

Property Management and Data Visualization Solution with Autodesk and the Oracle E-Business Suite

This paper presents the value and benefits of the integrated solution for commercial real estate information and property management offered by Autodesk MapGuide® together with the Oracle® E-Business Suite. Together, these applications enable organizations that own or manage large real estate portfolios to easily integrate, visualize, analyze, and distribute large amounts of spatial and tabular data for a variety of users across the enterprise.

Commercial property owners use these graphical solutions to drive improved return on their assets. For example, Autodesk MapGuide can be used by property managers and leasing agents to look at floor plans with lease areas color-coded based upon key performance indicators or lease attributes. This enables them to quickly see which leases are under performing in a retail situation. Or they can highlight leases that will soon expire and compare their rental rates to current market conditions. The visual display makes it easy to study adjacencies and proactively accommodate growing tenants.

Some institutions and agencies have particularly complex real estate management needs. They use Autodesk products such as Autodesk MapGuide and Autodesk Map® software to maintain, relate, and distribute both computer-aided design (CAD) and geographic information system (GIS) data in support of a multitude of internal customers and users. For example, major airports need drawings to support retail leasing, tenant operations, utility maintenance, land management, ground and airside operations, security, and so on. In addition to airports, corporations, major utilities, shopping centers, and many other organizations commonly need software tools to manage their physical assets. With so many consumers of complex drawings and data, it is critical to update and synchronize graphic data and publish it to non-technical viewers. The teaming of Autodesk and Oracle is unique in our ability to integrate CAD, GIS, leasing, and maintenance data in a single solution.

Comparison to Traditional Systems

With traditional point solutions, data on your property portfolio often resides in multiple proprietary databases—a complex environment where some databases are integrated and some are not. These databases are often managed by technical specialists and are confusing or inaccessible to business decision makers. It is expensive to maintain the disparate systems and the information in the various databases is difficult to keep synchronized. Finally, when an aggregated view of the data is required, it is a time consuming, often manual, process without the benefit of easy-to-read maps. Oracle's E-Business Suite is a set of business applications that are already integrated and operate on a common infrastructure.

Autodesk Consulting has integrated graphical data with the Oracle E-Business Suite, creating a solution for a number of property management and corporate customers. We have a core of highly reusable application components that can be quickly deployed for traditional property management or lease administration.

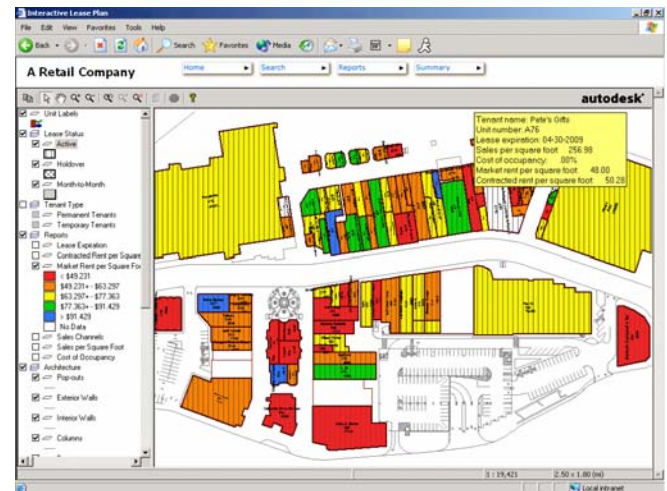


Figure 1: A major North American retail property management firm uses Autodesk MapGuide software as an intuitive graphical interface to Oracle's E-Business Suite to create, visualize, and distribute, valuable reports and data.

The Integrated Solution

Integration of live graphical data with lease administration and financial data is very important. For leasing managers, critical dates such as lease options or renewal notices drive the events and opportunities for interactions with your tenants and customers. Shaping those opportunities and lease negotiations into an effective leasing strategy depends on getting the best possible handle on space supply and demand and the opportunities to effect changes.

The integration of Autodesk's graphic technologies and the Oracle E-Business Suite reflects the value in integrating and graphically presenting spatial information. It combines both your tabular and graphic data to help your team make better, faster decisions, increasing your productivity and improving your customer relationships. The architecture that we've developed provides multiple interfaces for these distinct purposes and types of users.

Web Interfaces

Autodesk MapGuide is used to disseminate information across the Internet or a company's intranet or extranet, enabling authorized users anywhere to interact with live spatial information. Autodesk MapGuide is compatible with all standard web application development environments, including the Oracle Applications technology stack.

That facilitates the development of multiple applications, such as:

- Space planner applications for analysis and implementation of tenant re-configurations
- Dashboards for leasing managers, property managers, or facility managers
- Decision support applications for executive managers

For web users, Autodesk interfaces include the Oracle E-Business Suite security model of users and authorizations. You can use your existing user administration tools and processes. Users can log in with the same user names and passwords and their roles can determine what graphic interfaces are available to them.

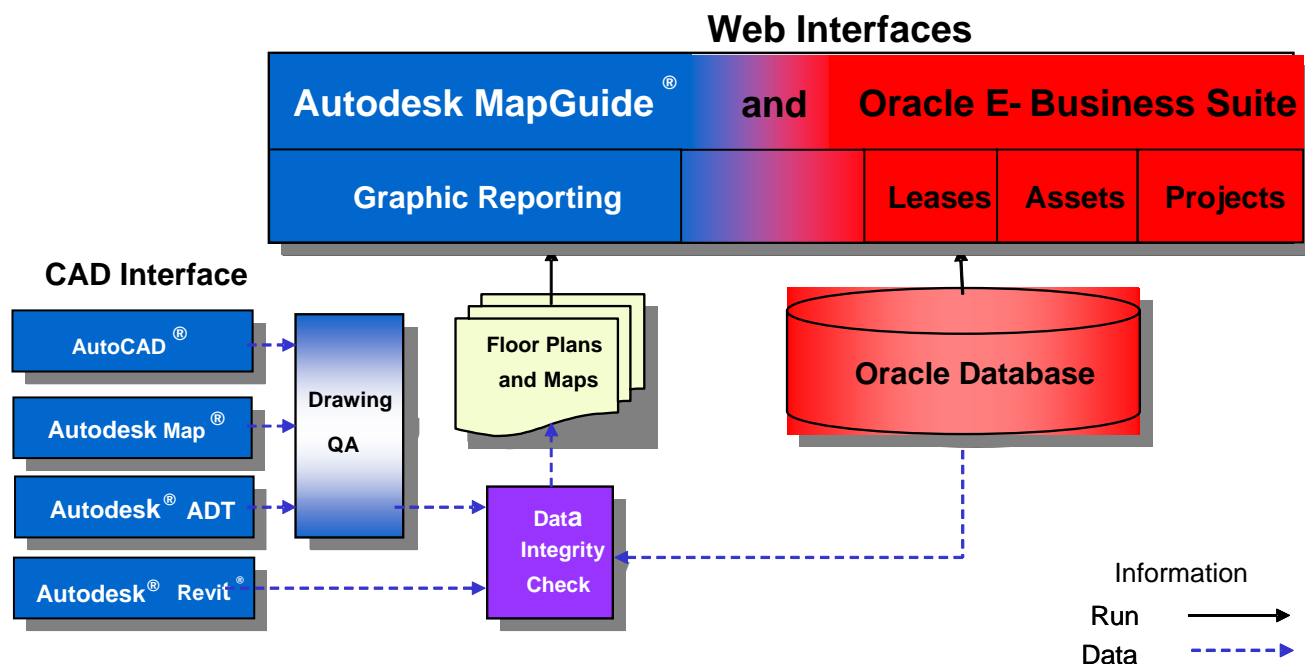


Figure 2: Autodesk – Oracle Property Management and Visualization Solution Architecture

CAD Interface

Autodesk has also integrated CAD software such as AutoCAD and Autodesk Map with Oracle Property Manager to improve the accuracy of maintaining floor plans and space data. When property managers update lease outlines, they can also edit some database attributes from within the CAD application. And the CAD application automatically updates floor areas in the Oracle database as locations are edited.

The system diagram in Figure 2 shows how the customizations we deploy within the selected CAD application work to maintain drawing standards and promote referential integrity with the Oracle e-Business Suite database. If the ability to add or delete location records is limited from the Oracle Applications, use of the CAD interface can ensure that the drawings and the database are continuously in synchronization.

Advantages of this Solution

Maximizes storage of data in the relational database. Unlike traditional applications that placed portions of the data in CAD files, this application architecture maximizes the storage of data in the relational database. Polygons that represent a space or lease in the drawing carry only a link to a corresponding record in the relational database. All of the information about that space or lease, such as the unit number, space type, and so on, is stored in relational tables. Similarly, all of the data about assets that might be located and displayed in the drawings is carried in the relational model with only a link to a point or feature in the drawing data.

This is important because it greatly simplifies integration with other applications and the entire enterprise information architecture. Customers that wish to develop additional integration points or text reports can usually do so with staff and tools that they already have. There is no need for your developers to read or write CAD files.

Use Autodesk MapGuide for live graphics on your web-based infrastructure. All of the maps, floor plans and graphical reports based upon them are built on-the-fly. Drawing labels, tool-tips, color coding, hatching, and symbols are derived from live queries of the relational databases. Gone are the static maps that must be generated manually or by batch processes. Map and floor plan displays are as fresh as your database. And graphic reports are delivered via the browser and easily cut and pasted into presentations or documents.

From the corporate IT perspective again, only moderate skills are required to develop additional graphical reports. With only a few hours training, your staff can create visual reports that integrate insightful spatial graphics with data from your relational databases. The resulting maps or plans are easily embedded into most any web page.

Compatible with modern web development platforms. Autodesk MapGuide software works with any web development environment. Development is therefore fast and easy, and takes advantage of the developer resources that you probably already have on staff. Web developers can enhance or maintain the graphic portions of this solution with just a few days training.

Multiple interfaces for multiple types of users. As you've seen in this paper, your maps and plans have wide applicability to many types of users. Most users will interact with them through their web browser. But lease outlines and related improvements change with virtually every new lease. Those users need, and are accustomed to, a CAD interface for updating geometry. We've built a CAD client for the application to make those users as productive as possible. To do that, we've given them form-based access to database fields that frequently change with the geometry. They can make both geometry and tabular data changes, and automatically compute floor areas, from a single application interface.

Employs the Dynamic Authoring Toolkit. Within the Autodesk MapGuide product, the Dynamic Authoring Toolkit provides tremendous ways give more power to map designs across large amounts of data. One definition of a map or floor plan display can be applied dynamically to any number of maps or floor plans. This minimizes the number of files, dramatically lowering the maintenance effort and chances of error. And desired changes in the visual formatting are instantly applied across the entire portfolio data. It also decreases your reliance on drawing standards in those graphic files because many graphic attributes are overridden by the map or plan definition. Your space planners can spend more time on your leases and tenant concerns and less time enforcing graphical data standards.

Integrate with the Oracle E-Business Suite. You buy the Oracle E-Business Suite because it provides a broad suite of functionality that is already integrated and has a common financial backbone. Now you can integrate all the way to your facilities drawings and the drafter's desktop. This solution allows the data created by your

architects and FM staff to be maintained electronically, and published to all levels of management for everything from maintaining your property to executive decision support.

Integrate with Oracle E-Business Suite user security model. Autodesk Consulting can implement the solution using the user security that you set up in the Oracle Applications environment. Your users only have to remember one login and password. Your staff will require less effort to administer user credentials, roles, and permissions. Your IT staff will be happy that the applications are equally secured.

Finally, this is a solution backed by two of the oldest and most stable of software companies -- Autodesk and Oracle. Both companies have been delivering successful products and solutions for more than 22 years.

About Autodesk and Oracle

Autodesk is the world's leading design software and digital content company, offering customers progressive business solutions through powerful technology products and services. Autodesk helps customers in the building, manufacturing, infrastructure, digital media, and wireless data services fields increase the value of their digital design data and improve efficiencies across their entire project lifecycle management processes. For more information about the company, see <http://www.autodesk.com>.

Companies of all sizes, in all industries and geographies, meet and exceed their business goals with the help of Oracle products, services solutions, and partners. Oracle is the world's largest enterprise software company. For more information about Oracle, visit our Web site at <http://www.oracle.com>.

Autodesk MapGuide

Autodesk MapGuide software is used to disseminate information across the Internet or a company's intranet or extranet, enabling anyone, anywhere to interact with live spatial information. Performance, flexibility, and ease of deployment distinguish Autodesk MapGuide as the leading Internet solution for supporting GIS, mapping, and digital design applications. Autodesk MapGuide can serve spatial data directly from Oracle Locator or Oracle Spatial.

Autodesk MapGuide consists of the following core software components:

- Autodesk MapGuide® Author is used for integrating GIS and CAD data and designing intelligent maps.
- Viewers, which reside on the client desktop (web browser) and are used for viewing intelligent maps, provide a highly interactive mapping environment for end users. Three viewers are available: Autodesk MapGuide® Viewer Plug-In, Autodesk MapGuide® Viewer ActiveX® Control, and Autodesk MapGuide® Viewer Java® Edition. The one you use depends on your viewing platform environment.
- Autodesk MapGuide® Server is used for delivering maps and their data to both the Autodesk MapGuide Author and the Viewer.

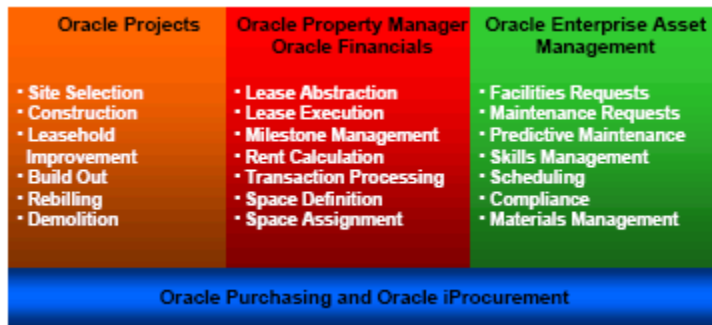
Autodesk MapGuide has been certified to support Oracle9i Application Server. With this certification, Autodesk MapGuide together with Oracle9i Application Server help enterprises create innovative, custom Java applications to distribute location-based data for improving customer services, streamlining business operations, performing efficient plant management, and developing new revenue streams. By using Autodesk MapGuide software as a development platform and graphical front end and the scalable and reliable Oracle9i Application Server for deployment, organizations can develop customized, enterprise-scale Java and XML-based applications.

Autodesk Consulting

Autodesk Consulting can provide Autodesk and Oracle solution integration assistance. Autodesk Consulting offers services ranging from basic installation, to training, data migration support and custom application development. For many solutions, Autodesk Consulting has standardized packages, such as their modular components for the integration of the Autodesk MapGuide application and Oracle's Real Estate Management solution.

Oracle E-Business Suite for Real Estate Management

The Oracle E-Business Suite offers a fully integrated footprint of applications that facilitate all activities related to real estate management.



Oracle Property Manager's ability to support lease execution from both owner and leaseholder perspectives addresses the needs of corporate real estate management, commercial property management, retail/franchise operations and real estate investment trusts (REIT's).

Oracle Projects delivers centralized project management functionality and serves as a bridge between operations and corporate finance. It consolidates project information into one repository: work plans, progress, issues, changes,

documents, costing information, budgets, forecasts, financial information, performance, and status reports. Oracle Projects empowers project managers to manage the work plan, resource assignments, financial forecasts, project accounting, and stakeholder communications, while streamlining the collaborative execution of project work.

Oracle Enterprise Asset Management was developed to help organizations better manage their maintenance operations. These operations can include both facility and production maintenance. It creates maintainable assets from the property configurations in Oracle Property Manager. Additional asset definitions are then slotted into the property asset structures. An Asset is anything that requires maintenance; for example: a building, HVAC equipment, production equipment, vehicles, and so on. Maintenance tasks can then be defined for each asset including a Bill of Materials identifying the materials required for execution of the task. Planned Maintenance schedules can be generated. It also includes a self-service interface for creating reactive maintenance tasks.

Oracle Consulting

Oracle Consulting offers services and methodologies designed to address technology needs ranging from strategic planning, and rapid implementations and upgrades, to enterprise system optimization. Whether you are starting your initial implementation, increasing your system security, or upgrading or migrating to the latest version of your Oracle Applications, Oracle Consulting can help you make the most of your technology investment. Throughout each phase of your solution lifecycle Oracle Consulting works with you to target your business objectives, track your progress, and measure the benefits to your business.

Summary

Autodesk provides a comprehensive range of design and graphic technologies that add industry-specific functionality on top of Oracle databases and applications. The solutions described here are deployed in enterprises and institutions with significant or complex real estate and facilities portfolios. The combined power of Autodesk and Oracle provides open, scalable solutions for any enterprise.

Businesses that can effectively manage utilization and costs associated with real estate assets stand to reap substantial benefits. A complete, integrated, web-based solution that supports end-to-end automation of all critical business functions is the foundation for effective real estate management.

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