   - Standard process for inspecting UC’s portfolio of real property assets

2. Inventory
   - Standard process for managing and inventorying UC’s assets
   - BSC → BSI

3. Log Deficiency Opportunity
   - Standard process for evaluating, identifying and tracking asset deficiencies
The Inspectors

Inspectors use their knowledge and experience to inspect real property assets

Real Property
- Permanently fixed elements that support the building or structure

Facilities, Systems & Components

Visual & Non-Invasive
- Inspect the readily accessible elements of the facility and assets

Architectural

Electrical

Mechanical
Managing Risk

Real Property Risk
The overall risk a real property asset introduces to a facility, its mission and the capital portfolio

Quantifying Risk
Two dimensions of risk, “Consequence of Failure” and “Likelihood of Failure” are rated to drive a total real property risk score

Consequence of Failure
Quantify the consequence an asset failure will have on a facility and the mission it serves
- Mission Impact Rating
- Mission Risk Rating
- Regulatory Rating

Likelihood of Failure
Quantify how likely an asset is to fail and when
- Urgency Rating
- Deterioration Rating
- Condition Rating
- Rigor of Use Rating

Scoring & Prioritization
Each rating is scored, all ratings are totaled, and total scores can be used to prioritize opportunities
Inventory Assets

Initiate FCA
- Inspection Request
- FCA Project
- FCA Tasks

Create Asset Inventory

UC Asset Catalog

Quantify Asset
- Unit of Measure
- Total Quantity

Establish Asset Lifecycle
- Life Expectancy
- In-Service Date
- Remaining Life

Score Risk
- Assign Consequence of Failure
- Risk Ratings

Associate
- Associate Asset
- Associate Location

Take a Pic
When is an Asset Deficient?

Inspectors use their knowledge and experience to identify asset deficiencies.

- **Exceeds Service Life**
  - The asset has exceeded its standard useful life.

- **No Longer Reliable**
  - The asset is no longer dependable and cannot be expected to produce the same results on an ongoing basis.

- **Not Functioning as Designed**
  - The asset is no longer functioning to the level it was designed to.

- **Deferred Maintenance**
  - Asset repairs and replacements or system renewal that was not addressed when it should have been or were postponed to a future date.

Deficient
ICAMP Outcomes

- **A Standardized Asset Inventory and Condition Assessment** of the major components and building systems across the UC portfolio
- Cost out and track **Deferred Maintenance (DM) Backlog**; develop DM buydown strategy
- Cost out and track **Asset Replacements** and **System Renewal** needs which, when funded, prevent future DM accumulation
- Use **Real Property Risk** scoring to drive investment towards the reduction of mission critical risk; and help balance funding demands
ICAMP Decision Support
Leveraging ICAMP Data Today and Tomorrow

Integrate
- Blend multiple data sets and points to provide an expanded and integrated view of the portfolio

Manage and Analyze
- Provide users with interactive views of the data so they can manage their portfolio as well as slice and dice multiple data points to discover new insights and begin to consider new courses of action...

Planning and Decision Support
- Establish an interactive decision support framework to allow users to create their own scenarios – setting filters and conditions across variable dimensions (time, funding capacity...)
- Develop a capital investment and allocation modeling framework

Performance
- Build a common performance management dashboard and establish benchmarks, set targets and compare actual performance across the system to continuously drive portfolio improvement
Integrating Portfolio Data

Mission & Strategic Priorities
- Lifecycle Needs
- Seismic Retrofits
- Capital Improvements
- New Construction
- Renovations
- Upgrades (Technology, Capacity, Resiliency...)
- Energy & Sustainability Improvements

Funding Sources & Capacity
- LRDP
- Space Plan
- Master Academic Plan
- EFA
- Capital Planning
- Initiatives

Opportunities

Operations
- Operations & Maintenance
- FCA, FCQA
- Codes
- Hazards

Planning

- Deferred Maintenance (Buildings & Infrastructure)
- Replacements & Renewal
- Fire, Life, Safety Updates
- Accessibility Updates
- Code Updates
- Space Quality & Programmatic Improvements
- Demolition
- Seismic Retrofits
Modernizing UC’s Data Management and Analysis

ICAMP Decision Support

University of California

Campuses

Facilities

Building Systems

Assets

Deferred Maintenance

Risk Prioritization

Action Timeframe

Integrated decision support

- Incorporate UC priorities (e.g. seismic, deferred maintenance, growth)
- Navigate portfolio horizontally or vertically
- Improve capital planning outcomes
- Enhance operational execution
- Develop holistic data-driven strategies
Drive Improvement with Performance Management

Dashboards
Monitor Performance
- Investments
- Operations
- Project Delivery
- Space

Metrics
Measure Performance
- Use KPIs and Metrics to manage portfolio

Targets
Evaluate Performance
- Actuals vs. Benchmarks
- Actuals vs Targets

Initiatives
Improve Performance
- Identify areas for improvement to drive initiatives

Benchmarks
Determine Standard
- Industry
- UC System
- Campus

Continuous Improvement
Blend multiple “raw data” sources

Use filters and conditions to slice and dice data

Set variable dimensions (time, funding...) to drive scenarios

Use portfolio scoring and prioritization to help order and refine outputs

Turn raw data into actionable plans

Enhance Planning and Decision Support
Integrate Capital Investment Planning Model Framework

Integrate Capital & Lifecycle Needs List
- Capital Plan
- Master Plan
- LRDP
- Space
- FCA (FCQA)
- Assess & Verify
- Lifecycle Needs

Create Portfolio Segments
- Systemwide Hierarchy
- Portfolio Segments
- Program Segments
- Buildings
- Systems/Assets
- Spaces

Prioritize List of Needs by Segment
- Strategic Priorities
- Mission & Program
- Risk Ranking
- Building & Asset Importance

Establish Funding Capacity
- Funding Management
- Funding Sources
- Funding Needs & Capacity
- Funding Scenarios
- Analysis and Planning

Project Action Plan
- Composite portfolio score to rank all projects
- Includes project cost and action timeframes

Execute & Monitor Performance
- Action Plan
- Program Management
- Performance Management
- Operate, evaluate, refine and improve

Integrate Composite portfolio score to rank all projects, includes project cost and action timeframes, Action Plan, Program Management, Performance Management, Operate, evaluate, refine and improve.
**Integrate Capital Investment Planning Model Framework**

**Scoring & Prioritization**
- **Portfolio Category**
  - Segment Mission, Program Importance
- **Building Importance**
  - Functional Value: FCI & FQI
  - Financial Value: Net Asset Value
- **Building Types**
- **System & Asset Importance**
- **Opportunity Prioritization:**
  - Strategic Priorities
  - Program Priorities
  - Risk (Red, Yellow, Green)
  - Action Timeframe

**Portfolio Hierarchy and Segmentation**

**Capital Investment Plan Output**

Ranked capital investment projects with costs and action timeframe
The UC Catalog

Unismat Classification, Assets & Costs
Uniformat II Classification Framework

Uniformat II is an industry standard format for classifying building elements and site work.

Level 1 (L1)
Major Group Elements
The first level of the classification hierarchy contains “Major Group Elements”

<table>
<thead>
<tr>
<th>Level 1 (L1)</th>
<th>Uniformat II Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Substructure</td>
<td></td>
</tr>
<tr>
<td>B: Shell</td>
<td></td>
</tr>
<tr>
<td>C: Interiors</td>
<td></td>
</tr>
<tr>
<td>D: Services</td>
<td></td>
</tr>
<tr>
<td>E: Equipment &amp; Furnishings</td>
<td></td>
</tr>
<tr>
<td>F: Special Construction &amp; Demolition</td>
<td></td>
</tr>
<tr>
<td>G: Site Work</td>
<td></td>
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</tbody>
</table>
## UC’s Five-Level Asset Classification Framework

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>D: Services</td>
</tr>
<tr>
<td>Level 2</td>
<td>D30: HVAC</td>
</tr>
<tr>
<td>Level 3</td>
<td>D3020: Heat Generating Systems</td>
</tr>
<tr>
<td>Level 4</td>
<td>D3023180: Boiler Gas</td>
</tr>
<tr>
<td>Level 5</td>
<td>D30231801060: Boiler, gas, 250 MBH</td>
</tr>
</tbody>
</table>
## UC’s Real Property Asset Catalog (Levels 1-3)

### A: Substructure
- **A10**-Foundations
- **A1033**-Slab on Grade

### B: Shell
- **B10**-Superstructure
- **B1013**-Floor Construction
- **B20**-Exterior Enclosure
- **B2013**-Exterior Walls
- **B2023**-Exterior Windows
- **B2033**-Exterior Doors
- **B30**-Roofing
- **B3013**-Roof Covering
- **B3023**-Roof Opening

### C: Interiors
- **C10**-Interior Construction
- **C1013**-Partitions
- **C1023**-Interior Doors
- **C1033**-Fittings
- **C20**-Stairs
- **C2013**-Stair Construction
- **C2023**-Stair Finishes
- **C30**-Interior Finishes
- **C3013**-Wall Finishes
- **C3023**-Floor Finishes
- **C3033**-Ceiling Finishes

### D: Services
- **D10**-Conveying
- **D1013**-Elevators & Lifts
- **D20**-Plumbing
- **D2013**-Plumbing Fixtures
- **D2023**-Dom. Water Dist.
- **D2033**-Sanitary Waste
- **D2043**-Rain Water Drainage
- **D2093**-Other Plumb. System
- **D30**-HVAC
- **D3013**-Energy Supply
- **D3023**-Heat Gen. Systems
- **D3033**-Cooling Gen. System
- **D3043**-Distribution Systems
- **D3053**-Terminal & Pkg. Units
- **D40**-Fire Protection
- **D4013**-Sprinklers
- **D4093**-Extinguishing System
- **D50**-Electrical
- **D5013**-Elect. Service & Dist.
- **D5023**-Light. & Branch Wiring
- **D5033**-Comm. & Security
- **D5093**-Other Elect. Systems

### E: Equip. & Furnish.
- **E10**-Equipment
- **E1013**-Institutional Equip.
- **E1033**-Vehicular Equipment
- **E1093**-Other Equipment

### G: Site Work
- **G10**-Site Preparation
- **G1013**-Site Demo. & Relocations
- **G20**-Site Improvements
- **G2023**-Parking Lots
- **G2033**-Pedestrian Paving
- **G2043**-Site Development
- **G30**-Site Mechanical Utilities
- **G3013**-Water Supply
- **G3063**-Fuel Supply
- **G40**-Site Electrical Utilities
- **G4013**-Electrical Distribution
- **G4023**-Site Lighting
Real Property Catalog: Level 5 Asset and Cost Association

**Assets**

- L1: D: Services
- L2: D30: HVAC
- L3: D3023: Heat Generating Systems
- L4: D3023180: Boiler Gas

**Cost Estimate**

<table>
<thead>
<tr>
<th>ASSET</th>
<th>DESCRIPTION</th>
<th>ACTIVITY (Replace, Repair)</th>
<th>COST ESTIMATE</th>
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</thead>
<tbody>
<tr>
<td>L5</td>
<td><strong>D30231801060: Boiler, gas, 250 MBH</strong></td>
<td><strong>Replace boiler, gas, 250 MBH</strong></td>
<td><strong>Material Cost</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$4,625</td>
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