

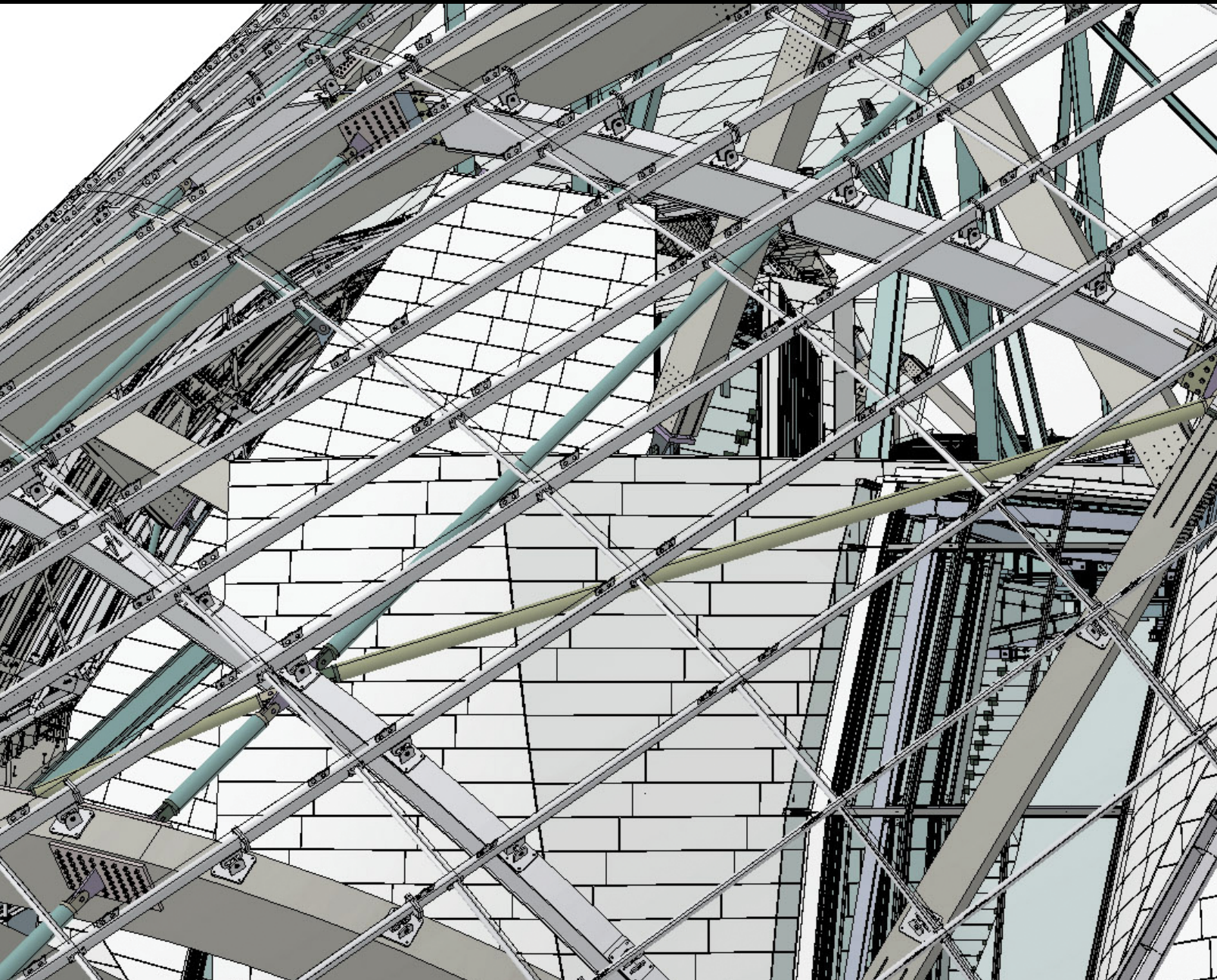
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On the cover: The Fondation Louis Vuitton, a new art museum in Paris, is pushing the limits of BIM technology and demonstrates how BIM, enabled by a cloud-based file management and project collaboration platform, can help large distributed teams work together. The 3D cover image, produced by Digital Project™, shows the façade of the Fondation Louis Vuitton.

Using Real-Time CMMS Asset Data Capture During Construction to Improve Facility Management

By Birgitta Foster

WE ARE MOVING TO A MOBILE-CENTRIC world, where information can be at our finger tips not just in minutes but in seconds. Mobile applications are becoming commonplace in every industry sector. They are used by commerce to monitor transportation and overnight delivery systems to track packages, all by real-time data capture. Could it be that real-time data collection has value for facility management (FM)?

This article explores the value proposition of using mobile applications to capture real-time asset data for improving FM activities. Currently, new asset information is delivered to the FM group after construction as a “handover”. What asset data is received is manually loaded into the owner’s computerized maintenance management systems (CMMS) after handover or, in some cases, is never loaded at all.

The combination of delayed entry and lack of equipment data in CMMS databases has a significant impact on the FM group’s ability to effectively maintain equipment and achieve intended service life. Because the maintenance personnel depend heavily on the CMMS to receive service orders, search for equipment information, reserve inventory and prepare work plans, it’s critical to have correct and complete equipment data. But it’s the timeliness of data entry that primarily impacts FM activities, such as preventative maintenance (PM) planning and scheduling, identifying required operations training and determining spare part availability. The reality is, these activities are not initiated until after the “handover”, when the building has begun operating, meaning FM is already behind on maintenance.

On the other hand, consider a transition to operations (ToS) approach, which will create a more seamless handover by utilizing mobile devices for real-time

updates of CMMS databases. At the start of a project, basic asset data from a building information model (BIM) is uploaded into the CMMS. Then, as the equipment is set, mobile applications capture the asset-specific data directly into the CMMS. This workflow allows time for the FM personnel to set up equipment PM plans, ensure critical spare parts are identified, and allows time to determine what equipment training is required *before* the building begins operations.

By taking a more proactive approach, like making a transition over time to operations (instead of a single moment in time like handover implies), there should be improvements not only in FM perception and O&M performance metrics but, more importantly, in extending equipment service life.

In most facilities today, once a piece of equipment is identified as requiring operations and maintenance (O&M), it triggers a sequence of FM activities, beginning with the creation of a new asset in the CMMS. For this task, the FM group will need basic information on the equipment, such as classification type, and manufacturer and vendor data. The manufacturer name, along with the model number, helps the FM team obtain O&M manuals and performance data, while the serial number is used for warranty issues and replacement parts orders. To locate equipment for servicing or emergency repairs, the FM team will require the building, floor and room numbers as well as what quadrant of the room the equipment resides. For warranty information, the team needs the installation date, which often becomes the default start of the warranty period, and the vendor contact information, in cases where a service call arises.

Once this information is gathered, the equipment data is manually entered into the CMMS and assigned an asset number, which identifies its existence. The next task is to create an equipment-specific job plan and schedule to ensure proper maintenance is performed per the manufacturer’s recommendations. The follow-on activities include identifying spare parts and inventory requirements and determining any special tools or training needed to properly perform O&M functions.

One activity vital to operations, but rarely considered, is obtaining the installed equipment’s operating parameters. The final commissioning report provides design operating ranges and set point verification but not likely the equipment’s actual operating range. Although delivered to the design engineers or project manager to document that the building systems met the design basis, this report almost never makes it to the FM group.

The ramifications of beginning facility maintenance after handover are fairly significant but commonly ignored. Waiting to receive the equipment information before beginning to enter new assets creates poor equipment maintenance (no PMs performed) and causes unexpected spikes in resource loading and PM backlog (because there is no upfront scheduling). It also results in a lack of proper training (so it takes longer to perform PM) and insufficient spare parts on-hand (increasing the time of PM). This inefficiency also results in wasted time due to start-stop work and disruptions other than pre-scheduled PMs. This creates a perception that FM is not staying up with maintaining the facility.

What if, by using mobile applications and devices, FM personnel could capture the required equipment nameplate data and upload it in real-time to their CMMS databases during construction?

Wait, isn't that the contractor's job? Yes, but how well has that worked? If the contractor, whose sole responsibility is to install the equipment per design, is expected to properly collect equipment data and ensure its accuracy and completeness, then why does the FM team always seem to re-collect the equipment data after the building is handed over?

On a new building, it's not uncommon to have over 500 new assets to enter into the CMMS system. The time it would take to properly complete the six FM activities (entering CMMS data and documents, creating PM job plans and schedules, identifying spare parts, determining O&M training requirements, establishing warranty periods and obtaining equipment operational ranges) could be up to three man-hours per new asset. For a new building, that is 1,500 man-hours or one full-time employee for over eight months! And that is *after* handover and the equipment is already in operation. It is clear that the FM needs the information early because even if FM began receiving complete asset data at handoff, it still does not address the delay in planning and scheduling PMs, prompting the call for alternative workflows.

Through individual interviews with O&M personnel, it has become apparent that their ability to properly maintain the facility assets is significantly impacted by the timing of the current project handover process. However, through the leveraging of new technology, like BIM and mobile applications, that can be changed. By taking a more proactive approach, like making a transition over time to operations (instead of a single moment in time like handover implies), there should be improvements not only in FM perception and O&M performance metrics but, more importantly, in extending equipment service life.

Handover nirvana? Maybe. By adopting a transition to operations approach with real-time CMMS asset data capture, not only does FM improve, it makes facility managers a part of the project "team" and not just the ones who come in after the dust clears. ■

Birgitta Foster is Assisting Director for the buildingSMART alliance™.

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