

Autodesk Vault 2012 and Microsoft SharePoint 2010: Providing Access to Design Data Across the Enterprise

Increasingly, to succeed, businesses must collaborate effectively—both within and beyond their walls. To facilitate such collaboration, companies need to provide employees, partners, and customers with easy access to accurate design data. With the integration between Autodesk® Vault 2012 and Microsoft® SharePoint® 2010, even non-designers can use familiar SharePoint capabilities to find and securely work with engineering and design data stored in Autodesk Vault. This integration can help businesses foster collaboration and spur innovation, increase productivity and streamline processes, and make informed decisions based on accurate business intelligence.

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What is Microsoft SharePoint?

Microsoft SharePoint 2010 is a business collaboration platform (BCP) that makes it easier for colleagues, partners, suppliers, and customers to collaborate more efficiently and effectively both inside and outside the firewall. One of the most successful Microsoft products ever, SharePoint is widely used by manufacturing and architecture, engineering, and construction (AEC) businesses to share ideas, expertise, and information. The platform's robust search capabilities and ability to expose data from disparate systems helps users manage documents and projects from start to finish, as well as to access and analyze the data they need to make better decisions.

Thanks to the familiar SharePoint user interface, people in manufacturing and AEC organizations can more easily find and use the business information they need to be productive. SharePoint can also help these organizations reduce costs by consolidating intranet, extranet, and Internet sites on a single platform that can be accessed via personal computers, mobile phones, and tablets. Many manufacturing and AEC organizations have developed customized SharePoint solutions to meet their specific needs.

Challenge Accessing Design Data

Historically, however, it's been difficult to access design data through SharePoint. In manufacturing organizations, such data is typically managed using product lifecycle management (PLM) and product data management (PDM) systems available only to designers and engineers. When project managers, accountants, purchasing personnel, marketers, or salespeople need design data, they must request it from busy design and engineering departments—where less-than-immediate response can render information out of date by the time it's received.

AEC firms also struggle to provide access to design data both within and beyond their walls. Project managers, contractors, estimators, field technicians, and surveyors may use SharePoint to share some project data, but have limited visibility into information managed by the design department.

Frustrated with this lack of access, non-design professionals may ask IT staff for workarounds. As a business collaboration platform, SharePoint is purpose-built to help business users access the resources they need to collaborate every day, improving productivity and decision making. To that end, the platform integrates seamlessly with core business systems, such as enterprise resource planning (ERP) software. However, SharePoint wasn't designed to manage engineering and design data, and therefore does not offer an easy way to directly interface with 3D CAD applications such as AutoCAD®, Autodesk® Inventor®, and Autodesk® Revit®. Some IT departments address the problem by manually uploading design data to SharePoint, resulting in version control problems, stale data, and files that lack intelligence.

What is Autodesk Vault?

While SharePoint was not designed to manage design data, Autodesk Vault data management software is built expressly for that purpose. Tightly integrated with more than 20 different Autodesk Digital Prototyping and Building Information Modeling (BIM) applications—including AutoCAD, Autodesk Inventor, Autodesk® Simulation, Autodesk® 3ds Max®, Autodesk® Navisworks®, AutoCAD® Civil 3D® and Autodesk Revit

software—Vault understands how design data works, including how files reference each other. It was specifically designed to help design, engineering, and construction workgroups organize, manage, and track design data and related information.

The benefits of Vault are myriad. Manufacturing and AEC organizations can save time organizing and re-using data. Users can control design iterations from within Autodesk design applications, promoting faster cycle times and better-quality. Additionally, Vault's release and revision management capabilities help organizations avoid costly mistakes by providing access to only the most current, accurate version of design data—and an accurate, complete archive of the data's history.

Like SharePoint, Vault is widely deployed by manufacturing and AEC organizations—and its adoption has risen drastically over the last few years.

Vault-SharePoint Integration Benefits

Now, manufacturing and AEC organizations that rely on both SharePoint and Vault can experience the best of both—and collaborate without compromise—thanks to seamless integration between Autodesk Vault 2012 and Microsoft SharePoint 2010. Together, these two innovative technologies build a crucial connection between design teams and the extended business enterprise, helping organizations increase productivity and profitability by giving everyone access to the information they need throughout a project's lifecycle.

Share Design Data with the Entire Enterprise

The integration of SharePoint and Vault allows even non-design professionals to access and manage engineering and design data through familiar SharePoint workflows. That means that SharePoint users across and beyond the enterprise—from project managers and field technicians to procurement professionals and suppliers—can continue to work in a comfortable and familiar environment while directly accessing the Digital Prototyping and BIM data they need to do their jobs more efficiently and effectively. In addition, users can view, print, and incorporate files from Vault into existing enterprise data, tools, and processes, enabling complimentary business processes with engineering workflows.

Boost Productivity, Respond Faster

With access to both design data stored in Vault and other related project data, organizations can increase productivity. Whether it's a DWG™ design file, email, Word® document, Excel® spreadsheet, or PowerPoint® presentation, users can find and use any type of file related to a project from within the SharePoint environment. Centralized global searching lets users conduct a single search for information and view aggregated results from SharePoint and Vault. Project teams can extend their collaboration using the latest social computing enhancements in Microsoft SharePoint 2010, including videoconferencing, voting mechanisms, and discussion capturing. With access to the right data at the right time, the right people can better respond to changing business needs faster.

Make Better Decisions

Historically, manufacturing and AEC companies have had a difficult time integrating design and engineering data into their business intelligence systems, forcing them to make decisions based on incomplete or out-of-date information. With the integration between Vault and SharePoint, that's no longer the case. SharePoint users can

incorporate the most up-to-date BIM and Digital Prototyping data into interactive dashboards, scorecards, reports, and business applications. So everyone in the organization can get a complete picture of a project—helping them to make better decisions.

Experience Deep Integration with Microsoft Products

The integration between Microsoft SharePoint 2010 and Autodesk Vault 2012 runs on Microsoft servers and utilizes Microsoft web services and Microsoft SQL Server 2008 R2® technology. Engineers, architects, and designers can manage and track design changes through Autodesk Vault, while SharePoint users can search, view and print Vault data from within SharePoint. Because Autodesk Vault 2012 is directly integrated with the familiar ribbon interface in Microsoft Office software—including Microsoft Word, PowerPoint, Excel, and Outlook®—teams can more quickly and easily organize, manage, and track all documents and email related to a project.

Benefits to SharePoint Users

Let's take a look at how people already using SharePoint for collaboration within and beyond their walls can benefit from the integration between SharePoint and Vault.

Project Manager

Responsible for tracking and managing action items, tasks, and milestones related to a project, project managers use SharePoint to capture, manage, and share project-related information. Where it was once difficult, if not impossible, to access or expose the design data driving their projects, project managers can now include *all* project information—including design data—on a project's SharePoint site. They can now attach drawings and models to action items, tasks, and milestones, as well as report on key performance indicators (KPIs) as a project progresses. They can even create reports in Autodesk Vault, then share them through SharePoint.

Accounting Personnel

With BIM and Digital Prototyping data at their fingertips, accountants can now keep closer tabs on project costs. Through SharePoint, they can access metadata in design models to use in spreadsheets, or capture material quantities or bill of material (BOM) information for cost projections. As a result they can more effectively manage costs leading to greater profits.

Procurement

Easier access to models, drawings, assembly instructions, BOMs, and parts lists helps procurement staff streamline the ordering process. Instead of requesting information from design and engineering departments—information that may be outdated by the time they receive it—procurement personnel can use SharePoint to search and view real-time design data stored in Vault. By including detailed BIM or Digital Prototyping information in their orders, procurement staff can get more accurate price quotes and better service.

Sales

Sales teams often use SharePoint to manage pipeline reports and track sales opportunities. Vault integration gives sales teams deeper visibility into the information they need to pursue and follow up on the most profitable opportunities. They can access technical sales documents to better understand a project or product, attach BIM or Digital

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Prototyping data to bids, and search and view models and drawings posted on SharePoint by technical teams.

Marketing

Early access to models gives marketing teams a deeper understanding of the building or product being designed, allowing them to develop more strategic marketing materials. In addition, they can generate visually rich renderings of buildings or products before they're built—saving on photography costs and providing a head start on attracting new clients and customers.

Field Technicians

Whether fabricating in the shop or building on site, field technicians can now use SharePoint to access the documentation they need to assemble, fabricate, or build—and to provide feedback to engineers and designers. They can mark-up models and drawings, then upload them to a SharePoint site for teams to review. Maintenance technicians can refer to SharePoint for all maintenance information. And organizations can build customized SharePoint workflows to produce requests for information (RFIs), providing bidirectional communication between the field and design and engineering teams.

Suppliers and Vendors

AEC and manufacturing companies already use SharePoint to manage information flow with external suppliers and vendors. Now, they can also pass engineering and design data to those project stakeholders—with full confidence that it's entirely accurate and up to date. Companies simply create a secure SharePoint site that gives suppliers controlled access to specific Vault data associated with those projects.

Benefits to Vault Users

While Vault users already have access to BIM and Digital Prototyping data, sharing it beyond the design and engineering team typically involves attaching documents to emails or using slow, outdated FTP sites. In addition, companies usually deploy Vault behind their firewalls, leaving suppliers, customers, and other stakeholders without direct access.

With the integration between Vault and SharePoint, however, users can collaborate and disseminate important design and engineering data throughout and beyond the enterprise via secure SharePoint sites.

Engineer/Designer

Although Vault is an effective tool for collaboration within engineering and design teams, many engineers and designers still rely on paper- or email-based processes to circulate designs for approval, release them to manufacturing, or share them with suppliers. These manual processes can introduce errors and file version problems. Engineers and designers may not remember which files they sent, or stakeholders may make changes to the wrong version. Furthermore, manual processes cost engineers and designers time better spent on more productive and value-added activities.

The integration between SharePoint and Vault lets designers and engineers focus on designing rather than distributing content. Sales reps, manufacturing personnel, quality control, and others throughout the organization can use a project SharePoint site to access live Vault data—without interrupting designers and engineers. The solution improves the accuracy of disseminated information and helps teams get on the same page at the same time, communicate issues sooner, lower risk, and make decisions faster.

Architect

Architects who already use Vault to manage BIM data—such as AutoCAD drawings, Autodesk Revit Architecture models, and Autodesk Navisworks fly-throughs and 4D sequences—can now easily make this data available to other project stakeholders using SharePoint. Suppliers, owners, contractors, and project managers can search, view, and print BIM data stored in Vault without jeopardizing design integrity.

Benefits to SharePoint Administrators

In the past, SharePoint administrators seeking to manage Autodesk design application data through SharePoint needed to develop a customized integration between SharePoint and the applications—typically with the help of outside consultants. Now, however, out-of-the-box integration between Autodesk Vault 2012 and Microsoft SharePoint 2010 gives SharePoint users direct access to live Vault data with little to no customization, reducing the burden and costs for SharePoint administrators.

In addition, site administrators who control SharePoint lists for specific business units or projects can now meet the information requests of their users. Instead of manually loading data, SharePoint site administrators can use standardized processes to enrich project sites with BIM and Digital Prototyping data. Because the data is pulled live from Vault, it's more accurate and up-to-date.

Extending SharePoint Benefits

While the primary benefit of integrating SharePoint and Vault revolves around accessing and sharing design data, SharePoint provides additional user benefits including social computing, search, and collaboration; composite applications; business intelligence, and workflows.

Social Computing, Search, and Collaboration

Enterprise collaboration, social computing, and search functionality in Microsoft SharePoint Server 2010—which enables collaboration sites, blogs, wikis, and really simple syndication (RSS)—helps AEC and manufacturing organizations connect people to the knowledge they need from others in the extended enterprise. For example, a manufacturer could set up a social media site on which each worker details his or her education, current and past projects, activities, credentials, hobbies, and more. In addition to such user-provided information, SharePoint can access metadata associated with designs and parts, powering robust searches. Then, in the course of a workflow, people can search for the information and input they need—for example, where a particular part or material has been used before. Or, faced with a problem, engineers can search for other engineers who have worked on similar projects, and learn from their insight.

Composites

SharePoint 2010 Business Connectivity Services (BCS) make it possible to combine information from a variety of systems as if all of it lived in SharePoint. Users can create, read, update, delete, and search the data using external lists, working online in a browser or in Microsoft Office. For example, a project manager on a construction site might need financial information, schedules, design data, and work resources information—all from different systems. With SharePoint's composite capabilities, she can view it all in one place, allowing her to work more efficiently.

Business Intelligence (BI)

With SharePoint 2010, employees can use interactive dashboards and scorecards to define and measure success. Key metrics can be matched to specific project milestones and strategies—then shared, tracked, and discussed.

For example, an AEC firm working on a government construction contract might receive payments at certain project milestones. With SharePoint, the firm can monitor progress towards those milestones and run what-if analysis on strategies for completing work more efficiently. Then, at each milestone, it can give the government agency validating financial and project information—and get paid faster.

In a manufacturing organization, the robust BI functionality in SharePoint provides insights that facilitate better decision making. For example, manufacturers can monitor the cost of a commodity, such as steel, so that it can buy when prices fall, and analyze supplier contracts at a deep level to identify the suppliers providing the best prices and terms.

Workflows

The workflow feature in SharePoint 2010 help automate AEC and manufacturing business processes, improving collaboration, consistency, and productivity. Organizations can create specific workflows for those business processes that require active participation from workers to complete tasks. For example, a company might build a workflow for change orders—which may require the engineer to alter the design and a contractor to reschedule and reassign work.

Technical Solution Overview

The integration between Autodesk Vault and Microsoft SharePoint connects SharePoint to live Vault data—data is never copied and always up to date with what's in Vault.

The following versions of the software products are supported:

- Autodesk Vault Collaboration 2012
- Autodesk Vault Collaboration AEC 2012
- Autodesk Vault Professional 2012
- Microsoft SharePoint 2010 standard or higher

Deploying and Configuring the Solution

A SharePoint administrator can deploy the solution on a SharePoint 2010 Server—with no additional skills required unless the organization wants further customization. (System integrators and SharePoint consultants will find the solution highly customizable.)

The administrator simply installs Vault for SharePoint 2010 on the SharePoint Server and logs into Vault as a client. Because the integration supports a dynamic connection, it never presents stale data.

SharePoint lists can be configured by object type to support Vault files, items, and change orders. Lists of Vault files can be scoped by Vault category, state, or folder. Items can be scoped by Vault category or state. Vault change orders can be scoped by state.

The integration supports an infinite number of unique lists. Each list can be mapped to a Vault folder and scoped by a lifecycle state and Vault category, allowing site administrators to control any Vault data that appears on the SharePoint site.

All Vault user-defined properties and system properties can be configured and exposed on SharePoint lists or search views, and customized via SharePoint. Site administrators can configure the integration to provide download access to all file types, including the DWF™ visualization format, or they can configure the integration to block downloads.

For step-by-step instructions on installing Vault on the SharePoint server, see [Autodesk WikiHelp: Deploy and Configure Vault for SharePoint](#).

Conclusion

Now, more than ever, businesses need every advantage to succeed. They must innovate faster, make smarter decisions, increase productivity, and control costs. To do so, they need teams within and beyond the firewall to communicate and collaborate as efficiently and effectively as possible, workflows that automate routine processes, and access to data and business intelligence that facilitates improved decision making. With the integration between Vault and SharePoint, manufacturing and AEC companies can achieve all that—and more.

For More Information

Start experiencing the benefits of deploying Autodesk Vault 2012 on Microsoft SharePoint 2010. To learn more or to purchase Autodesk Vault software, visit www.autodesk.com/vault or contact an [Autodesk Authorized Reseller](#). To learn more or purchase Microsoft SharePoint software, visit sharepoint.microsoft.com.

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