

Tapping BIM using ODBC

This paper explores how one well-established and widely adopted standard, ODBC, is being used to communicate building information from the Revit platform for building information modeling to other applications.

The rapid adoption and success of building information modeling (BIM) has led to heightened interest in moving information from tools that support building information modeling to related applications such as energy analysis, specification management, visualization, and rendering.

Part and parcel of this discussion is how best to get at the information held within a building information model. The choices are plentiful, because (as has often been observed) the nice thing about standards is that there are so many to choose from! Among the standards that have been proposed for communicating building information are IFC™, various flavors of XML, DWG, DWF™, DXF™, and (remarkably) even PDF!

About ODBC

The ODBC (short for Open Database Connectivity) standard is a database access method, providing a vendor-neutral common ground between applications and databases. Essentially a vehicle for accessing data from relational tables of rows and columns, ODBC has been utilized in commercial applications for over a decade and is a proven, established method for transmitting data. ODBC uses a middle layer, called a database driver, which acts as a translator between an application and a database. As long as the software programs on both sides of the driver support ODBC, no specialized programming or interfaces are necessary, reducing the cost of the application integration and ongoing product support.

CAD-based design applications contain building geometry and (usually) building object data. Consuming this data places a substantial post-processing burden on the receiving application to derive building information such as material quantities or program areas from the geometry. This requires a relatively large amount of data to be communicated, a lot of work on the part of the receiving application, and a more elaborate integration protocol supporting both geometry and data.

True building information modeling tools track building information directly. Material quantities and other building information can be communicated in a straightforward and compact way to other applications that can consume it directly.

Ironically, for the most sophisticated building information modeling tools, the relatively old ODBC standard turns out to be a particularly suitable integration approach for applications like cost estimating, quantity surveying, and specification management.

Two Examples

One software vendor that utilized ODBC to connect their product to the Revit® platform is InterSpec (www.e-specs.com). Their popular specification management product, e-SPECS®, automates the preparation of project specifications. Typically, e-SPECS scans and extracts product and material requirements from whatever object data might be available in AutoCAD® DWG drawing files, and the user supplies whatever is missing.

Recently, InterSpec linked e-SPECS directly to the database inside the Revit® Architecture software via ODBC. This tight integration of e-SPECS and Revit Architecture ensures that the building model and project specifications remain in sync. For instance, if a door, or window, or any other building object is added to the Revit model, the e-SPECS project specification manual is automatically refreshed. Or if a brick wall in the Revit database is changed to a concrete wall, the change is also reflected in the e-SPECS project manual, with the unit masonry section of the spec being replaced by a concrete section.

According to InterSpec’s President Michael Brennan, “Our e-SPECS software automates the preparation of construction specifications for architects, saving them time and money. This direct link between e-SPECS and the Revit database generates more cost savings and helps guarantee that the information in the project specifications match the current state of the building model. Our e-SPECS For Revit Architecture customers can benefit from the inherent ability of Revit to produce high-quality, consistent, always-coordinated design information – information which is also in sync with the project specifications.”

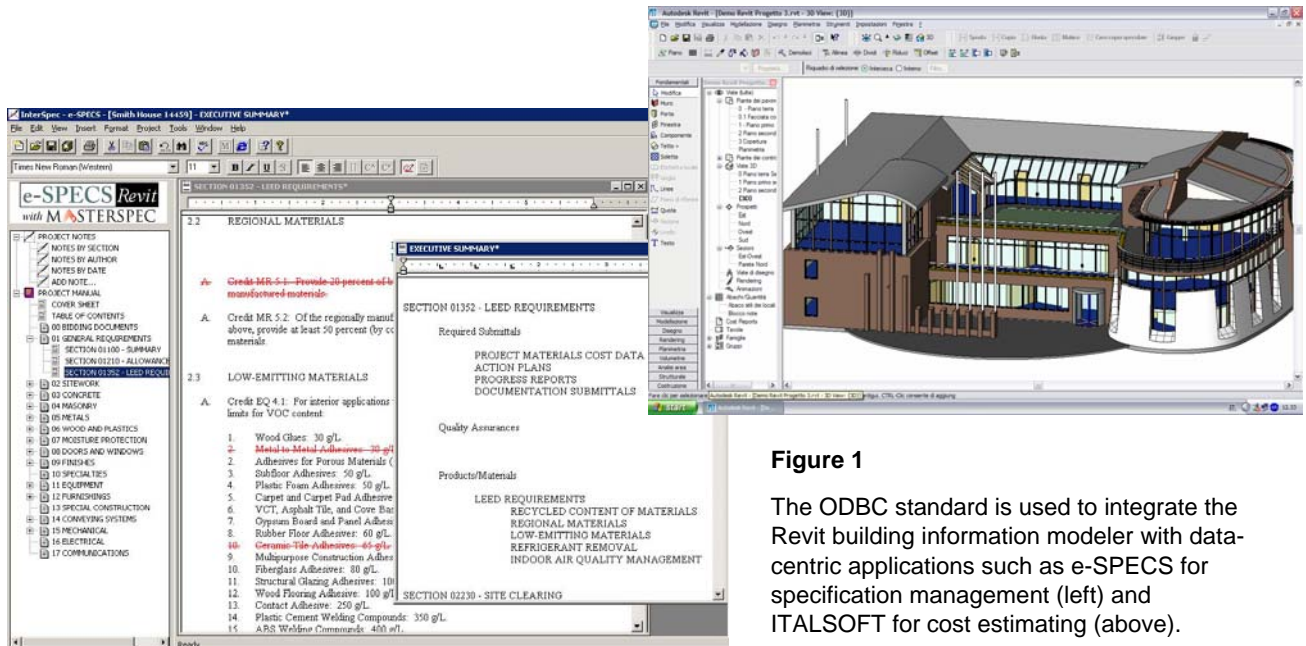


Figure 1
The ODBC standard is used to integrate the Revit building information modeler with data-centric applications such as e-SPECS for specification management (left) and ITALSOFT for cost estimating (above).

Similarly, ITALSOFT (headquartered in Stanghella, Italy) leverages ODBC to dynamically link Revit Architecture to their popular Italian cost estimating software. Within ITALSOFT’s estimating software, building items are initially mapped to Revit types during project setup.

For example, a partition wall type from Revit Architecture would contain: bricks (calculated by volume), plaster on both sides (calculated by surface), paint (calculated by surface on one or both sides), and manwork (calculated by hours). ITALSOFT then uses the ODBC

connection to Revit Architecture to read how many instances of the type there are in the project and calculates the project costs according to the prices established for the items. Like the e-SPEC example above, the direct ODBC connection between ITALSOFT and Revit Architecture means that cost estimates produced by the software are in sync with the building model.

Matching Standards to Requirements

Many standards are leveraged by software vendors to enable the exchange of building information. But all standards are not created equal - because different standards have evolved to suit a particular set of requirements. As it turns out, ODBC (an “old” standard by Internet reckoning) is well-suited to integrate data-centric applications with building information modeling.

At the end of the day, customer and industry needs are the driving forces behind how standards are used to extend building information modeling to other applications in truly useful ways.

About Revit

The Revit platform is Autodesk’s purpose-built solution for building information modeling. Applications such as Revit Architecture, Revit® Structure, and Revit® MEP built on the Revit platform are complete, discipline-specific building design and documentation systems supporting all phases of design and construction documentation. From conceptual studies through the most detailed construction drawings and schedules, applications built on Revit help provide immediate competitive advantage, better coordination and quality, and can contribute to higher profitability for architects and the rest of the building team.

At the heart of the Revit platform is the Revit parametric change engine, which automatically coordinates changes made anywhere — in model views or drawing sheets, schedules, sections, plans... you name it.

For more information about building information modeling please visit us at <http://www.autodesk.com/bim>. For more information about Revit and the discipline-specific applications built on Revit please visit us at <http://www.autodesk.com/revit>.



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