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White Paper

AutoCAD 2002 and Web Publishing

Robert Metcalfe, the inventor of Ethernet, is credited with espousing a principle that is now known as Metcalfe's Law. Metcalfe's Law states that the value of a network is measured by the square of its number of nodes. Put simply, as you add networked participants to a process, the degree to which the participants can contribute to the process grows geometrically.

Let's think about this concept in terms of design:

- First, while drafting and design is a critical part of a company's business, it is usually a small part of its overall value chain. However, the resulting design data is a company's most valuable asset.
- Second, for every member of the core design team, there are another 5–10 (or more) people who must consume, interact with, contribute to, and make decisions about design data.
- Third, a company's unit of work is measured in terms of a project, and not in terms of a single drawing or set of drawings.

It's clear that the way to get the most value out of design data and incorporate all members of the team in a project setting is to ensure that data is distributable, accessible, and usable by every member of the team. One of the most powerful ways to keep all of these contributors involved and current is through web publishing of AutoCAD® 2002 design data.

More importantly, the data publishing capabilities in AutoCAD 2002 are also available in Autodesk's family of industry-specific design applications that include

- Autodesk® Architectural Desktop 3.3
- AutoCAD® Mechanical 6
- Autodesk® Mechanical Desktop® 6
- Autodesk® Map 5
- Autodesk® Land Desktop 3

Now, more than ever, competitive advantage has less to do with designing and everything to do with how a company uses design data. What are the mechanisms in AutoCAD 2002 that make for powerful publishing?

AutoCAD 2002 Publish to Web

Of course, once engineering documentation is completed, it has to be reviewed by peers and an engineering manager. The documentation could be individually e-mailed to these peers, or the original engineer could publish them to an internal URL. That way, all members of the design team, whether or not they use CAD software, can interactively review and comment on a single set of drawings. If external audiences have to share the information as well, the engineer can publish the data to a website.

Publish to Web was introduced in the first AutoCAD 2000i extension as a mechanism to easily create web pages that contain images of AutoCAD drawing files. Publish to Web handles all details of generating the HTML code and outputting the images, so people with little or no prior web development knowledge could readily use the feature.

AutoCAD 2002 builds on that feature set by offering key enhancements such as additional HTML templates and the introduction of themes that offer you greater control over the formatting of your generated web pages.

You can also make your own templates that can be integrated with the AutoCAD 2002 Publish feature. These improvements let you control your Publish to Web projects while maintaining the feature's ease-of-use.

Several of the updates to this feature include the ability to select different publishing sizes for each of three file types (DWF, JPG, and PNG). You now have more control over the size of the images that get posted to your website.

i-drop

i-drop™ is a new Autodesk technology enabling designers and developers to create web content that gives you the ability to drag design content from a web page directly into your design products.

With i-drop enabled capabilities, companies can now publish interactive block, symbol, and drawing libraries to a corporate intranet, or perhaps a secure extranet. Autodesk's i-drop technology enhances the collaborative design process by allowing users to view and then drag relevant content directly into their drawings in real time.

For example, a lighting designer may need to use a specific fixture within an AutoCAD or 3D Studio VIZ® session. Provided that a lighting manufacturer's website contains a library of its fixtures from which to browse, the designer can drag the appropriate fixture into the design session. Designers can now select any DWG file from an i-drop enabled website and drop its geometry directly into AutoCAD 2002.

But beyond access to manufacturers' content, the ability to publish i-drop files as part of Publish to Web is extremely powerful for general project use.

Companies can take entire block or symbol libraries and publish them to intranet or Internet locations, all in i-drop format. Now all contributors to a project can have direct access to the right set of symbol information in one location, with each symbol available to be dragged directly into drawings that are part of the project.

This allows standard company drawing information to be intelligently reused instead of re-created. Moreover, since published web pages can be automatically updated, the CAD manager can ensure that the symbol or block data is always up-to-date.

And it's more than just geometry: i-drop is an XML-based technology that can carry relevant nongraphic part or product data in addition to the object's geometry. It is completely up to the designer.

Drawing Web Format (DWF)

Another major concern of design companies is the ability to protect intellectual property and mitigate liability. One area where this is evident is in transmitting drawings to third parties for hardcopy output or for viewing and markup. But sending native DWG has significant security pitfalls because a careless or unscrupulous recipient can change the data.

The concept of an ePlot, a plot-ready large-format document, was introduced with AutoCAD 2000 to establish a standard in the design and engineering markets that is analogous to PDF in document publishing. ePlot provides a mechanism by which design information can be exchanged in a lightweight, portable, web-friendly, secure, precise format.

ePlots are created through the AutoCAD hardcopy plotting pipeline and stored in a DWF (drawing web format) file. The DWF file is then reviewable and printable through Autodesk's Volo™ viewing products, Volo™ View and the freely downloadable Volo™ View Express. DWF is the best format for exchange of design information among team members via the Internet. It makes work easier for each person that currently reviews, marks up, or queries design information.

In AutoCAD 2002, the ePlot driver has been updated to create DWF files with a higher level of detail. Using the Volo products, these new DWF files can be printed with the same level of visual resolution as an AutoCAD 2002 plot of the original DWG file. These improvements include

- Optimized-for-plotting ePlot driver model
- Optimized-for-viewing eView driver model

- Support of merge control, ISO linetypes, and fill patterns
- Control over color depth of DWF output
- Support of true color plot styles
- Greater control over raster output
- More efficient storage of raster data (PNG and Group 4 TIFF)
- File size and tessellation optimization improvements

Now, instead of sending DWG files to a municipality for permit approval, transmitting documents to a job site for change orders, or simply uploading them to the local reprographer, the new plotting-optimized DWF protects you while delivering the fidelity you need.

Volo View and Volo View Express

With the Autodesk companion product Volo™ View, you can open, view, mark up, print, and plot AutoCAD drawings.

Whether your data is on a network or on the Web, you can use Volo View without installing AutoCAD. You can also view Autodesk Inventor™, Mechanical Desktop 4, and AutoCAD Architectural Desktop™ files with the help of object enablers downloaded from the Autodesk website. By making drawings available to all members of the design team, Volo View improves communication, streamlines the design process, and shortens the project cycle.

The free viewer Volo™ View Express is included in AutoCAD 2002 to allow for viewing of the new DWF formats produced by the Publish to Web feature and through ePlot.

Publishing Design Using eTransmit

What if the engineering drawings we discussed earlier need to be sent to a third party for some additional work or sent to the manufacturer for an RFQ? Again, the drawings can be put on a ZIP disk, or e-mailed, but this doesn't easily take into consideration all xref'd drawings, fonts and shape files, plot styles, and so forth.

The eTransmit function automatically assembles all necessary information into a single, comprehensive package of information that can be compressed and password-protected for distribution.

In AutoCAD 2002, eTransmit is also standards-aware, dramatically increasing the value of this collaboration tool. Now eTransmit automatically includes the DWS standards file associated with the drawing if one has been created. With this capability, everyone on the entire design team can operate using a single standard.

One particular capability of interest is eTransmit's ability to create a web page that is associated with each transmittal set. Transmittal sets can then be put on the Web for download by multiple constituencies who need to access these intelligent packages of information.

Individual features of eTransmit include

- **Compression—**You can create a compressed, self-extracting executable or ZIP file while creating the transmittal set. The set can be delivered electronically with less file-size overhead.
- **Security—**You can protect the compressed file with a password. Password protection helps in preventing unwanted parties from viewing your design data.
- **E-mail Notification—**You can automatically send an e-mail notification to the receiving party about the transmittal set. This is an easy way of sending information about the transmittal set, like location and password, to the receiving party.
- **Report Generation—**Reports include complete log information about the transmittal set: packed files, any deviations encountered, and more. A single transmittal set report is available to all users to track transmittal activities, manage problems, and determine which files need to and have been sent.
- **Standards—**eTransmit is also standards-aware, dramatically increasing the value of this collaboration tool. Now, every time a file is packaged for distribution,

eTransmit automatically includes the DWS standards file associated with the drawing. With this capability, everyone on the entire design team can operate using a single standard.

- **Web Posting—**The Web Posting tool facilitates posting the transmittal set to an Internet or intranet location. This helps global enterprises communicate and exchange design data without burdening the e-mail system.

Managing Your Corporate Drawing Standards Using the Internet

As design professionals, you live in a world where project collaboration and data sharing is increasing dramatically. Driven by the globalization of business, the requirements of fast-track projects dictate that data is shared between individuals and offices within an organization, and between organizations themselves. Without the implementation of standards, this round-tripping of design data can result in errors that are costly and time-consuming to fix.

One of the primary tasks of CAD managers is to set up standards and administer them. Our survey of over 300 CAD managers revealed that more than 90 percent of them use standards and 80 percent consider standards to be important or very important. Most users of standards indicated that administration was laborious, either because of a lack of tools or because of the difficulty in maintaining tools developed in-house.

The CAD Standards feature gives CAD managers a robust set of tools to check and enforce standards compliance, resulting in better coordinated teams, a more efficient and effective design process, and a higher return-on-investment in design tools. It provides a way to associate standards (DWS) files with AutoCAD drawings, and perform interactive and batch audits to ensure that any discrepancies between a drawing file and its associated standards can be resolved.

The Standards Manager

The Standards Manager is used to associate standards with the current AutoCAD drawing, as well as administer plug-ins. The Standards tab displays all standards files that are associated with the current drawing. As individual standards are selected from the list control, the Description is refreshed with summary information that is pertinent to the selected standard. Standards can be added, removed, and reprioritized.

Auditing Drawings

Analogous to a spell checker in a word processor, the standards interactive audit checks the active drawing against the associated standards, reports on any discrepancies, and suggests appropriate resolutions.

You can either accept the proposed alternative, or manually fix the problem in AutoCAD, without interrupting the audit process. Problems can also be ignored (appropriate in the case of construction geometry, for instance). Previously ignored problems may be reported in subsequent audits, depending on a user setting.

Publishing Summary Report Information

The Standards Manager includes a Batch Standards Checker that performs batch audits on multiple drawings. Once the check is complete, this feature generates an XML-based, browser-viewable report of standards violations.

Individual drawings can be checked against their associated standards files, or a set of drawings can be checked against a set of global standards.

Multiple batch audit configurations can be saved in an external configuration file and reused later. An operating system command-line version of this tool can be used for scheduling batch standards checks or used in server environments.

The report file is automatically displayed as soon as the batch standards checker completes a batch audit, or by choosing the View Report button from the batch standards checker after running a batch audit during an AutoCAD session.

Selecting the Ignored Problems button filters the report so that it displays a summary of

the standards violations found for each drawing.

Most importantly, these reports are browser-based and can be published so that all contributors to the project can get up-to-the-minute information on the integrity of the drawings they created or modified.

File Navigation and Web Folder Support

AutoCAD 2002 features more fully integrated support for web publishing and file access through the implementation of Web Folder support (or Internet Folders depending on your operating system). Based on Microsoft's Web Distributed Authoring and Versioning (WebDAV) protocol, AutoCAD 2002 allows access to Web Folders, as well as the ability to customize to include your Web Folders in the AutoCAD File Navigation dialog box.

WebDAV extends the HTTP/1.1 protocol to allow you to publish, lock, and manage resources on the Web. WebDAV works behind the scenes over the HTTP protocol, giving authors a single, consistent way to access and write documents residing on remote servers from multiple vendors. WebDAV also "locks" documents to prevent users from accidentally overwriting each other's changes.

In addition, WebDAV improves navigation and manageability through documents and their properties, allowing you to navigate a WebDAV-compliant server and view the server as if it were a part of the local file system.

For example, you can drag and drop files and perform other tasks such as moving, copying, and saving files seamlessly between local files and remote WebDAV-compliant servers. In addition, you can create, remove, and retrieve properties about web pages in a consistent way.

To Create a Web Folder

- Open My Network Places
- Double-click Add Network Place
- Follow the instructions in the Add Network Place wizard

To open My Network Places, double-click My Network Places on the desktop. Before you can create a Web Folder, contact your network administrator for the Internet address of a web server to which you can save files. Web Folders are created automatically when you open resources on a web server to which you have read and write access.

Once the Web Folder is created, you can add that folder to the Places List in the File Navigation dialog box by navigating to that folder and dragging the folder into the Places List. You can also right-click in the Places List and select Add Current Folder.

Setting Up a WebDAV Server

Setting up a WebDAV publishing directory on your server is as straightforward as setting up a virtual directory through the Microsoft® IIS snap-in. Once you have set up your publishing directory, users with the correct permissions can publish documents to the server and manipulate files in the directory. Before you can set up a WebDAV directory, you must install Microsoft® Windows® 2000 Professional, Windows 2000 Server, or Windows 2000 Advanced Server.

Buzzsaw, Redspark, and Point A

Autodesk gives you several options for managing your digital design data on the Web. Project, collaboration, and file hosting services are available from Buzzsaw.com, Redspark, and Autodesk Point A.

Buzzsaw.com is a secure, centralized online workspace for everyone in the building design and construction industry. AutoCAD 2002 allows integration with Buzzsaw.com's online project collaboration and print management services.

For example, you can access, open, and save files and data that are hosted on Buzzsaw.com from AutoCAD 2002's File Navigation dialog box. And you can publish print-ready documents directly to your local reprographer using AutoCAD 2002 and the Publish to Plans & Specs™ application that's included on the AutoCAD 2002 CD. Visit www.buzzsaw.com for more information.

The AutoCAD File Navigation dialog also links to services on RedSpark. RedSpark provides inter-enterprise applications for the development, sourcing, and marketing of engineered products. A spinout from Autodesk, RedSpark provides companies that develop consumer products, medical equipment, industrial equipment, and automotive/aerospace components with tools to connect with their suppliers and customers.

RedSpark's suite of solutions includes RAPIDteam™, an end-to-end collaborative product development (CPD) solution designed to accelerate product development and direct materials sourcing processes; and ProductEdge™, a customer relationship management (CRM) solution designed to power a manufacturer's website to serve existing customers and assist in acquiring new clients. Visit www.redspark.com for additional information.

Finally, the Autodesk Point A design portal offers My Files at Autodesk Point A for simple file storage on the Internet. For customers with no existing web-available storage space, My Files is the perfect choice. Please visit www.pointa.autodesk.com for more information.

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