Leveraging COBie for Effective Digital Project Delivery

Design & Technology Series #25

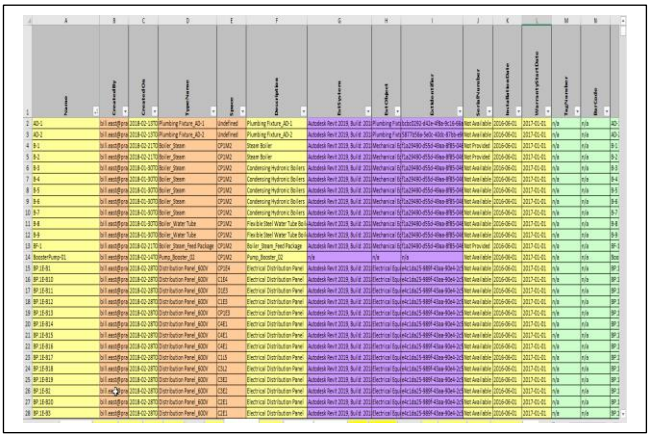

Fig. 1: Example of a COBie file

What is COBie?

Construction to Operations Building Information Exchange (COBie) is a standardized method for delivering building asset information so that owners can operate and maintain facilities without rebuilding data from scratch. COBie is a non-proprietary data format that can be delivered as a structured spreadsheet or Industry Foundation Classes (IFC) file and converts conventional closeout information into a consistent dataset for review and integration into Computerized Maintenance Management Systems (CMMS). This allows owners to efficiently manage work orders, track assets, and optimize inventory.

Traditional handover processes typically rely on PDF documents and binders that are difficult to search or reuse. Although construction may be complete, operations teams often lack clear visibility into basic asset information. COBie addresses this gap by organizing information that already exists across schedules, submittals, and commissioning records into a standardized, searchable format that can be transferred and used directly for facility operations rather than becoming a static document archive.

COBie Implementations in Industry

COBie has been widely adopted across public sector and institutional projects, particularly for government-funded infrastructure.

- COBie was first developed by the U.S. Army Corps of Engineers (USACE) and is now mandated on many U.S. military, federal, and healthcare projects.
- It has been incorporated into the National BIM Standard–United States (NBIMS-US).
- COBie is required for centrally funded government projects in the UK as part of the BIM Level 2 framework and associated standards, including BS 1192-4 and ISO 19650.

Beyond public-sector use, COBie is widely applied by academic institutions, research centres, large private owners, airports, and mission-critical facilities, to standardize asset information and support portfolio-wide facilities and asset management.

COBie for Alberta Infrastructure

COBie data collection

Digital Project Delivery (DPD) is an Infrastructure initiative focused on providing modernized, computer-readable project deliverables and data to Facilities Management teams at project completion. This is achieved by using new digital formats and industry-vetted requirements developed by the DPD team, which supports the successful implementation of DPD on projects. COBie is one of the key DPD deliverables used by Alberta Infrastructure to capture essential building information about floors, spaces, equipment, systems, and associated documents. This structured dataset ensures that all physical assets within a building, from architectural components to mechanical and electrical systems, are clearly documented and easily accessible.

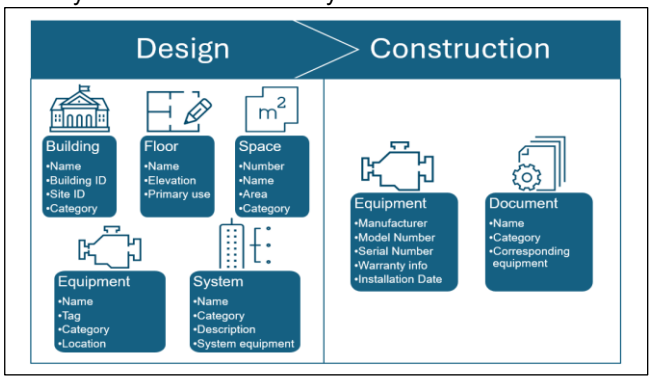

Fig. 2: Overview of Building Asset Data Captured in COBie File for Alberta Infrastructure

A COBie file is a collaborative deliverable that develops progressively over the project's life, with each stakeholder contributing information within their area of responsibility, as illustrated in Figure 2.

COBie for Other Ministries

As different organizations and ministries use various CMMS platforms, the required data structures and formats vary. To accommodate this diversity and ensure the consistent exchange of building asset information that meets the needs of different end users, multiple versions of the COBie Specification have been developed by the DPD team.

- The COBie Specification does not replace the COBie standard. Instead, it provides detailed guidance on data formatting, naming conventions, and classification rules to support compliance with ministry-specific requirements.
- It has been refined and updated by the DPD team through multiple iterations and implemented across numerous projects for different end user groups, including Health Shared Services, Alberta Infrastructure, and Environment and Protected Areas.
- As project volume increases and operational needs evolve, the COBie Specification is expected to continue evolving, with additional versions introduced to support a broader range of end user contexts.

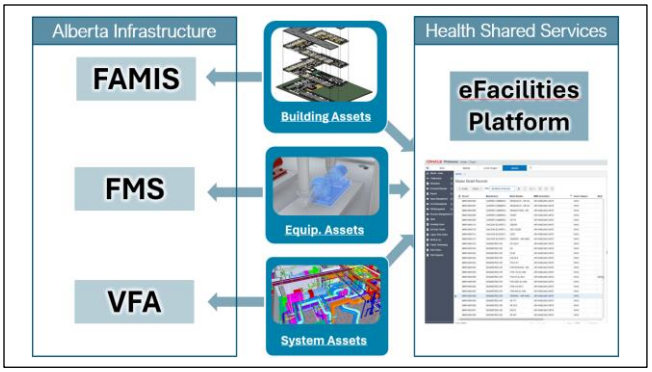

Fig. 3: CMMS used by Alberta Infrastructure and Health Shared Services

COBie-derived data collection form

The COBie standard requires highly structured and detailed data, which can be challenging and costly to implement on projects with limited scope, tight schedules, and constrained budgets. To address these limitations, the DPD team created a simplified Excel-based Asset Information Collection (AIC) Form based on the COBie data structure.

In comparison to a full COBie implementation, the following are some benefits of using the AIC Form for small renovation or retrofit projects:

- It substantially reduces the data-entry burden for consultants and contractors while still capturing essential information related to project contacts, floors, spaces, equipment, systems, and associated documentation.
- The AIC Form captures the building assets that directly affected by the project scope, including assets that are removed, replaced, or newly installed.

COBie Export Tools

Different software tools are available to export COBie files, including:

- Autodesk COBie Extension for Revit
- dRofus
- EcoDomus
- Ideate BIMLink
- Solibri COBie Extension

Further Considerations

Currently, COBie data verification is performed by the Technical Services DPD team, relying on documentation from consultants and contractors, including drawings, shop drawings, and O&M manuals. While this approach provides a basic level of validation, it may not sufficiently ensure data accuracy or completeness. To strengthen this process, verification responsibilities could be integrated into the scope of commissioning agents, who inspect and test installed systems, or assigned to consultants, who approve equipment selections and design changes. In addition, existing COBie workflows do not adequately capture asset removals, relocations, and replacements in large renovation projects. Enhancing procedures to document these lifecycle events would improve the accuracy and continuity of facility asset records.

References

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