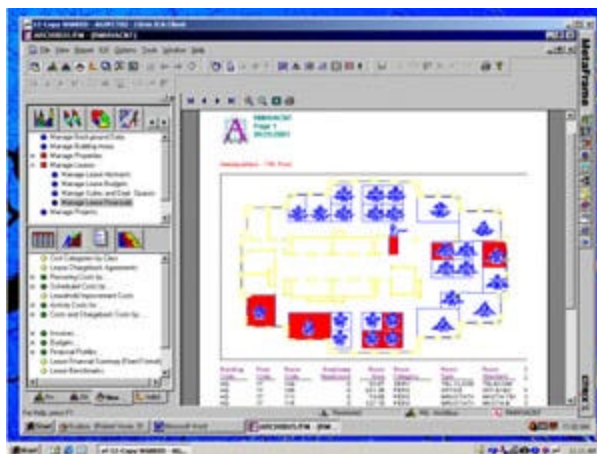


## Computerized Facilities Management in Disaster Recovery: A timely look at how CAFM tools allowed swift return to business after September 11

By Jerry Laiserin, FAIA



FM services/consulting firm [Visser Software](#) partnered with [AssistGlobal](#) who hosts Archibus FM software applications [Archibus](#) on the Web, using Metaframe from [Citrix](#). The standard Archibus report shown here is a "vacancy report," similar to the one used by Visser client Morgan Stanley in recovering from the loss of their premises at New York's World Trade Center.

Author's Note: This story was originally scheduled to provide an overview and roundup of software tools available for facilities management (FM) and related tasks. Although it will still touch on that perspective, events that occurred close to the due date for the story clearly require attention to the ways in which FM tools relate to actual facilities subject to external forces beyond our control, indeed beyond our imagining. -JL

The tragic events of September 11, 2001 took the lives of more than 6,000 innocent people. In Washington, DC, terrorist actions also damaged nearly one-third of the Pentagon, which had been in the midst of a multi-year, nearly \$1-billion facility upgrade. In the lower Manhattan business district, according to the latest tallies by the New York Times, buildings comprising more than 13.4-million square feet of office space were destroyed, and buildings containing an additional 16.6-million square feet of space suffered varying degrees of damage (among this latter group, even that vast majority of buildings deemed structurally sound still sustained significant damage to interiors, building systems, and infrastructure-likely to render them unusable for a prolonged period). Beyond the incalculable cost of lives lost, hundreds of businesses that had occupied the destroyed or damaged 30-million square feet of space needed to cope almost overnight with providing, equipping, and managing working space for more than 100,000 office workers displaced from their normal premises (to grasp some sense of the magnitude of this 30-million square foot loss, consider that in Philadelphia, the next big city geographically closest to New York, the damage would have represented 75% of Center City's 40-million square foot inventory; even in Manhattan's 328-million square feet of office space inventory, the loss represents 9% of the total in an already tight market).

Computer-aided facility management software (CAFM) proved to be of great benefit to many of the affected businesses in planning the rapid and orderly relocation of tens of thousands of their employees, thereby permitting a swift resumption of business. Because so many of the affected firms were engaged in financial services or related legal matters, business continuity was critical, not only to the economic welfare of the firms themselves, but to the overall soundness of global financial markets to which they were connected.

### Good Data

Visser Software Services, owned by Robert Visser, AIA, is a CAFM software, services, and support provider located in midtown Manhattan just a few miles north of the World Trade Center (WTC, now destroyed) and the

adjoining World Financial Center (WFC, for now effectively unusable). Among Visser's many clients with quarters in those complexes, or in other buildings nearby, were American Express, Deloitte & Touche, JP Morgan Chase, Lehman Brothers, Morgan Stanley, Nomura Securities, and Smith Barney. For some of these firms (and others), Visser serves as [Autodesk](#) and [Archibus](#) dealer, for CAD and CAFM products, respectively. Visser typically goes beyond merely reselling and supporting software, providing installation, configuration, customization, and training. In several instances, Visser provides FM outsourcing services, with Visser personnel regularly in place at client sites, effectively serving as on-site CAFM staff.

After verifying that his own staffers on-site were safe and accounted for, Visser turned to the task of assisting clients with their immediate recovery needs. For example, Morgan Stanley had to relocate 3,500 people from its former spaces on floors 43-46, 56, and 59-74 of Two WTC (the second tower hit) and also in Five WTC (one of the lower buildings surrounding the plaza at the base of the twin towers). Morgan Stanley employs many thousands more located throughout the firm's several million square feet of space in other parts of Manhattan, with large blocks of space in the midtown Times Square and Rockefeller Center areas. Visser had long helped to provide decision support for key FM users at Morgan Stanley, through a highly customized browser-based Archibus environment, running on Internet Information Server (IIS) from [Microsoft](#) with custom HTML reporting. Because this system provided instant and up-to-date access to all of Morgan Stanley's move management, project management, property management, leasing information, space planning, and work orders across all of its New York space inventory, CAFM personnel were able to respond within minutes to a Morgan Stanley senior VP's request for data on space availability within the firm's own inventory as of the afternoon of September 11. According to Visser, the answers were generated from a standard Archibus vacancy report, supplemented by full size plans batch plotted via a custom automated process that Visser had previously developed for Morgan Stanley (this latter step was required because of the large floor plates of many of Morgan Stanley's spaces, which would have been difficult to read at the reduced scale of an 8-1/2" x 11" standard report).

The vacancy report and floor plans, combined with listing reports that identified the workstation configurations available on each floor of each building, enabled Morgan Stanley to relocate their people to the most suitable in-house locations. Some of Morgan Stanley's WTC space had been originally occupied by the former Dean Witter, prior to that firm's merger with Morgan Stanley. Although this former Dean Witter space did not have the same degree of FM database coverage as Morgan Stanley's other spaces, Visser was able to read the DWG-format CAD plan files and use the departmental polyline borders to calculate functional and departmental area allocations in the destroyed spaces. Plots were used to perform takeoffs of furniture counts, and the data was then exported to Microsoft Excel spreadsheets, helping to ensure that relocated departments and staff would be restored to comparably functional quarters.

## Lessons Learned

The data housed in Morgan Stanley's Archibus system is fed automatic updates from the firm's lightweight directory access protocol (LDAP) and IT systems, so it is therefore expected to be current (tracking phone and network jack information reveals who is in which physical locations and therefore which physical locations are unassigned). The importance of up-to-date information was underscored by the experience of another (unnamed) multi-location firm with which Visser is familiar. Their CAFM system delivered space inventory information quickly enough, but when managers went to the locations indicated as vacant they discovered that subsequent moves and changes had not been reported or entered in a sufficiently timely fashion. As has always been the case with computerized systems, a database report can only be as reliable as the timeliness and accuracy of the data that is fed into the database.

Morgan Stanley also was fortunate that its facilities group was not housed in any of the buildings destroyed. Another (unnamed) firm with which Visser is familiar lost access to the WFC building in which their facilities department, among other functions, was housed. Although the department's Archibus data and software were backed up elsewhere, the firm's central IT staff recovery/continuity planning had assigned a relatively low priority to the facilities group's data access needs, which may have added several days to that firm's relocation planning efforts compared to the near-instantaneous response at Morgan Stanley.

Visser client Smith Barney had an experience similar to that of Morgan Stanley. The firm had nearly 5,000 people on twenty floors in Seven WTC, a 47-story building that collapsed into rubble a few hours after the adjacent 110-story towers at One and Two WTC. Like many "Wall Street" trading firms, Smith Barney maintained a fully equipped mirror site for traders directly across the Hudson River in Jersey City, NJ. Over 800 traders were immediately relocated to trading floors at the Jersey City site and another Smith Barney facility on Greenwich

Street, a few blocks north of the WTC. Many other Smith Barney staffers were relocated to space in midtown, only blocks from Visser's offices. Smith Barney manages their Archibus CAFM system internally, and was able to generate the necessary reports and relocation plans from the system in accordance with a disaster recovery process that Visser had created for Salomon Brothers using Archibus prior to that firm's merger with Smith Barney. When Smith Barney's backup site for the facilities group proved to lack the requisite large format plotter, Visser (who also did not have a large format plotter in-house) suggested that Smith Barney generate plan files in [Adobe](#) Acrobat PDF format and take them to the nearest Kinko's-only a block away -for plotting (most Kinko's locations nationwide have at least one large format plotting device).

Among Visser's other clients directly affected, JP Morgan Chase, in several buildings a few blocks away from WTC and WFC, needed replacement media for their Archibus and AutoCAD software because their backup site did not have those applications installed, while the original media were housed in a building to which the firm did not have immediate access. Again, this indicates that the scope of even the best business continuity plans did not contemplate so widespread a disaster. Deloitte & Touche, with 4,000 employees in WFC, had been in the process of converting to Archibus from another CAFM database system. Because they were effectively between computerized systems, the firm was forced to rely on paper documents for relocation planning.

## Well Formed

As local professional societies of engineers and architects organized volunteer assessment teams to assist the City of New York government in evaluating the condition of buildings that were damaged but still standing, Visser arranged to adapt another CAFM tool to help support those efforts. Visser and development partner [AssistGlobal](#) from Canada had already created [PalmOS](#)-based input software for handheld, wireless data collection, entry, and verification into most Archibus database fields and tables. At press time, Visser had donated a number of wireless-enabled, PalmOS handheld PC's to the damage assessment effort, complete with on-screen forms customized to specific requirements of the condition assessment reporting process.

In normal usage, the AssistGlobal system includes a hosted Archibus database to which the handhelds would be synchronized. Providing software applications in this way, as a service, also called the application service provider (ASP) model, likely will become more popular for CAFM and other critical applications as firms reassess their security and recovery procedures.

## Other Firms, Other Tools

Many businesses were displaced, and no doubt many used other CAFM and CAD tools besides Archibus and AutoCAD (although those are the leaders in their respective software market categories). At press time we simply have not had access to the same level of information and detail about these other firms and their tools as the insights graciously provided by Bob Visser. The range of activities covered by typical, full-range CAFM systems includes: strategic planning, or space forecasting; space management, which typically includes space inventory, allocation, and cost accounting or chargeback; move management, or the tracking of changes and "churn"; lease and property management; asset management, including tracking of furniture and equipment inventories; service request or work order tracking, sometimes called maintenance management; and links to other corporate information, such as human resources, telecommunications, construction project management, and so forth.

Many CAFM providers link their databases through a third party CAD/graphics front-end-most commonly AutoCAD. In addition to Archibus, the leading AutoCAD-compatible CAFM vendors include Facility Information Systems (FIS), and [FMSystems](#). One vendor that has branched out beyond its architectural CAD roots to reach more broadly into the enterprise is [Peregrine Systems](#), which integrates the former Span/FM CAFM lineup into a larger asset management or infrastructure resource planning (IRP) solution.

The key point behind any full-range CAFM solution is that the non-graphic data always are linked into the CAD/spatial context, even if only behind the scenes. This CAD/graphics core is so critical that several CAFM vendors choose not to rely on external CAD tools, like AutoCAD, but opt instead for their own proprietary CAD engines. A leader in this approach is ([Aperture Technologies, Inc.](#), whose eponymous product was among the first to include non-CAD graphics, such as raster images of furniture, alongside CAD in an overall CAFM database. Another pioneer in linking drawing and database information was the aptly named DrawBase, acquired last year by Graphisoft and merged with the latter's ArchiFM solution (which is, in turn, an FM extension of [Graphisoft's](#) flagship ArchiCAD design and modeling software).

In line with recent management trends toward less pyramidal organizational hierarchies, developments in CAFM have focused on integrating CAD, other graphics and non-graphical data within a simple browser interface, to open up access to FM information throughout an organization. This allows users without CAD or database skills—even those without CAD or database software on their PC's—to view and use strategic corporate information that previously was limited to a few expert users in the FM department. Most of the leading products/vendors, particularly Archibus, ArchiFM and FM:Systems, have thoroughly Web-enabled their offerings.

## Future Trends

Whether terrorist threats will impose new patterns of facility usage, such as greater dispersion in lower, less prominent buildings, remains to be seen. However, it is clear that businesses and governments alike will need to focus on more distributed and more redundant data and communications infrastructure in order to insure operational continuity. Virtual private networks (VPN) and wireless access also will become more important regarding critical CAFM data, whether hosted internally or via the security of an ASP model. Some of the difficulties experienced and lessons learned by FM groups of firms disrupted by the WTC tragedy would have been significantly alleviated or avoided entirely with VPN access to CAFM on an ASP. Such alphabet soup should not be intimidating, but a cause for optimism that even though buildings may be destroyed, the spirit of American business, indeed of America itself, shall endure.

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