

By Eric Teicholz

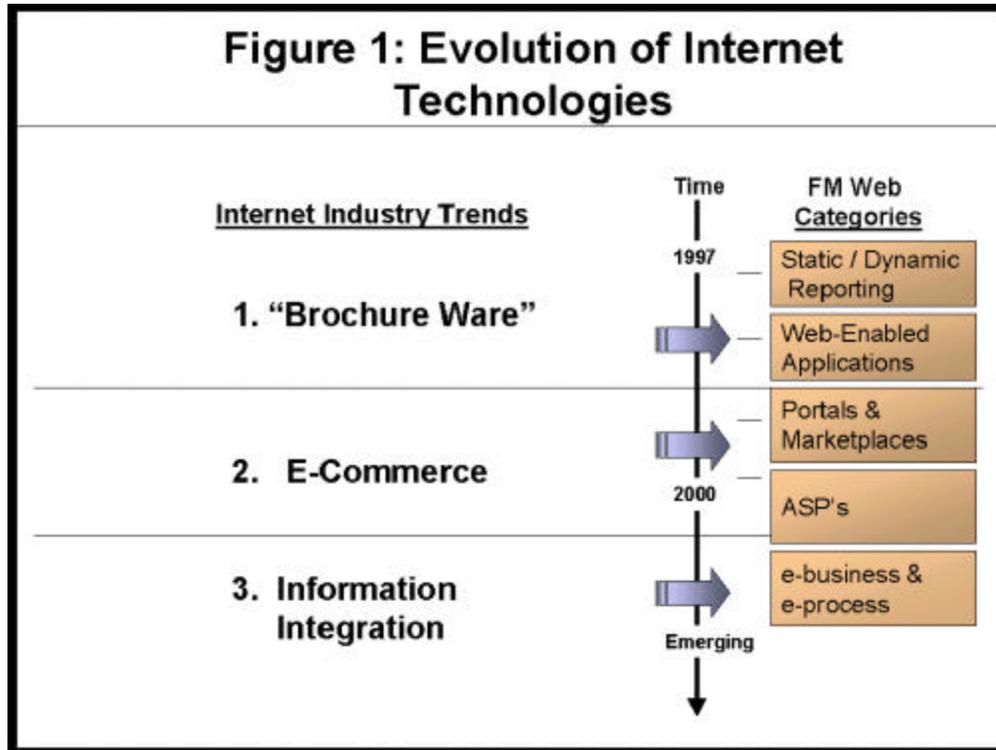
Just about everybody in the FM community is trying to figure out how to effectively use the Internet. Corporate and institutional facility departments are developing web strategies for managing projects for internal and external customers as well as for providing and obtaining services and products over the web. Existing FM software and service providers, besides trying to figure out successful revenue models that incorporate the web, are re-writing parts or entire applications to operate on the web. Managers fret about putting sensitive data on the web and IT departments fret over firewalls. The only thing everyone seems to agree on is that their organization must develop a formal web strategy since they want to do business on the web as soon as possible.

The purpose of this article is to take a brief look around the virtual world of the Internet and see what kinds of FM product and service offerings currently exist. A vendor case study example is presented for each category of Internet application. The vendors selected for the case studies were chosen as representative of a class category. The author in no way endorses any of the vendors selected. A more comprehensive list of vendors and their URL locations, sorted by similar application categories, can be found on the author's web site (http://www.graphsys.com/html/Tradeline_00.html).

Some Definitions

It is generally accepted that Internet technology is in its third generation: Information Integration (see Figure 1 below). The first generation, dating from approximately four years ago, has been referred to as "brochureware" and is characterized as "vendor-centric" in that users would explicitly access a vendor's site, view static (via HTML) or dynamic (via ASP) web pages, and perhaps place an order, which would be manually processed. The second generation of the Internet, called "e-commerce", encompassing the last two years, was likewise vendor-centric but with much more back-end integration incorporating activities such as automated order placement and tracking. The third generation of Internet commerce has been called "Information Integration." This current phase changes the paradigm from vendor-centric to customer-centric functions in which there is both front- and back-end integration of business functions triggered by the customer initiating a transaction request. This approach is much more flexible and does not necessarily limit the customer to a specific vendor's web site but might encompass supply chain management,

bidding by multiple vendors to supply a service or product, fulfillment and procurement from one or more companies. Using workflow technology that automates the performance of a set of sequential activities, the customer defines a business process that can then be implemented using a variety of vendors.



Facility Management and the Internet

The development of facility management applications, to a large extent, parallels these Internet generations. Many FM vendors are still in the first generation of development – that of static and dynamic reporting with minimal e-commerce functionality. Using a Web search engine, such as Yahoo!, a customer will find the URL location of a provider, and go to the site to learn more about a specific product or service of interest. There are also several FM-specific, mostly non-commercial, sites developed for the most part by publications or professional organizations, such as IFMA (<http://www.ifma.org>), where vendors can promote their services.

The second web-based FM category, Web-enabled applications, is more complex than simple Web-based reporting in that vendors rewrite older client-server software (called thick client applications) to move either parts of applications (e.g., database form input or reporting) or entire applications onto the (thin client) Internet, using development tools such as Java or Active X. Because the Internet is a new and different software

development environment, there are a myriad of new Internet-only vendors emerging that are not burdened by having to re-write older thick-client software. It is difficult for customers to evaluate these new vendors when all you have is a URL address and content provided on the vendor's web site to go by.

To meet our definition for the third category of FM Internet usage, a FM portal site must have three characteristics: Commerce, Content and Community. Content relates to the availability of specific information on a FM topic of interest to the customer. The content can be made available in either a push mode (i.e., without the customer asking specifically asking for it) or a pull mode (e.g., by a specific data request). Community represents the availability of content-specific forums where interested parties can communicate about a specific subject. In general, there are very few FM portals available at this time. Many vendors aspire to become such a portal since it represents one-stop shopping for facility managers and could therefore generate procurement revenues. Consortiums of property owners are in the process of establishing such portals for real estate (see case study 4 below) but no similar effort of this scale exists yet in FM.

The current "buzz" on the Internet are Application Service Providers (ASPs). Several CAFM vendors (e.g. Peregrine, Prism) are positioning the next releases of their software to operate in an ASP mode with the vendor hosting the software. It will be interesting to see if and how these vendors continue to support their current client-server products. With ASP use, customers use their browser to access the desired software located either on the vendor's computer, or on the computer of a web hosting service such as Quest, Digex, Verio, Oracle, or IBM. A monthly or usage fee for use is paid to the vendor. Vendor partnerships are made not only with web-hosting companies but also with commerce/procurement companies such as Ariba, Commerce 1 or Sitestuff (as in the case of the Octane RE portal) as well.

The advantages of ASP can be significant. There are no up-front user hardware or software costs and the deployment of a complex piece of software, such as CAFM, can be much more rapid than the client-server versions of the same software. Most of the time, plug-ins and upgrades of the software are downloaded on the Internet so that IT departments do not have to 'touch' the customers PCs by downloading software on each PC. As with all Internet applications, there are data security/firewall issues that still exist but, so far, the advantages of ASP seem to outweigh its disadvantages.

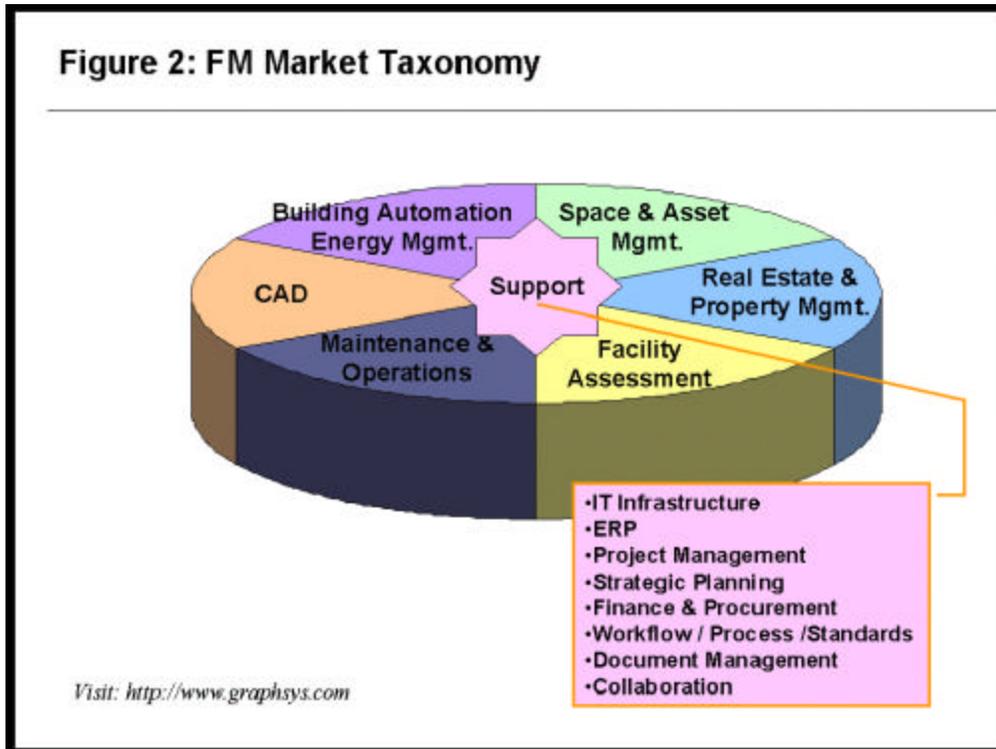
Two final issues associated with ASPs are worth mentioning. First is the fact that it is often difficult to evaluate your ASP partner since it means evaluating the vendor's partners (e.g., for web hosting and commerce) as well as the application provider. Second is the cost model for the ASP. Typical ASP rental costs might be from 5-8% of the software's purchase price per month which means that the cross-over point for when the ASP price reaches the purchase price is 13 – 20 months – not that different from a hardware lease. You might also spend an additional three times the annual ASP cost of the software for things such as training, data creation, customization and legacy system integration. This is perhaps a simplification (not unlike the 5:1 ratio commonly used for CAFM client-server implementation) but it is a good budgeting number to start with.

Our final emerging FM web category, E-Process/E-Business, models commerce software around a business process using process workflow modeling and collaboration. It is totally "event" driven, involves front- and back-end integration, supply chain management and a host of other functions that depend on lots of standards. The development environment of these standards will probably be XML (Extended Mark-up Language) but XML standards have not been defined/accepted by the FM industry yet. This FM Internet general offers much promise but we will have to wait a couple of years until we see how it evolves.

Some Case Studies

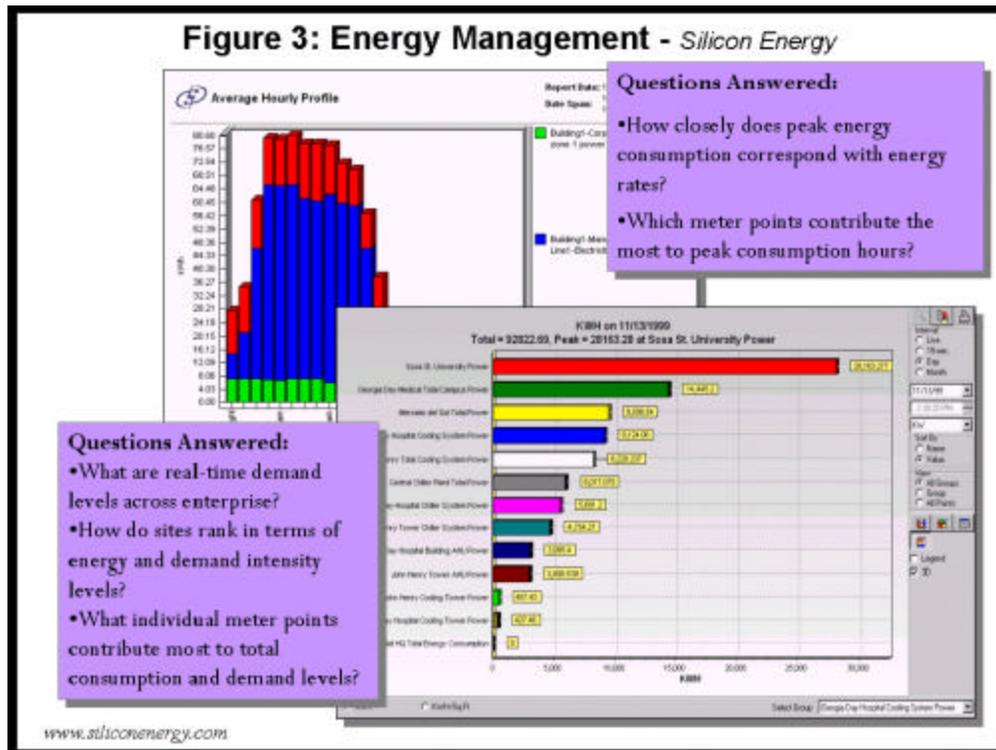
A useful taxonomy of FM technology vendors appears in Figure 2 below. Although some vendors provide software that multiple applications, most conform to these categories. There are Internet solutions for all of these categories except CAD. None of the major CAD vendors have migrated their software to the net yet although AutoCAD, VISIO, Microstation and Revit have announced forthcoming pure web versions of their software in the next calendar year.

Figure 2: FM Market Taxonomy

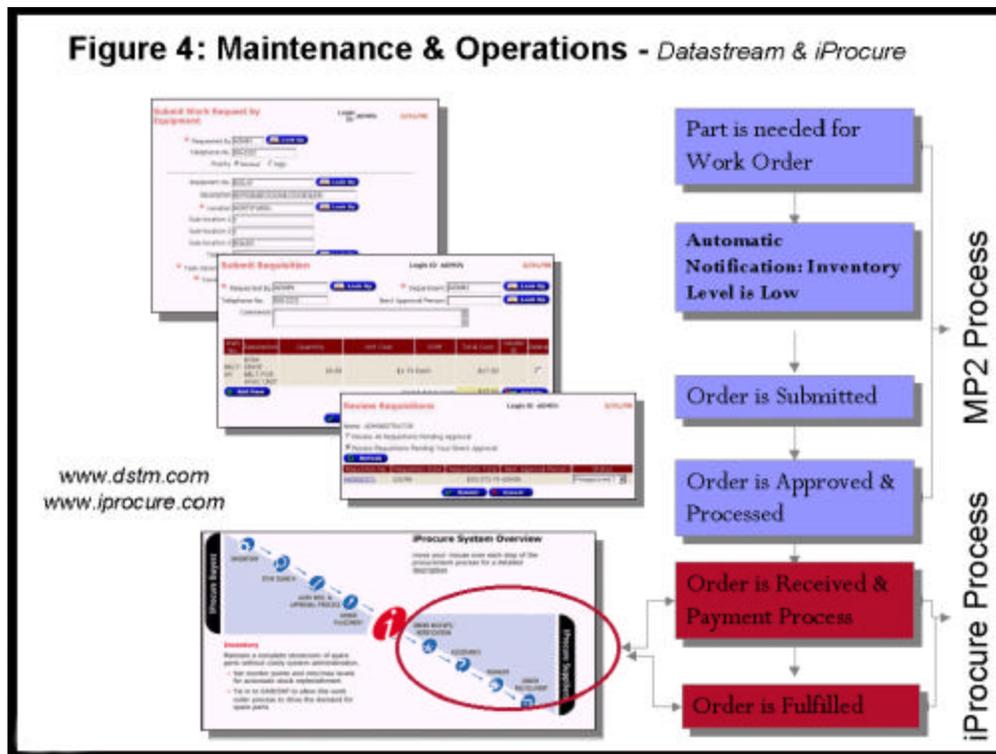


1. Space and Asset Management is the traditional domain of CAFM vendors. All of the major vendors presently have the ability to enter data and generate customized reports on the Internet. Most CAFM vendors require a client server version of the software to exist which users access via the browser. Vendors such as FIS (<http://www.fisinc.com>) and PRISM (<http://www.prismcc.com/index.html>), whose software has been developed completely within a web enabled back-end database such as Oracle 8i, by definition, can host the entire application on the web. Other vendors, such as Peregrine (<http://www.peregrine.com>), have announced that the next release of their software will be completely web enabled and available in an ASP Peregrine-hosted environment.
2. Building Automation and Energy Management is one of the more dynamic web categories. As markets for electric power open to competition, new rules will change the way companies buy and use energy. Software allows companies to monitor, analyze and control energy consumption from multiple facilities simply and inexpensively. Companies can use the Internet to simply shop for the least expensive fixed price energy contract or manage both supply and demand levels, and control consumption patterns, to take advantage of vendor's pricing incentives. In the near future, it will be common for real time Building Automation Systems to search the Internet for a price plan that is the most advantageous with respect to the company's usage patterns. Companies such as Silicon Energy (<http://www.siliconenergy.com>) have developed software that enables

energy users and energy providers to analyze and forecast energy consumption according to a range of variables such as weather, season, and wholesale and retail pricing (see Figure 3 below). The software also lets customers use the Internet to adjust electrical devices like their air conditioning and lights according to weather conditions or sales performance.

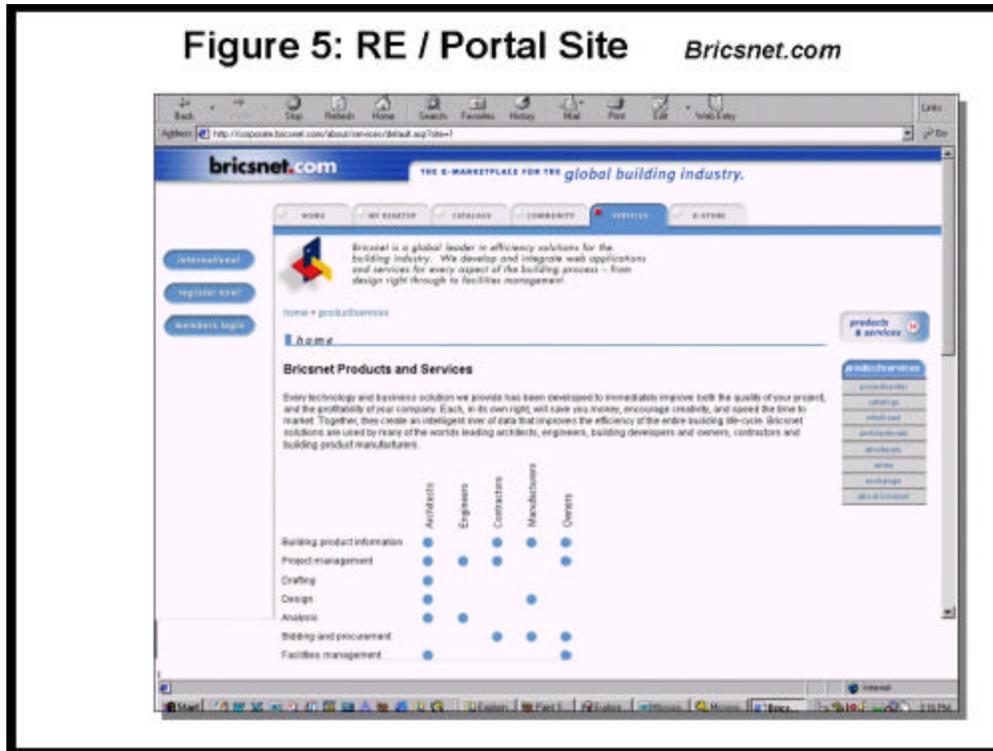


3. Maintenance and Operations (CMMS) vendors have just started to move to the Internet. One of the more interesting vendors to do so is Datastream (<http://www.dstm.com>), author of the popular MP2 software package. The web is used for two primary purposes: for workorder submittal, status checking and reporting by accessing a client-server based MP2 and, more interesting, for procurement functions. Through its iProcure portal site (<http://www.iprocure.com>), a user can submit purchase requisitions to MP2 (or, using workflow, have inventory levels trigger requests), approve or reject requisitions, scan on-line parts catalogs, order parts and process payments (see Figure 4 below). With this functionality, the application becomes one of the few e-business and, with workflow, e-process solutions.



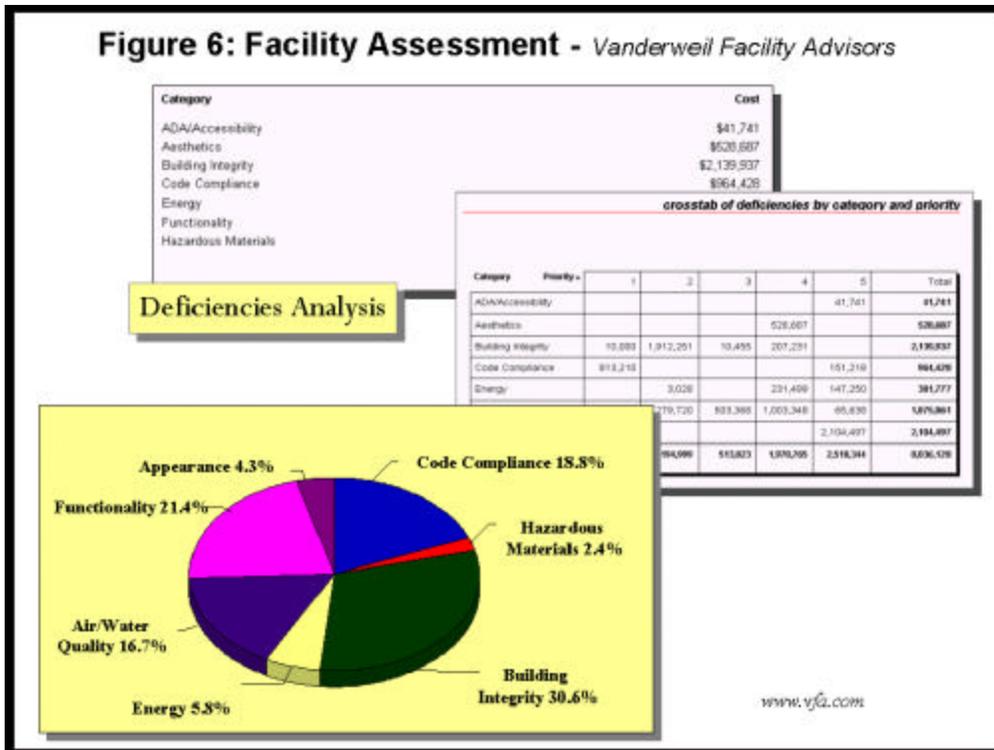
4. Real Estate and Property Management is one of the more mature Internet e-commerce applications. Some of the largest property owners in the U.S. have established a technology consortium called Project Constellation and a procurement exchange called Project Octane (see press releases on <http://www.cbrichardellis.com>). There are also hundreds of property listing sites (see <http://www.pikenet.com>). Bricnet (<http://www.bricsnet.com>) is interesting because of the scope of its product offerings. The company is focusing on the FM industry and has a fairly comprehensive suite of RE applications called RELMS (for Real Estate Lifecycle Management Systems) which includes functionality for space tracking, lease and portfolio management, work order and inventory management - all using workflow and collaboration.

Besides RELMS, Bricnet, also has a Project Extranet product called ProjectCenter for project document collaboration and workflow. The company is one of the few vendors that is a true portal in the sense that commerce, community and content are all provided (see Figure 5 below). Finally Bricnet is integrating PurchasePro.com's AEC Connect, an online bidding and procurement solution, designed primarily for the A/E/C community, to operate with the company's e-marketplace offerings.



5. Facility Assessment is a powerful software application that is just beginning to find its way onto the Internet. The application is labor intensive for its creation of input data (usually costing from \$.05 to \$.15 per square foot) because it requires a building audit by professional designers and engineers. This is in order to collect deficiency information, including the type of deficiency (e.g., compliance, energy, building integrity, life safety, etc.) and its priority (see Figure 6). Vanderweil Facility Advisors (<http://www.vfa.com>), a vendor of condition assessment software, hosts its application in an ASP mode. Life-cycle information is also collected so that the client can look at projected deferred maintenance costs over time and by category and priority. The software contains R.S. Means labor and material costs associated with deficiency correction and, at the end of the system's useful life cycle, replacement values. With this deficiency correction and life-cycle data, clients can generate "what-if" funding scenarios for purposes of capital planning and budgeting. It is only a matter of time before vendors will develop procurement links with this software since labor and material costs can be rolled up based on specific deferred maintenance correction plans.

Figure 6: Facility Assessment - Vanderweil Facility Advisors



Conclusion

Trying to describe the current state of FM software and services on the Internet is quite difficult as the technology is changing so rapidly, there are new vendors appearing almost daily, and there is so much confusion regarding terminology. Most current and new vendors seem to be moving towards offering goods and services on an ASP basis. Although there are few financially successful ASP business models existing currently, ASP use seems to offer the most promise in terms of realizing cost savings and significant productivity gains for the end user. We will have to adapt a "wait and see" attitude to see if this is indeed the case. One thing is sure, we live in Internet time and we will not have to wait long.

About the Author

Eric Teicholz is president of Graphic Systems, Inc., a Cambridge-MA based FM technology consulting company. A past professor at Harvard University, Teicholz is the author of nine books and hundreds of articles on FM technology. He can be reached via telephone (617) 492-1148 x106, fax (617) 492-4044, or email teicholz@graphsyst.com