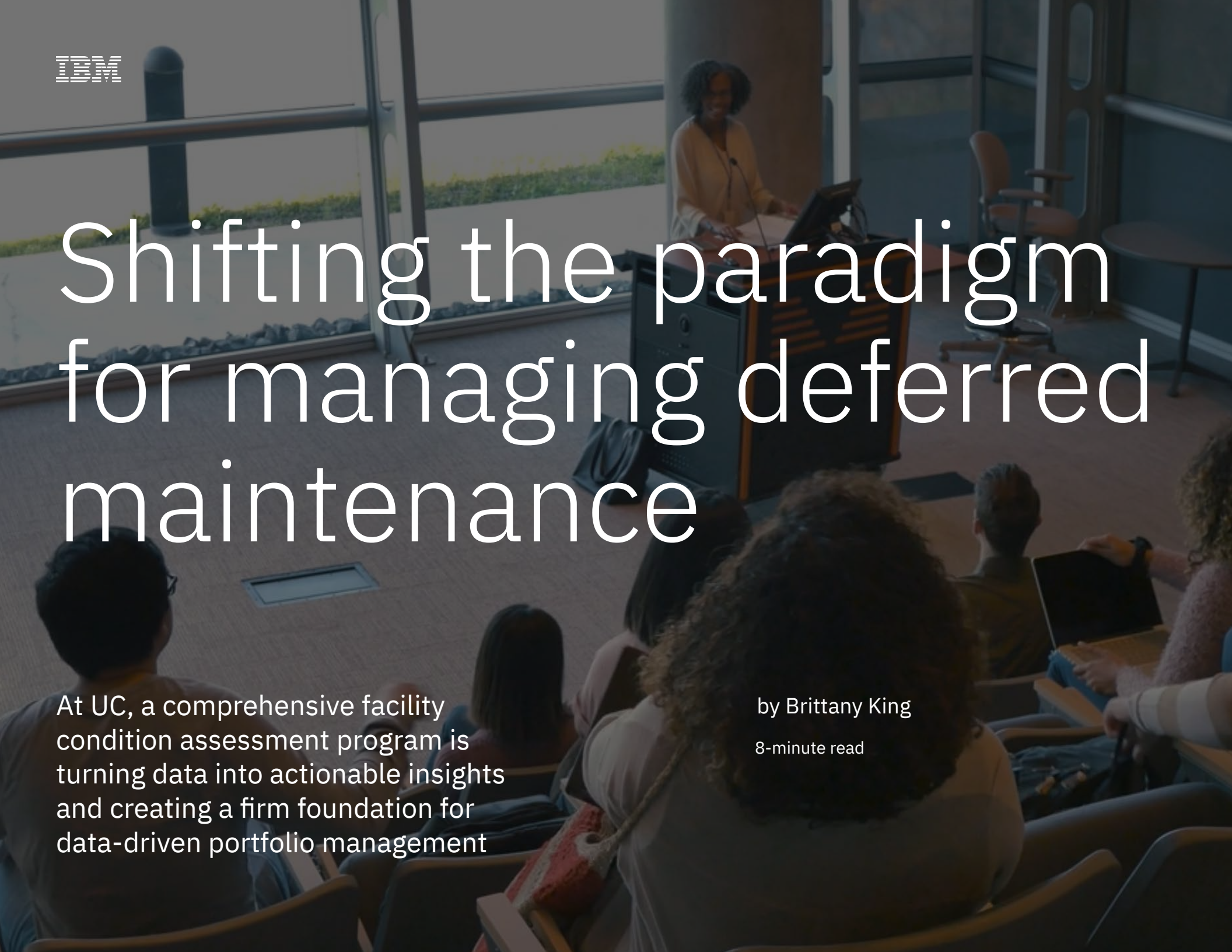


Shifting the paradigm for managing deferred maintenance

At UC, a comprehensive facility condition assessment program is turning data into actionable insights and creating a firm foundation for data-driven portfolio management

by Brittany King

8-minute read

When managing your portfolio, do you know what facilities and assets you have? Can you build a credible budgetary framework? Can you justify your investment strategies with your stakeholders? If not, perhaps it's time to consider a comprehensive facility condition assessment (FCA).

For years the University of California (UC) struggled with managing its deferred maintenance program. At the time, there wasn't a clear path for determining what assets the university had, what condition they were in, what risks deteriorating assets posed and just how big its deferred maintenance backlog had become. Managing the state-eligible portion of its portfolio across 10 campuses, and 2,300 buildings covering over 62 million square feet—plus campus infrastructure systems—was daunting under the best circumstances.

Add to that the more than 20 different systems in use to manage the asset portfolio lifecycle across the university, and even simple data calls—like one for deferred maintenance—became overwhelming. So much so that the annual call for campus deferred maintenance had become a compilation of spreadsheets. Where asset and cost information were derived differently at each location, there were no clear priorities set for which projects needed to be addressed first to protect UC's missions (Education, Research and Public Service).

Nathan Brostrom, Executive Vice President and Chief Financial Officer at the University of California Office of the President (UCOP), explains: "We did not have a good assessment of what our needs were in terms of deferred maintenance for buildings or for infrastructure. Every campus did a good job of trying to assess

their needs, but there were no common standards in doing that."

However, as a public institution, developing credible and justifiable budget requests for the state and other stakeholders is not only expected but also represents responsible financial stewardship. Obtaining adequate funding is always a challenge, and there will never be enough to do everything that should be done. But by developing innovative approaches for deploying the right amount of capital for the right projects and at the right time, a substantive case can be made for each investment dollar requested.

With this realization, in 2015 Brostrom created a team to develop a new best-of-breed program at UC called the Integrated Capital Asset Management Program (ICAMP). The new program would pave the way for a more efficient asset lifecycle management system.

Rich Powers, the team's Program Manager, elaborates: "We had our charge: deliver apples-to-apples across the portfolio. We started from the ground up. We designed the program to overcome the complexity of managing the portfolio of assets across multiple systems by introducing a new, single real property asset management system—along with common asset, cost and risk prioritization standards that would be captured by a team of inspectors using a standardized systemwide facility condition assessment process."

"By collaborating with the campuses to implement the ICAMP asset management system and FCA process, we knew we could deliver a better view of our deferred maintenance needs. But, like all digital transformation journeys, we knew it would take time, persistence and teamwork."

Rich Powers, ICAMP Project Manager, the University of California Office of the President

Building-related deferred maintenance opportunities identified at USD

6.7 billion

as of 2022

Inventoried 125,000 assets and logged

41,000

deferred maintenance opportunities

"Early on, we realized we were producing the data necessary to form a new, paradigm-shifting foundation for deferred maintenance and portfolio management at UC. The promise of credible data was becoming real."

Dr. Hayden Collins, Sr. FCA Program Lead, Parsons

You can’t manage what you can’t measure

UCOP and IBM worked to implement a long-term integrated system to maintain the university’s extensive real estate. UCOP deployed one of the largest and broadest FCAs across the entire university system using the IBM® TRIRIGA® Application Suite. The integrated workplace management system (IWMS) delivers extensible application features and scalability as demand evolves.

The ICAMP team started with configuring IBM TRIRIGA’s FCA module and building the system out to support expansion into the other modules, which in the future would be able to provide an even richer, more integrated asset lifecycle management experience.

To overcome the numerous systems and asset management conventions used at each campus, ICAMP set about developing and integrating a standardized catalog of building and infrastructure assets, applying the Uniformat building classification framework. The catalog also included standardized units of measure and lifecycles for each asset and a full complement of remediation activity costs to address deferred maintenance.

“The catalog (BSCs & Assemblies) capabilities in TRIRIGA are extremely powerful,” explains Powers, “and really form the foundational DNA of the program … it’s how we achieve apples-to-apples.”

The next foundational building block that needed designing was a method for determining the risk each asset's potential failure might introduce to a given facility and its mission. To address this, ICAMP developed a standardized set of risk ratings.

Ron Kalich, Director of Facilities Asset Management and ICAMP at UCOP, explains: "We built the risk classification and scoring prioritization framework predicated on two main components: likelihood of failure and the consequence of failure. Together, these two dimensions would allow us to quantify the risk of an asset failing; this would also solve the problem of an unprioritized deferred maintenance list and deliver the ability to ladder-rank and color code deferred maintenance opportunities as Red, Yellow and Green."

Without people, a system is just a system, so for the next step in the plan, ICAMP worked with the campuses to form the most critical foundational element of the program, the FCA teams. UC settled on a hybrid approach for the team-building exercise: on some campuses, FCA teams were staffed by existing maintenance personnel who had been installing and maintaining many of the assets since their original installation; on other campuses, where building teams from the maintenance resources was not an option, UC introduced a partnership with Parsons, a recognized leader in facility asset inventory and condition assessments, to supplement the local staff.

Together, these teams would undergo an extensive initial training program on the UC FCA process and system and learn what it meant to perform a high-quality FCA.

Dr. Hayden Collins, Sr. FCA Program Lead at Parsons, explains: "Not only were we all trained on the basic methodology, but we also introduced regular calibration meetings across the campus teams to ensure our work product was repeatable and consistent. We used our quality control findings to identify key improvements. This type of knowledge sharing created a virtuous cycle."

Over the course of the next four years, these teams would move through 2,300 buildings, as well as campus infrastructure systems, using the ICAMP-TRIRIGA platform to inventory over 125,000 assets, assess their condition, assign risk ratings, and cost out over 41,000 deferred maintenance opportunities. "By the end", Powers explains, "we had identified a deferred maintenance backlog totaling USD 6.7 billion which was all quantified via our standardized catalog and FCA process."

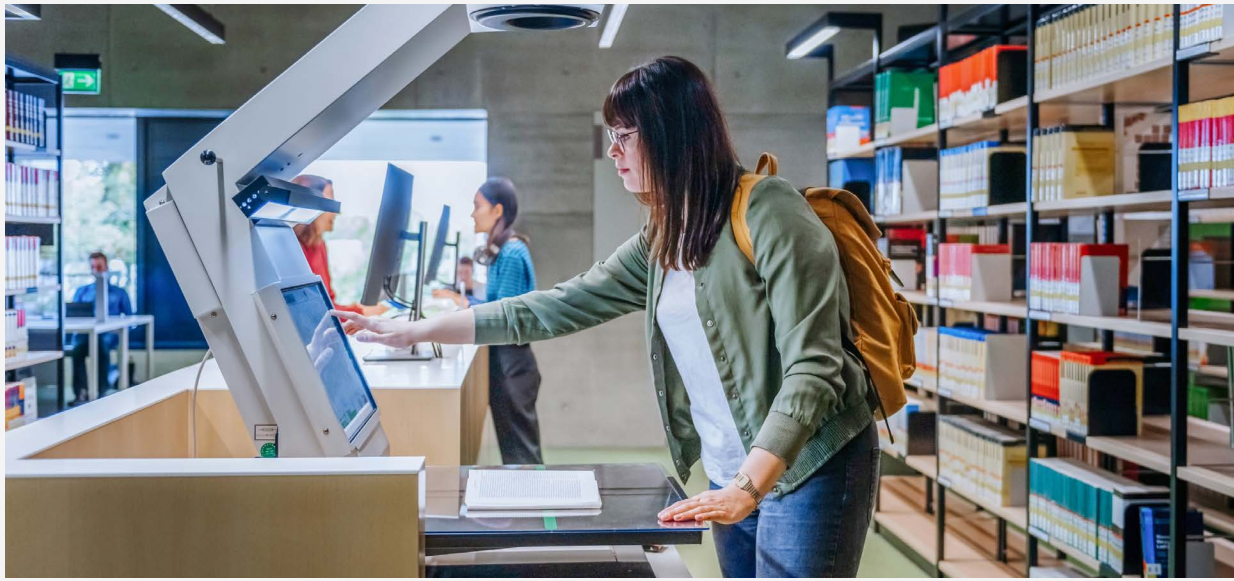
Susan Fish, Director of Asset Management, Facilities Services at UC Berkeley, says: "It became apparent that the data captured in ICAMP was complementary to what we had in [IBM] Maximo. It fills in the missing pieces, such as criticality of the assets to the campus missions and the risk of the assets to operations. We now had information that would allow the teams to make better decisions to anticipate and take corrective action or replace assets before they failed and disrupted operations."

Data drives funding justification

In the past, the backlog was made up of rows of projects in a spreadsheet and it was unclear which were the priorities and which of the many projects should be funded first. As the data flowed into the system, a new vantage point of the backlog began to emerge. The data was not only able to capture the details within the backlog but could be rolled up by the overall risk scores and colors, along with an urgency to remediate ratings, allowing ICAMP to show it in more distinct and manageable categories of prioritized needs.

Now decision-makers could reference the "Total Deferred Maintenance by Risk Color & Action Timeframe" matrix and show how much funding is needed to address the highest-priority deferred maintenance (Reds and Yellows) to the lowest-priority (Greens) within the next one to five years.

Kalich explains: "asset by asset, we could now show our users which had deferred maintenance opportunities and which were most likely to impact their operations. In addition, we now had a five-year investment needs horizon built into the system from which we could start our analysis and decision-making."



In a large institution like UC, there are always so many competing demands for capital dollars, for example, new facilities and renovations to support enrollment growth, transitioning to clean energy, addressing seismic improvements, system

renewal and deferred maintenance that leveraging data like that provided by ICAMP is needed to help deploy capital more efficiently.

This need led to another valuable data-driven decision-making dimension ICAMP overlayed onto the data, and that is the ability to cross-reference the deferred maintenance opportunities with several of UC's major initiatives and strategic objectives. Deferred maintenance projects can now be tagged to indicate if they could be associated with energy or decarbonization projects, seismic projects, or if they could be assembled into larger life-safety or sustainability programs. This cross-referencing allows UC to bring into focus those projects that would satisfy multiple objectives, thereby making the most of each investable dollar.

Kalich notes that the most recent state funding allocations bring the many dimensions of the ICAMP data into focus: "Because we can identify our high-priority deferred maintenance needs and demonstrate how we can support other objectives such as sustainability, we can present a more compelling case for funding. In just the last two years, we have received USD 475 million, 30% more funding than the previous six years combined. UC now has both credible data and the ability to use it to create justifiable investment strategies and funding requests."

"The larger tranches of funding are making a significant impact; we can now address significantly more of our critical deferred maintenance backlog than ever before, including our aging foundational infrastructure systems, including steam, electrical, water and waste that make up our 100-plus-year-old campus."

Susan Fish, Director of Asset Management, Facilities Services, University of California, Berkeley

Optimizing deferred maintenance and portfolio investments

ICAMP not only supports UC leadership with developing more justifiable systemwide investment strategies, but it's also making a difference at the campus level, where sufficient funding resources are always a challenge and where making the most of each investment is essential. But making the most of each investment takes cross-functional collaboration and data the end users can trust.

Powers explains: "The FCA process by design creates a systematic approach for collecting asset data and logging deferred maintenance opportunities. But it also creates a conversation between the FCA inspectors, facility managers and maintenance support teams, whereby they can work together to unlock information that is often only in people's heads or

sitting in logbooks. In this way, the FCA is making sure what subject matter experts know isn't lost to the ages, but it's also delivering a comprehensive view of our needs from the field to the offices of the teams planning for and making critical investments."

Fish says that UC Berkeley is a good example of this new and improved

collaboration and data decision-making at work: “Our teams are always looking for ways to apply deferred maintenance funding along with other investment dollars to get the most out of a given project. At Moffitt Library, Facilities and Capital Planning worked together to combine deferred maintenance funding and a significant private donation. In doing so, we were able to initiate a major renovation that would update a significant portion of the space and address critical components such as lighting controls and fixtures, as well as building controls that deteriorated well past their useful lifecycles. As a result, the teams addressed the aging building systems and delivered on multiple objectives, including sustainability and improving our ability to support our high-value research and education missions.”

As more and more teams at UC begin to see the intersection of the FCA data with significant initiatives such as seismic or sustainability, it will improve data-driven decision-making. Kalich adds, “The tool and the approach will be extremely valuable in helping drive new best practices for asset lifecycle management and creating optimal investment strategies.”

“With a single, agreed-upon system of record in ICAMP, we are better able to bring together key cross-functional teams, (energy, capital projects, facilities and engineering) and leverage this expertise to influence the full lifecycle—from start-up, to commissioning, to improving maintainability.”

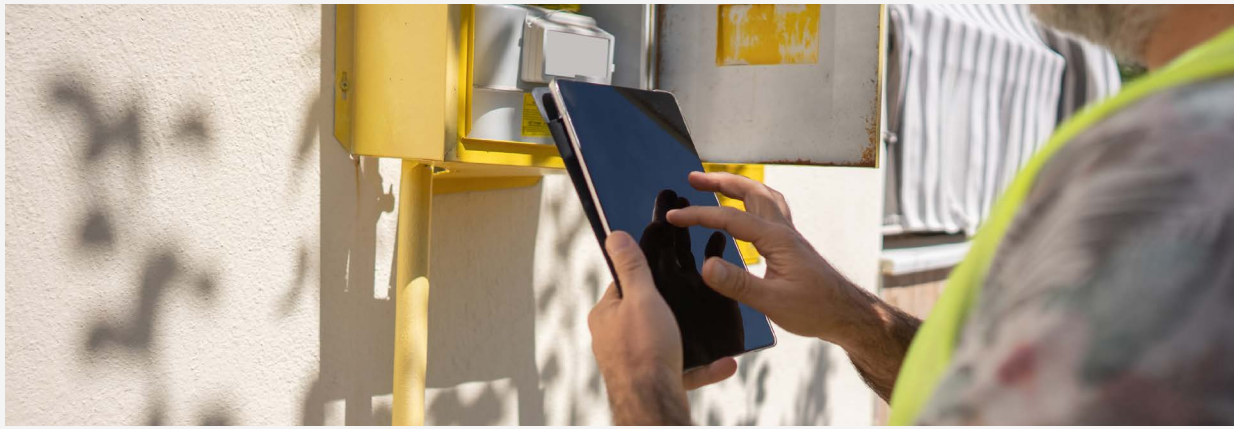
Susan Fish, Director of Asset Management, Facilities Services, University of California, Berkeley

Adapt, improvise and overcome

Managing a portfolio is never easy, especially in an ever-changing economic, technical and operating environment. So, creating a dynamic system and process for managing portfolio data is more critical than ever.

In the old consultant FCA model, techs would visit a facility perhaps every three to five years and compile a list of needs and provide a book for reference. In the UC model, Kalich explains, “We have a living system in ICAMP. As the campus personnel and inspectors make changes to the data, that data is updated in the main management dashboards twice a day. This is keeping the data fresh, current and actionable, which is an imperative in a USD 40 billion-plus sized portfolio.”

Fish echoes these sentiments: “At UC Berkeley, the facility condition assessment is not just a one-point-in-time initiative. Now the facility management and operations teams are updating the assets, capturing those aspects of the data in real time, and showing the change to the asset’s health over time.”



With respect to the future of ICAMP -TRIRIGA, Kalich notes: “There are so many other capabilities within the platform to leverage, including capital asset management, capital budgeting and capital project management. There are a host of additional benefits and use cases that can yield operational and investment efficiencies from planning to procurement to sustainability.”

UC is shifting the paradigm and allowing facility leaders and stakeholders to make data-driven decisions that adapt to the current circumstances, improvise based on sound data when needed, and overcome challenges and needs as they arise.

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About the University of California Office of the President (UCOP)

The University of California was founded in 1868 with only ten faculty members and 40 students. As of 2022, the university employs more than 150,000 people and educates over a quarter of a million students a year. It includes 10 campuses and six medical centers consisting of 6,000 buildings. UCOP (link resides outside of ibm.com), located in Oakland CA, is the university's headquarters.

Solution components

- IBM® TRIRIGA® Application Suite
- IBM Maximo® Application Suite

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