

Facility Data Commissioning

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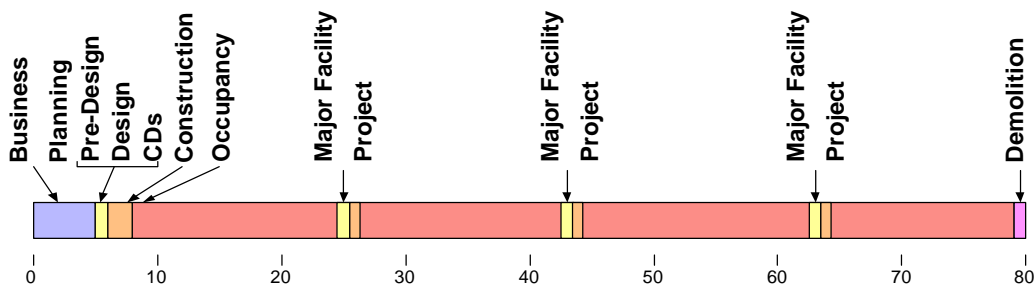


Introduction

As computer-based facility information management and decision support systems evolve and mature, the question of how to capture, load and continually refresh facility information remains a significant concern. Once organizations have successfully identified essential performance metrics for their business management and

operational requirements, they must address the question of how information will be acquired at the earliest practical moment and maintained throughout its life cycle without overwhelming already scarce financial and human resources.

At its core, facility information provisioning is a supply-chain issue which, rather than focusing on materials, focuses on information. Supply-chain re-engineering, which focuses on participants in the chain and attempts to optimize their inputs and outputs, reveals that one of the richest opportunities for streamlining facility information provisioning is present in the interface between new construction/renovation and initial occupancy/resumption of operations in the facility.



A facility lifecycle showing A/E/C activity over time with opportunities for data commissioning.

Concept and Development

A Facility Data Commissioning process identifies, prepares and then migrates graphic and non-graphic data resources that are present in the conceptual, design and construction portions of the lifecycle into data that will be useful to information systems dedicated to facility management and operations. The National Institute of Building Sciences (NIBS) recognizes this principle in the evolving standards for Total Building Commissioning (TBC). (see <http://www.nibs.org/projtbc.html>) and in the work of the Facility Operations

and Maintenance Committee (FMOC) (see <http://www.nibs.org/fmochohome.htm>). TBC activities focus on the physical structure and systems of the facility through testing intended to assure that the designed capabilities of the facility are actually present and operational in the delivered product. With TBC, migration of O&M materials and operator training is planned during the Specification Phase and executed during the Acceptance Phase. FMOC goes further by focusing on increasing the influence of O&M on the facility acquisition process; creating standards and streamlined processes for acquiring and managing life cycle facility information. Both of these development efforts, while conceptually sound are not likely to be widely adopted until incentives are adjusted and supply chain participants adopt new business models.

Practical Issues

Data Commissioning makes logical sense and, in a crude way, is already occurring in facility construction and renovation projects. But effective data commissioning requires much more than, for example, simply handing off as-built construction drawings and equipment operating manuals. A data resource is used very differently during design, construction, and facilities management phases. Thus, a construction drawing in its A/E/C form, for example, is only partially useful to a facility manager. What the FM really wants are elements of the drawing delivered in a way that supports operations such as space planning, move management, cable management, and facility asset inventory to support maintenance and repair operations.

The following tables illustrate how typical products of A/E/C activity differ from the end-user needs of the Owner.

A/E/C Information consists of:

- Construction Drawings
- Schedules
- Specifications
- Operating Manuals
- Shop Drawings & Submittals
- Supplemental Instructions
- Change Orders
- FF&E Plans & Specifications
- Employee/Room assignments

When what the Owner needs are:

- Asset capitalization information
- Capital budget support
- Risk management/insurance data
- Property inventory
- Space inventory/management
- Facility operations definition & scheduling
- Custodial care plans
- Equipment maintenance plan
- Security/fire/life safety data and ops plans

Streamlining the supply chain requires the participants to recognize those differences and establish relationships and incentives that will enable mutually beneficial cooperation.

Relationships and Incentives

Of the three primary participants in building/renovation projects (owner, designer and contractor), the Owner has by far the strongest incentive to participate in a Data Commissioning process. Traditionally, Owner/Architect contracts focus on producing a buildable design and Owner/Contractor contracts focus on getting the design built. The Owner is the only participant with an investment in the lifecycle cost of managing, maintaining and operating the facility. Design/construction costs represent only approximately 10-15% of lifecycle costs and it takes as little as 7-8 years for operations costs to exceed initial construction cost. Its not surprising then that Owners report efforts to add clauses to Owner/Architect and Owner/Contractor agreements have been met with lukewarm acceptance and have been only marginally effective in delivering usable data to their facility management information systems. In the current environment, some would even suggest that it is better to make no attempt to integrate the data from phases of work and instead treat the products of design and construction as raw materials to be sifted and remanufactured into facilities management information after the fact.

Whats a Mother To Do?

For Data Commissioning to work, both Owners and A/E/C professionals must evolve their relationship. Owners must calculate the value of improved management information and improved facility performance as a precursor to providing enhanced fee structures and/or preferential selection criteria to A/E/C service providers who support effective data commissioning capabilities. A/E/C professionals must recognize the value proposition inherent in preparing design and construction information appropriately and migrating prepared data effectively into the Owner's computer-based facilities management information systems.

Architects and Engineers (who ironically are still looking for "the CAD payoff") must think of their work as not only a design problem, but also as a data processing and information management opportunity. At a minimum, it is essential for A&E's to understand how an owner wants to operate a facility and the content and form of data an Owner will need at commissioning to accomplish these goals. The most progressive A&E's will provide value added services by using their technical/professional training and breadth of experience to lead the Owner to best practices for both operational and facilities data processing.

Constructors, who are closest to the as-is configuration information and who manage the information flow that turns conceptual design into bricks and mortar, are in a unique and important position to contribute to Data Commissioning. Every firm material that is incorporated into a facility is processed through a submittal, approval, procurement, installation, test and start-up procedure. The actual and precise configuration of space, the connection of services, the naming and linkage of equipment and control systems, and the placement of assets are all known to the constructor and shouldn't have to be recreated by third parties post-occupancy.

Owners have to prepare the ground, plant the seeds, water and weed the garden. Specifically, Owners have to do the following:

- ◆ invest in the time and self-examination needed to set appropriate policies and standards for data that will support management and operational requirements,
- ◆ prepare clear and achievable contracts that include clauses for data commissioning,
- ◆ seek out and give preferential status to professionals who actively understand and support their needs.
- ◆ provide incentives through enhanced fees or performance bonuses, longer term contracts, targeted evaluation and selection criteria, etc.
- ◆ refuse to accept and pay for services that do not support data commissioning or data that does not migrate directly into their computer-based facility management systems.

Conclusion

Information technology in design, construction and facilities management continues to develop dramatically; but developments are proceeding along mostly independent tracks. Along each track, participants continue to search for rewards that will justify significant IT capital investments and minimize data gathering and maintenance requirements. Data Commissioning, by integrating and streamlining the facility information supply chain, offers the promise of the next paradigm in facilities information management.

About the Author

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