



AECbytes Product Review (August 30, 2007)

## Newforma Project Center

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### Product Summary

Newforma Project Center is a project information management and collaboration application targeted towards architecture and engineering firms. It organizes project information, facilitates information exchange, and streamlines project processes.

**Pros:** Automatic indexing and categorization of all project information so that it can be easily accessed, managed, and searched, without the need to move files or add tags to them; plug-ins to Microsoft Outlook allow both incoming and outgoing emails to be quickly saved with their respective projects; built-in Viewer for marking up drawings and snapshots of 3D models and sending them as PDFs to external members with an option to log a transmittal; powerful search capabilities including the ability to find object data in CAD files; dedicated interfaces for managing document sets, submittals, and transmittals and for managing and tracking issues to resolution; dedicated Info Exchange server allows project-related information to be exchanged with external team members easily and securely.

**Cons:** Help documentation has an over-abundance of text and very few illustrations, providing a poor learning supplement to the training sessions provided during initial deployment and upgrades; Viewer does not directly support 3D files, which are becoming an important part of the AEC workflow; email integration is limited to Microsoft Outlook and does not extend to other email applications.

**Price:** Available for license on an annual subscription fee basis in two modes: full product functionality and "express" license that includes email management, search, and viewing and markup capability. The annual cost is determined by actual usage.

Last month, in my article on the [AEC Technology Strategies 2007 Conference](#), I had briefly described the implementation of Newforma Project Center, a relatively new project information management application specifically developed for the AEC market, at the firm, Eppstein Uhen Architects. Newforma has just announced the commercial availability of the Fourth Edition of the application, which seems to be gaining a lot of traction in other leading firms as well, such as HOK, SOM, and BNIM Architects. HOK, for instance, first deployed the solution in selected offices in June 2006 and is now expanding its deployment to 1,600 employees across all its 26 offices worldwide as an important part of its strategy for information management and efficient project delivery. This review takes a detailed look at Newforma Project Center to find out how it works and what accounts for its remarkable success so far. Since it is being reviewed in AECbytes for the first time, we will look at the application as a whole rather than focus only on the new features in the recently released version.

### Overview of Newforma Project Center

The objective of Newforma Project Center is to create a more productive environment for project managers and the project team by organizing project information, facilitating information exchange, and streamlining project processes. It is currently targeted towards architecture and engineering firms, although plans are on for future versions to extend its capabilities to cover tasks and processes specific to construction firms as well. Unlike a web-based project extranet such as Autodesk Buzzsaw whose prime focus is on collaboration, Newforma Project Center is first and foremost a solution for project information management within a firm, although it does include an online component called Info Exchange for external collaboration as well. It works by installing a server that sits next to a firm's central server and automatically indexes and categorizes all the information so that it can be easily accessed, managed, and searched. There is no need to move files to specific project folders, or even to add tags to them—the indexing system automatically keeps track of what document belongs to what project. In the case of project-related email, there are plug-ins to Microsoft Outlook that allow both incoming and outgoing emails to be quickly saved with their respective projects with a single click. In addition to managing and organizing project documents and emails, Newforma Project Center includes capabilities for marking up drawings and snapshots of models, managing and tracking issues to resolution, and creating and managing document sets, submittals, and transmittals.

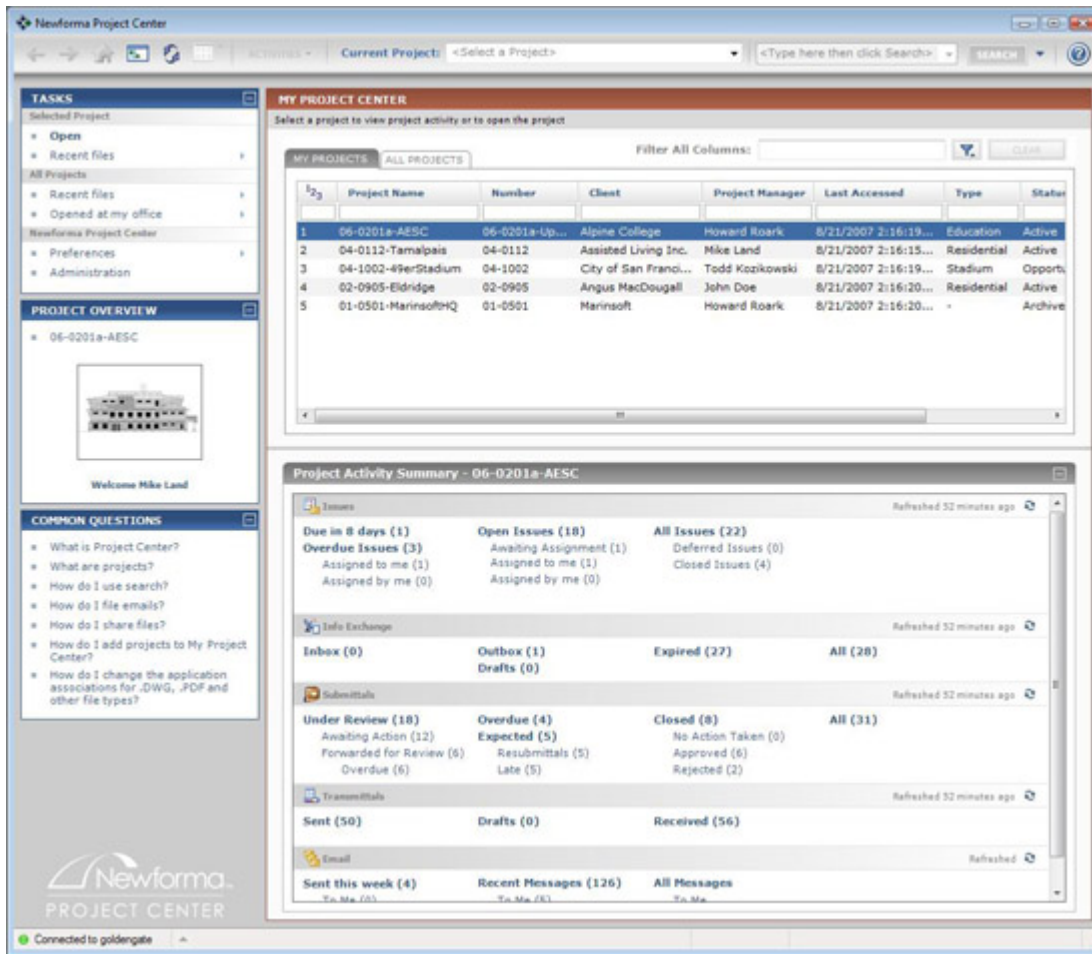
Newforma Project Center is an enterprise-level solution, and is priced per user per year. Unlike regular desktop-based applications that I review by installing them on my own computer, I had to

review Newforma Project Center by visiting the Newforma office and working with a sample sets of projects that had been set up for demonstration and testing. All the screenshots shown in this review are of this sample deployment.

Let's move on to look at the different components of the application in more detail.

## Working with Projects

Projects are the primary method by which information is accessed and organized within Newforma Project Center and form the basis for all the features of the application, including issues, transmittals, submittals, markups, etc. When you launch Newforma Project Center, the first screen that appears is My Project Center, shown in Figure 1. Here you can choose the project you want to work with from the listing under the "My Projects" tab, which are the projects on which you are a team member. You can also open and browse through other projects available on the Project Center Server that are listed under the "All Projects" tab, provided you have the necessary permissions to do so. The application honors the existing network permissions that are in place in a firm and does not impose a separate security model. Thus, it does not require file permissions to be duplicated, as is the case with project extranet solutions that need a parallel security model to be created.

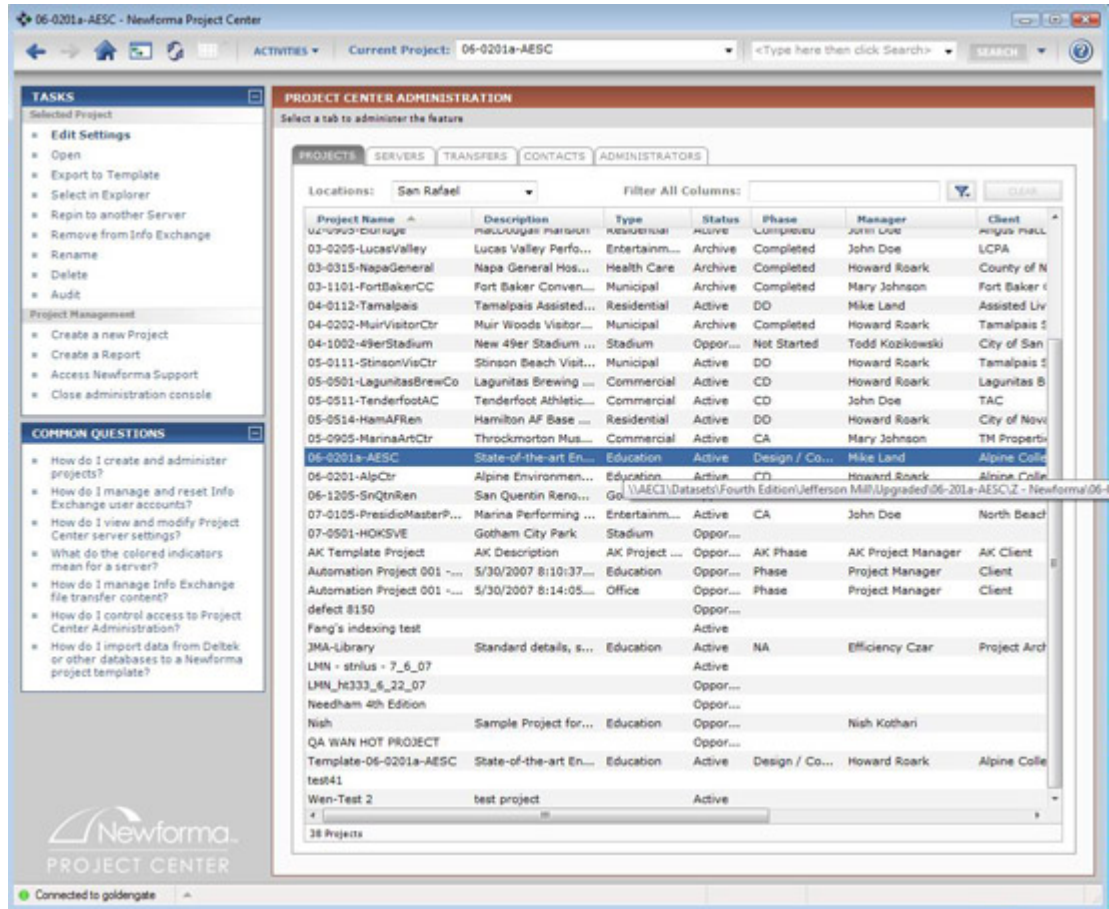


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**Figure 1.** The opening screen of Newforma Project Center, showing a list of projects and an activity summary of the selected project.

If there are lots of projects listed in My Project Center, the list can be quickly narrowed down by entering text to apply as a filter to any of the columns in the space provided at the top of every column. For example, entering the word "City" in the Client column will only show those projects that have "City" as part of the client name. You can also enter text for applying as filter to all the columns. When you select a project, a summary of all recent activity related to that project is displayed in the Summary window, including its issues, Info Exchange transfers, submittals, transmittals, and project email along with the corresponding links for quick access to the required information. A Task list on the left of the Project Center window shows all the tasks related to this level of activity such as

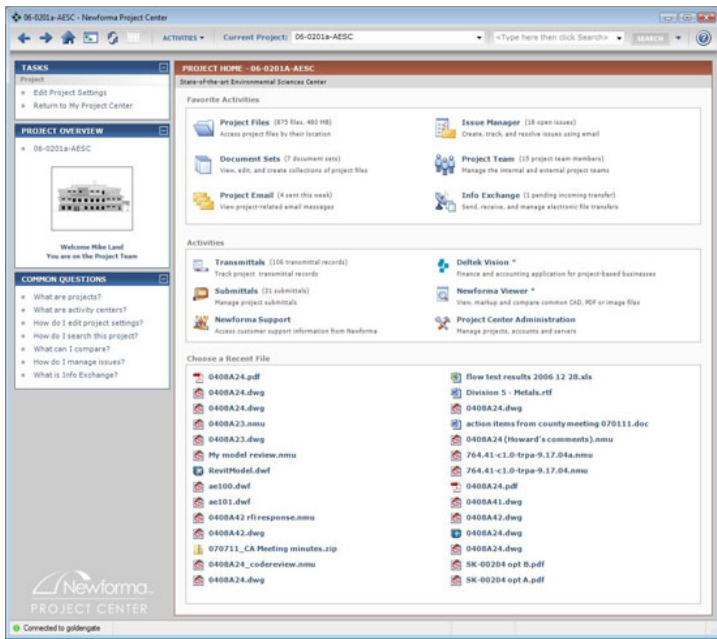
opening recent files and setting various preferences such as the configuration of the activity center, user profile, Outlook signature, and so on. For those who have administrator rights, an Administration task is available to manage and configure Project Center projects, servers, user accounts, administrators, and the Info Exchange server (see Figure 2). Context-sensitive help is available in the Common Questions section, which lists the questions related to the current screen and links directly to the relevant section in the online Help where that question is answered. This task list and context-sensitive help is a common feature of the Newforma Project Center interface that appears in most of its windows, as you will see in the subsequent images. A toggle button allows the entire left pane displaying the task list and common questions to be hidden or displayed when required.



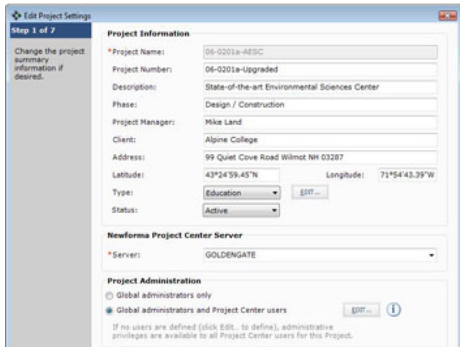
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**Figure 2.** The Project Center Administration interface, showing the range of tasks and settings available for administrators to configure.

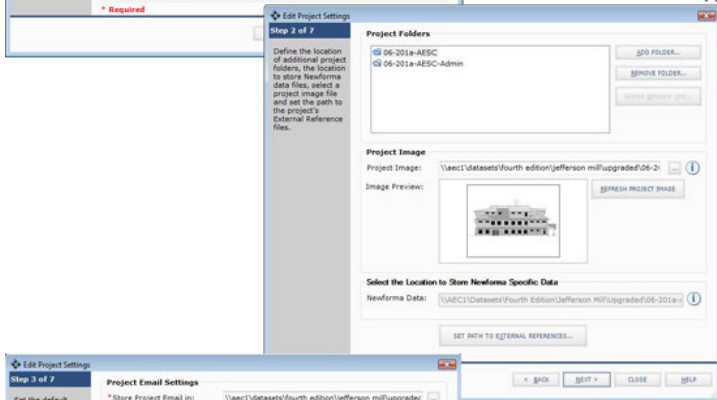
Double-clicking on a project from My Project Center, shown in Figure 1, opens up the Project Home activity center, shown in Figure 3-a. This serves as the project starting point, providing links to all the files and activities related to that project and also lists the recent files that were opened. Projects are created by administrators who specify key informational fields such as Project Name, Project Number, Status, and Type. These settings can be viewed and edited by those with administrator privileges by using the Edit Project Settings option in the Project Home window or the Edit Settings option in the Project Center Administration interface shown in Figure 2. The settings are captured in a series of seven dialogs, the first three of which are shown in Figures 3-b to 3-d. As you can see from the settings, one of the most important components of a project is the location of the files associated with it on a company's network. A project can have several file locations, each of which is entered as a root project folder beneath which the files and nested sub-folders are then associated with the project by Project Center. As mentioned earlier, one of the key aspects of the application that has contributed to its success is that it does not require firms to move, modify, or restructure their network-stored project data. Instead, project administrators simply define projects that reference the project data as it is currently structured on their firms' central file servers. The data is then brought together virtually by Project Center and conveniently accessible from one place instead of many different locations.



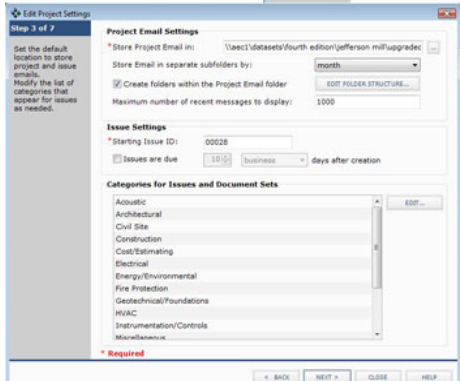
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(b)



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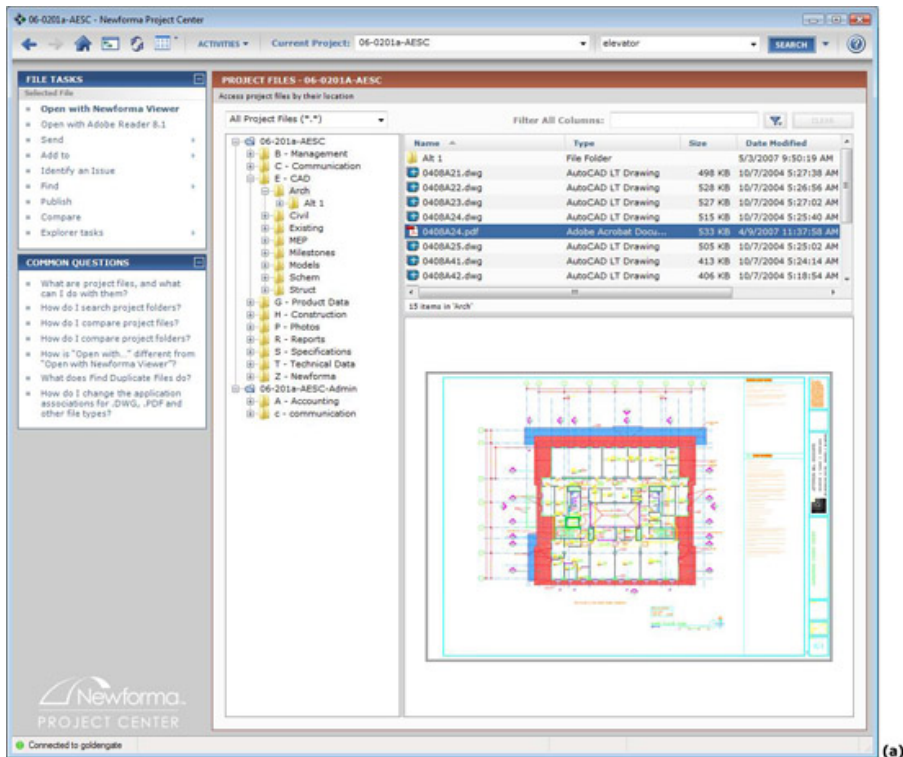


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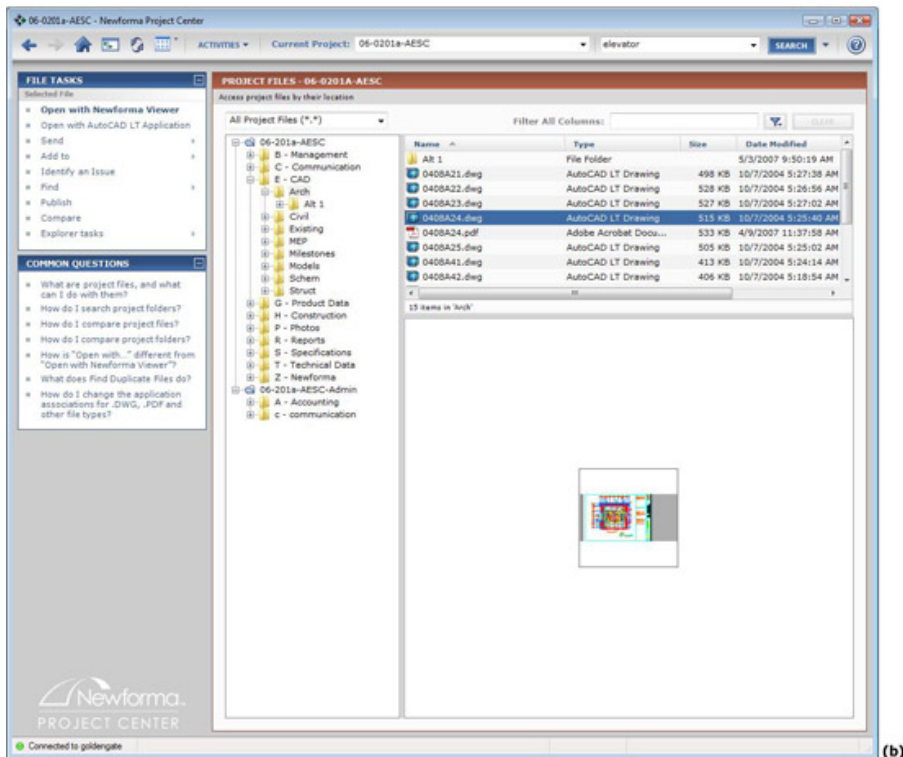
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**Figure 3.** The Project Home interface for the project selected in Figures 1 and 2, and the first three of its Project Settings dialogs.

Clicking on the Project Files link in the Project Home window takes you to the Project Files interface shown in Figure 4, where you can directly access and browse the folders and files in the currently open project as well as carry out a number of project-related tasks. It brings related folders and files from across the network together in one place, enabling project-specific search as well as a convenient way to browse project files without needing to know the actual file locations on the network. It provides most of the Windows Explorer capabilities such as copying and pasting, moving, deleting, and renaming files and folders and creating new folders. Additionally, it also allows duplicate files, which typically proliferate over time in a project and greatly hamper efficiency, to be detected and removed. By default, all the files in a folder are displayed in the Project Files interface, but you can narrow down the list by specifying a file type or by using any text as a filter. Selecting a file shows a preview of it in the lower right pane. For some file types such as a PDF, the file is actually read when it is selected, allowing a full-size preview, as shown in Figure 4-a. In contrast, for a DWG file, only the thumbnail image that is stored with the file is displayed, making it difficult to get a good preview, as shown in Figure 4-b.



(a)



(b)

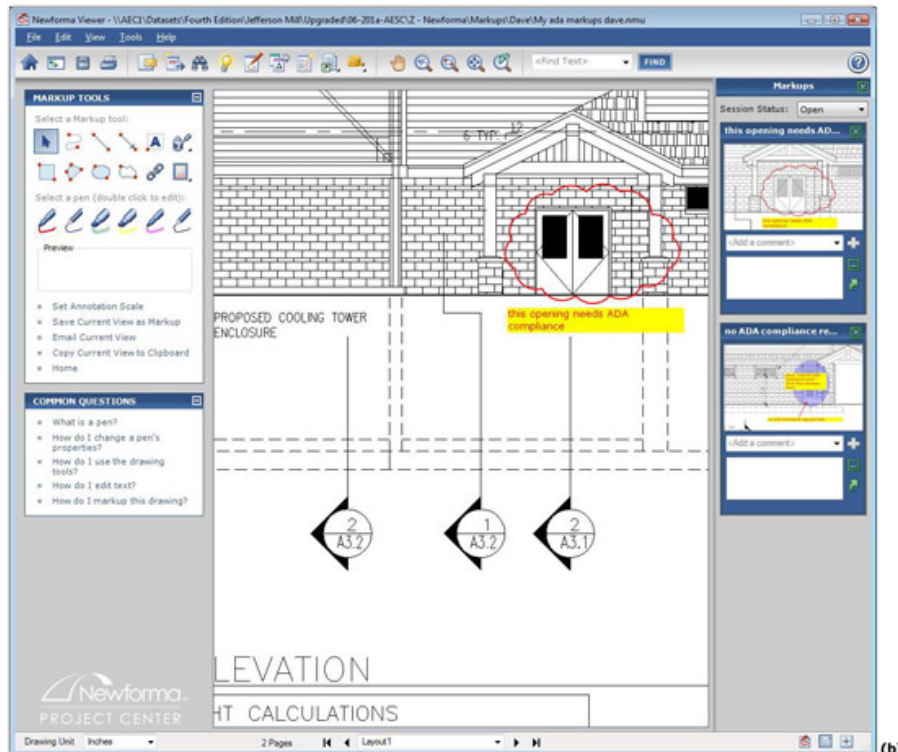
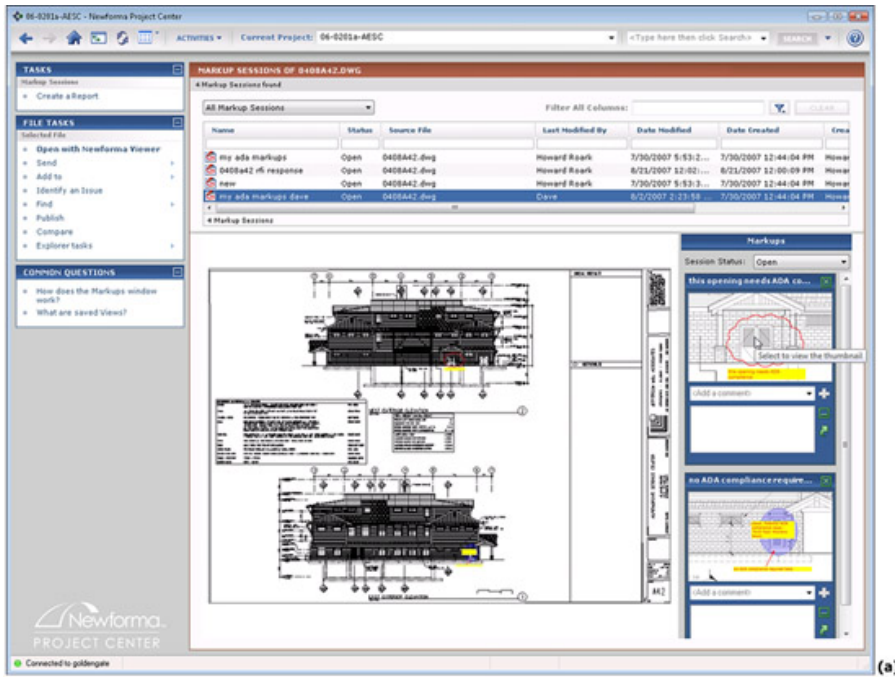
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Figure 4. Previewing a PDF and a DWG project file in the Project Files interface.

### Viewing Files and Creating Markups

Newforma Project Center includes a full-fledged built-in viewer that allows graphic files to be viewed and marked up using annotation and drawing tools. The CAD file formats that can be opened in the viewer are DWG, DGN, and DXF. Supported published formats include PDF, DWF, and PLT. Various raster image formats such as BMP, JPEG, GIF, TIFF, and PNG can also be opened and used as the basis for creating markups. Markup sessions get stored as separate NMU files overlaying the original source file, which remains unaffected. Figure 5-a shows how the markup sessions related to a

certain drawing can be previewed in the Project Center, and subsequently opened in the Newforma Viewer, shown in Figure 5-b. As you can see, this particular markup file has two markups that are displayed in the Markups palette on the right. Selecting a markup directly zooms on the specific area of the drawing where the markup has been created. The markup tools, shown on the left, are simple and easy to use, allowing you to add leaders, rectangles, ovals, text, and revision clouds using different pen styles and colors.

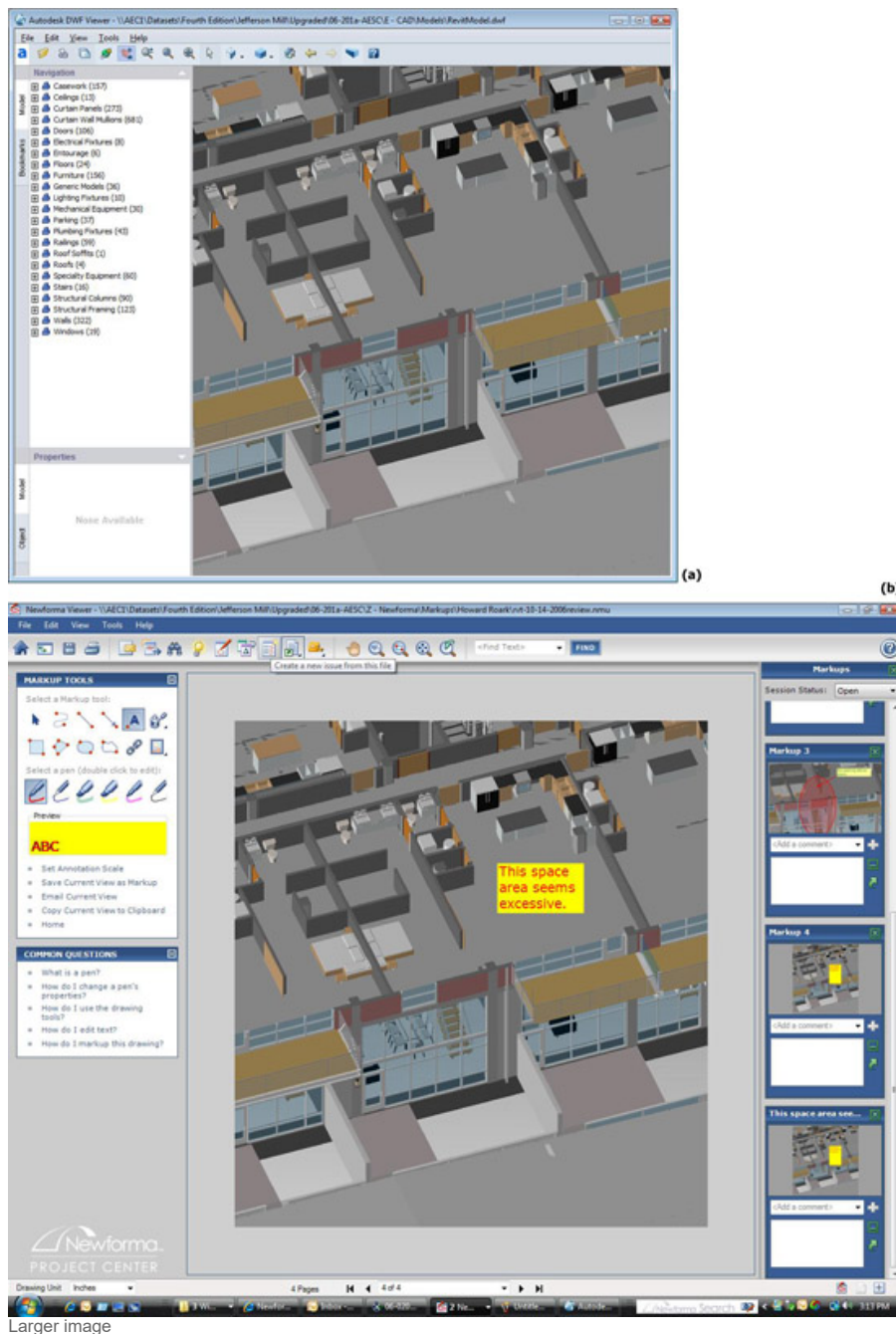


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**Figure 5.** Previewing a markup file in the Project Center and subsequently opening it in the Newforma Viewer.

While the Newforma Viewer does not directly support 3D viewing/navigation of models exported from applications such as Autodesk Revit, ArchiCAD, Bentley Architecture, or AutoCAD, it does provide a way to include the markups of 3D models as part of the workflow, which is becoming increasingly

important as BIM (building information modeling) implementation gains momentum in the AEC industry. You can either open the files in their native application, or if the model has been saved in the 3D DWF format, open it in the free Autodesk DWF Viewer, as shown in Figure 6-a. You can then use the Newforma Screen Capture tool, located in the Newforma Search utility that gets installed in the Windows Taskbar at the lower right corner of the screen, to take a snapshot of the screen. Once you select the area of the screen you want to capture, it automatically opens up in the Newforma Viewer, allowing you to overlay it with markups as required, as shown in Figure 6-b.

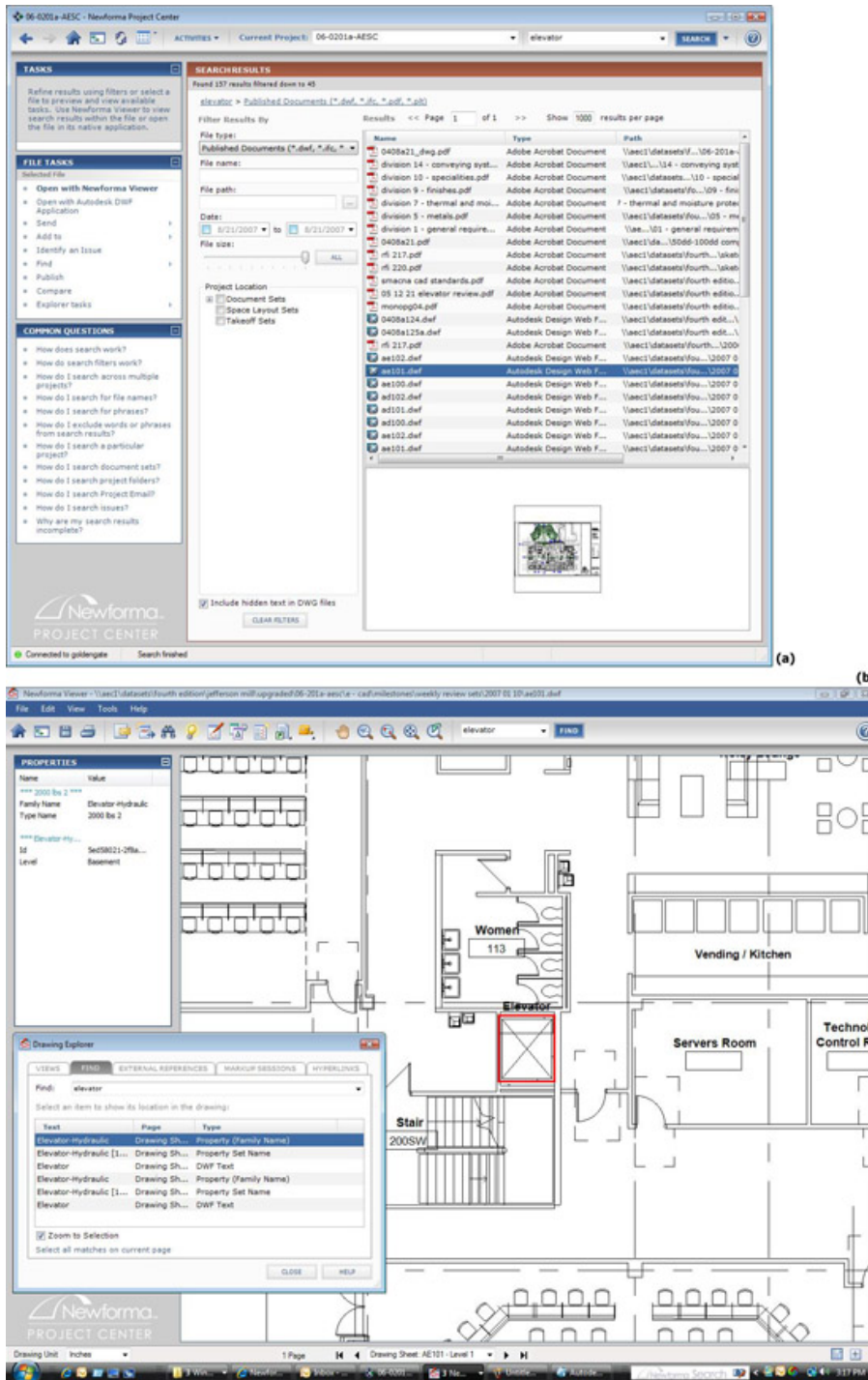


**Figure 6.** (a) A Revit model that was saved in the 3D DWF format, which was then opened in Autodesk DWF Viewer. (b) A snapshot of the model that was captured and marked up in the Newforma Viewer.

The powerful search capabilities of Newforma Project Center, which extends to all standard AEC document types found in project folders, email (including attachments), Office documents, PDF files, the contents of zip files, and so on, also include the ability to search for non-graphical object data in formats such as DWG, DWF, and IFC. (Note that while search of IFC files is supported, the Newforma Viewer does not yet support viewing of IFC files.) Figure 7-a shows the current project being searched for the word "elevator." In the Search Results window, the search has been narrowed only to published file formats such as DWF, PDF, PLT, and IFC. As you can see, several files meet



this search criterion, one of which is subsequently opened in the Newforma Viewer, shown in Figure 7-b. The Drawing Explorer dialog in the Newforma Viewer lists all the instances where the word "elevator" has been detected in the drawing, whether it is in the form of a text label, an object name, or an attribute name. Clicking on any of these instances in the list takes you directly to that portion of the drawing where the object or text is located.



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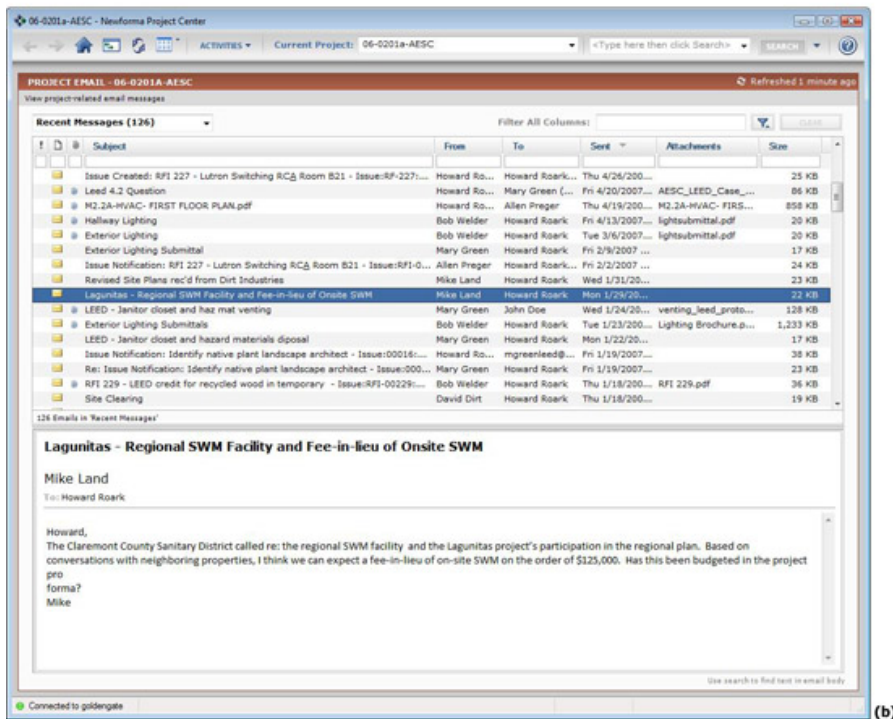
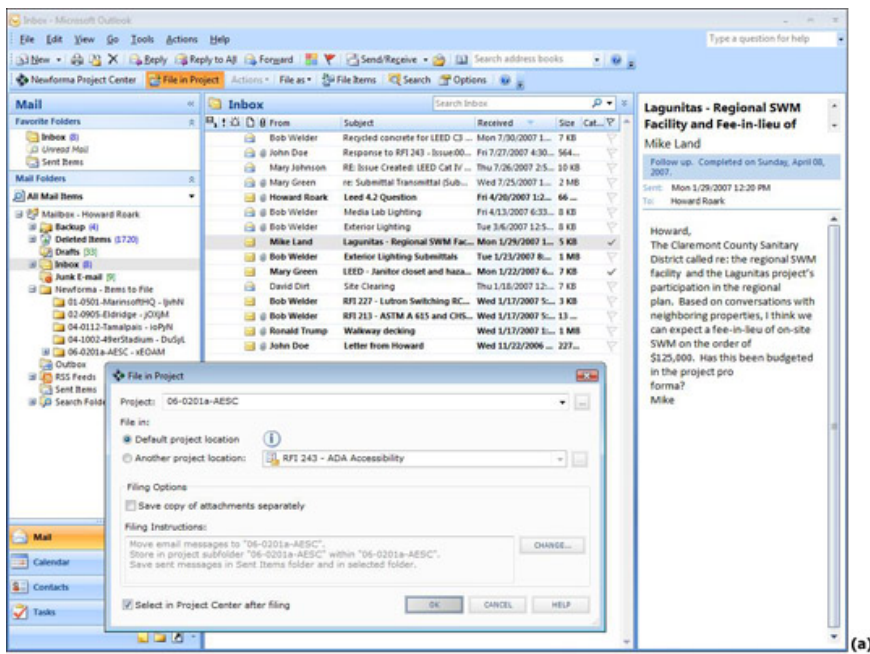
**Figure 7.** (a) Searching for the word "elevator" in all files of specified types within a project. (b) Opening one of these files in the Newforma Viewer and exploring the different objects and text labels in which that word appears.

Other capabilities of the Newforma Viewer include the ability to manipulate drawing visibility by showing and hiding objects by layer or by type, counting objects in the drawing and measuring lengths and areas, and printing scaled views of the drawing on any system printer. There is also a comprehensive drawing compare feature that allows revisions to drawings to be detected and

graphically viewed using a "Digital Light Table" tool. This feature was described in detail in the AECbytes Tips and Tricks article, "[Animating Illustrations of Design Changes using Newforma Project Center](#)" published earlier this year. You can compare not only two versions of a drawing but multiple versions as well, with a compare animator that dynamically transitions between adjacent drawing versions for a clearer understanding of how the design has evolved over the project timeline. There is also a batch compare capability that allows you to set up a comparison of a set of baseline drawings with a set of revised drawings and generate and output color-coded comparisons to a printer or a PDF file. This lets project team members quickly scan the color-coded revisions for unintended or undocumented revisions.

### **Managing Project Email**

One of the most compelling features of Newforma Project Center is its ability to effectively manage the proliferation of project-related email, keeping track of which is becoming a major challenge for AEC firms. In my article on the [AEC Technology Strategies 2007 Conference](#), I had described the example of a Project Manager from the firm, Eppstein Uhen Architects, whose Email Inbox had over 4000 emails related to many different projects and other tasks. This email was not accessible to others and any email, received or sent, related to a specific project was not being documented with the project, unless the Project Manager specifically saved it out in the project folders. Newforma Project Center has addressed this problem by developing plug-ins to Microsoft Outlook that allow both incoming and outgoing emails to be quickly saved with their respective projects. Figure 8-a shows this feature being used to file an incoming email in Microsoft Outlook to the default location of a project that was specified in the Edit Project Settings dialog (shown earlier in Figure 3-d), using the command from the Project Center add-in to the Outlook toolbar. If multiple users save the same message to the same folder, only one copy is created to avoid duplication. If you are offline, there is a useful option to save an item to file later when you are connected. You can specify what should happen to the Outlook messages after they are filed in Project Center in the Filing Instructions section of the File in Project dialog. If you now access the Project Email activity center of Newforma Project Center, as shown in Figure 8-b, you will find the email that was just filed.



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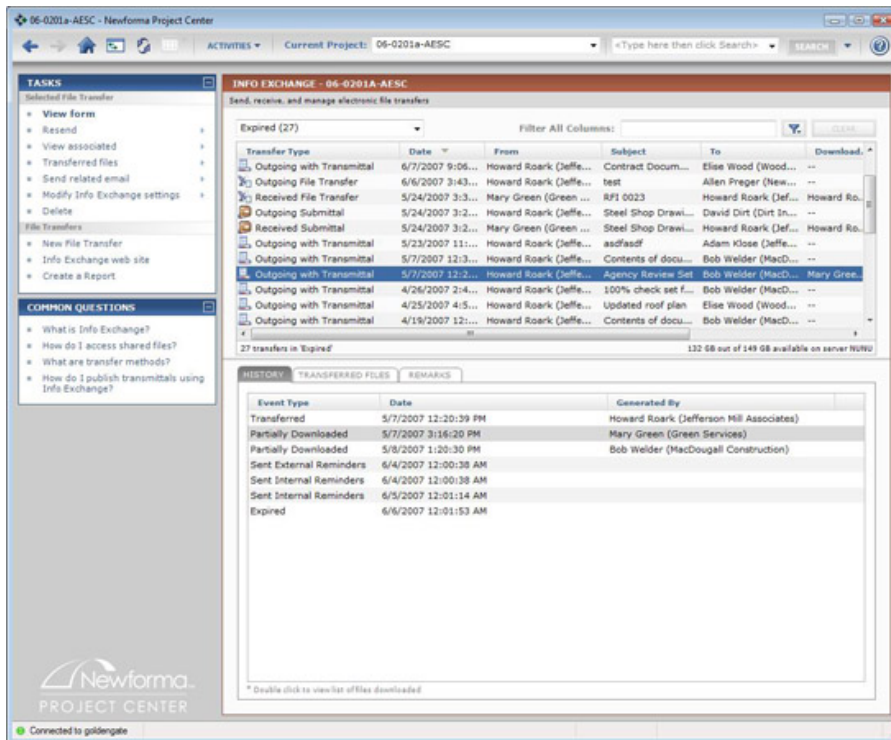
**Figure 8.** Filing an email with a project in Microsoft Outlook, and subsequently viewing it in the Project Email activity center of Newforma Project Center.

By default, Project Center stores the email messages in separate subfolders based on month, quarter, or year, depending upon the option that was selected in the Edit Project Settings dialog. Additional email sub-folders can be defined during project setup to optionally store messages by Client, Contractor, or any other classification, though this is not a requirement since Project Center's filter and search capabilities make it easy to find specific emails. You can narrow the list of emails in the Project Email activity center by choosing a specific filter from the drop-down list such as Recent Messages (as in Figure 8-b), Messages to You, Messages from You, All Messages, and so on. The number of email messages for each filter category is indicated in parentheses next to the filter name. You can additionally also search for text matches in specific columns or apply text as a filter to all columns.

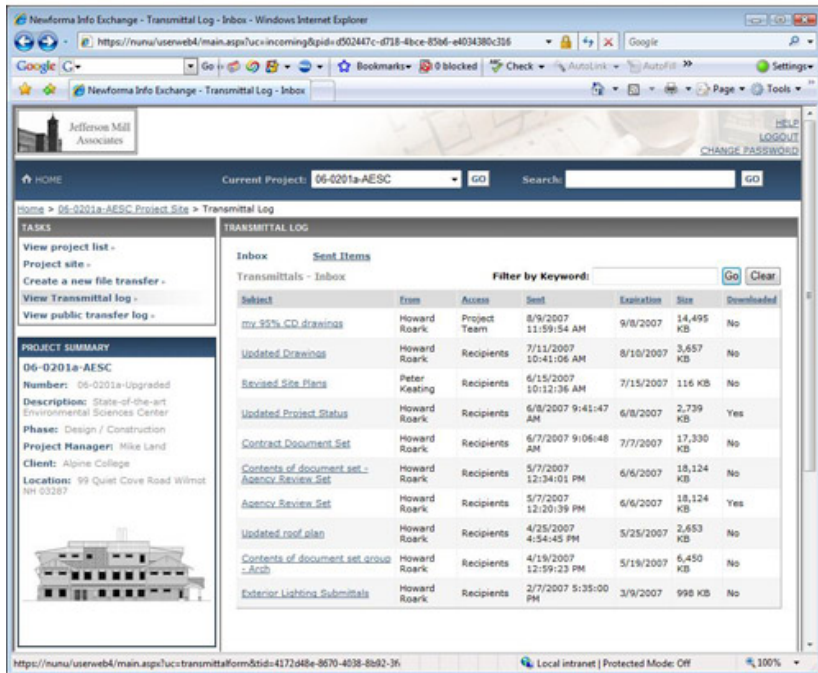
## External Collaboration and Other Capabilities

To facilitate the exchange of project-related information with external team members easily and securely, Newforma Project Center includes a dedicated utility called Newforma Info Exchange. It is comprised of two components: the Info Exchange activity center, which is accessible to internal project team members from within Project Center, and the Info Exchange Web Server, which can be accessed by external as well as internal project team members using a standard Web browser. The Info Exchange activity center is the location from which internal team members can send files to external team members through a guided process that transfers the selected files (and any associated XREFs) to the Info Exchange Server and automatically sends notification email messages with download links to each recipient. In addition to email notifications, the Info Exchange Server provides reminders, automated expiration (deletion), and a history log (audit trail) for all posted file transfers. It can also be used by the external team members to send files back to the internal team, even if they do not have Newforma Project Center installed at their end. A compressed ZIP file containing the file contents of each file transfer sent or received via Info Exchange is automatically saved to the record copy location designated for the project, eliminating the need for internal project team members to separately save copies of transferred files.

The Info Exchange activity center within Project Center can be used to view the status of every file transfer sent or received via Info Exchange, including the ability to see who has or has not downloaded specific file transfers, and, for transfers sent with the Partial Download capability enabled, a list of which files were downloaded. Figure 9-a shows the history of an expired transmittal sent using Info Exchange, showing the dates of the partial downloads by different members, when the reminders were sent, and the date it expired. Figure 9-b shows some of the same transmittals seen in Figure 9-a listed on the Info Exchange website.



(a)



(b)

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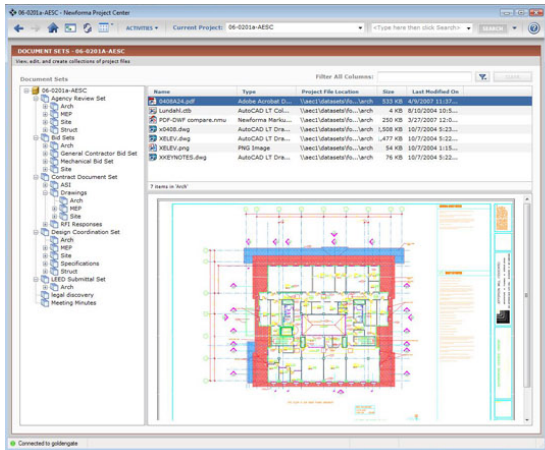
**Figure 9.** (a) Tracking the history of a transmittal sent using the Info Exchange Server in the Info Exchange activity center in Newforma Project Center. (b) A transmittal log on the Newforma Info Exchange website, showing all the transmittals sent and their status.

Other important aspects of the AEC workflow that Newforma Project Center helps to manage are document sets, transmittals, submittals, and issues, for each of which the application has a dedicated activity center, as shown in Figure 10. These operate in a manner similar to the other capabilities of the application that have been described so far. Document sets, shown in Figure 10-a, can be used to assemble and manage related sets of deliverables without moving or changing the firm's underlying file folder convention. A document set creates a set of references to a group of files, similar to shortcuts or virtual folders—it does not alter the actual source files in any way. Any electronic or physical exchange of information or materials between project team members can be logged as a transmittal, which can be managed using the Project Transmittals interface, shown in Figure 10-b. Similarly, the Project Submittals interface, shown in Figure 10-c allows both electronic

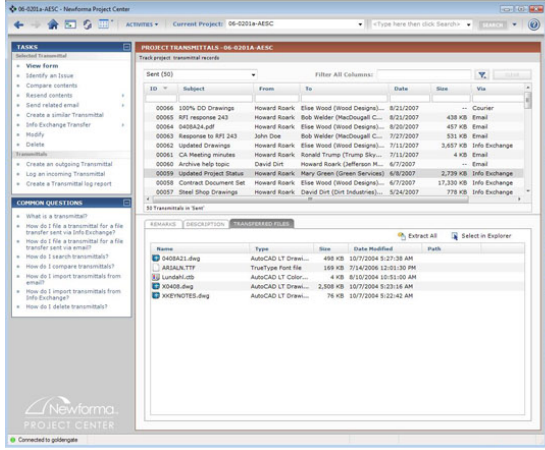
and paper submittals to be received, reviewed, tracked, and logged electronically. The Issue Manager, shown in Figure 10-d, provides the capability to create, track, and manage project issues throughout the life cycle of a project. The Microsoft Outlook plug-in allows email messages to be easily filed to a particular issue, giving all project team members the opportunity to contribute to issue resolution. Supporting documents and sketches can also be associated with issues, providing a permanent record of all issue-related information.

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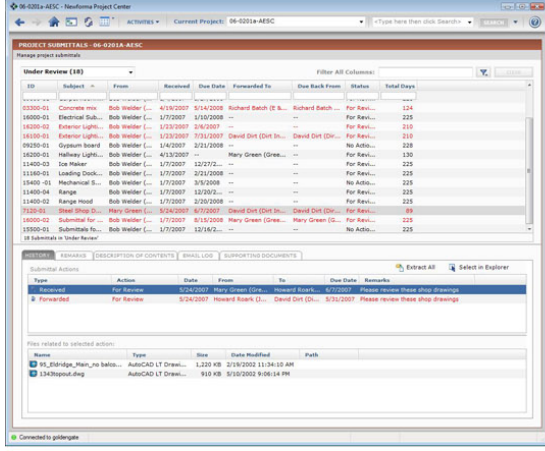
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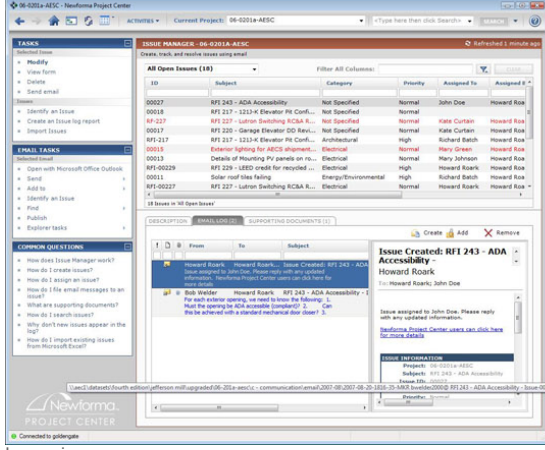
(a)



(b)



(c)



(d)

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**Figure 10.** The activity centers for managing document sets, transmittals, submittals, and issues in Newforma Project Center.

Newforma Project Center also includes additional capabilities such as the ability to import Deltek Vision project and team information into a new Project Center project, ensuring the consistency of basic project information across both applications; the ability to archive a project so that its files can be viewed and searched but not edited; a Space Layout tool that allows program requirements defined in Microsoft Excel spreadsheets to be used to generate space plans that reference a set of CAD or raster drawing files and subsequently generate space program summary and detailed reports; and a Takeoff tool that allows measurement or extraction of units, lengths and areas from source drawings which can then be exported to an Excel spreadsheet for analysis or for use in a cost estimating application.

## Analysis and Conclusions

For an application that has been in development for only about 3 years, Newforma Project Center is remarkably comprehensive and powerful, addressing all the key project management and execution challenges that design firms have to face on a day-to-day basis. In the absence of an application like this, firms have to rely on various ad-hoc methods to keep track of project files, emails, file transfers, document sets, submittals, etc., such as logging entries in Excel spreadsheets and creating sub-folders to hold different kinds of information. Employees have to be trained on how to use these methods, but because the processes are not formalized, they are difficult to enforce. Duplicate files proliferate, it is often difficult to find needed information, and by and large, there is no accurate audit trail that can be culled for contractual, litigation, or other purposes. Given this scenario, the immediate "Eureka" reaction with which project managers at Eppstein Uhen Architects greeted Newforma Project Center (as described by the firm's Director of Information Technology at the [AEC Technology Strategies 2007 Conference](#)) is hardly surprising, as also the recent news that it is being deployed firmwide at HOK within only a year of being piloted.

The strongest aspect of Newforma Project Center is that it doesn't require firms to alter their IT infrastructure, re-engineer their processes, or dramatically change the way they work for efficient project management. Instead, it makes it possible to gain greater value from software that is already in place for drafting, BIM, finance, office applications, email, etc. At the same time, it provides comprehensive search, drawing, viewing and comparing, markup, publishing, and external collaboration capabilities that can replace the use of the many disparate applications firms use for these individual tasks.

Given the current focus and scope of the application, the only real shortcoming I found was the poor quality of its Help documentation, which has an over-abundance of text and very few illustrations, providing a less than ideal learning supplement to the training sessions provided by Newforma during initial deployment and upgrades. The company is developing 5-minute training videos, which should be available soon, on a variety of Project Center topics that are geared to be the secondary learning experience after the formal training. However, with the overall complexity of AEC processes and the concomitant challenges of managing them, the importance of a lucid and comprehensive Help documentation should not be underestimated.

Going forward, the application may have to adapt to many technological changes, both in general as well as in the AEC industry in particular. A good example of a general technological trend is the move to putting more processes and data online. For managing project email, for instance, Newforma Project Center currently only supports Microsoft Outlook, which is the dominant email application now. However, it may no longer be in the future as more and more companies start using hosted email services such as those provided by Google. Newforma Project Center will then have to expand its email support to cover those applications as well.

In the AEC industry of course, the main transformation is to do with BIM and the model-based way of working as opposed to the drawing-based processes that are currently in place. While Newforma Project Center is primarily focused on the current drawing-based project management, it has already incorporated some object-based capabilities such as the ability to work with IFC files and search for object-based data in file formats such as DWF and DWG. This is a great start. The next step would be for the Newforma Viewer to support the viewing of 3D models, if not in their native file formats, then at least in published formats such as DWF, PDF, and IFC. This would allow the application to eventually transition to supporting BIM-based project management when model-based processes become more commonplace and replace the current drawing-based processes in AEC.



## **About the Author**

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