"The core mission of a business will become obsolete from time to time, unless someone is watching for new developments, a company will find itself mired in the past, without systemic & purposeful abandonment of an old and outdated business model, the company will be overtaken by these events. This out-of-the-box thinking is not a luxury, but a necessity."
- Peter Drucker

Facility Knowledge Management
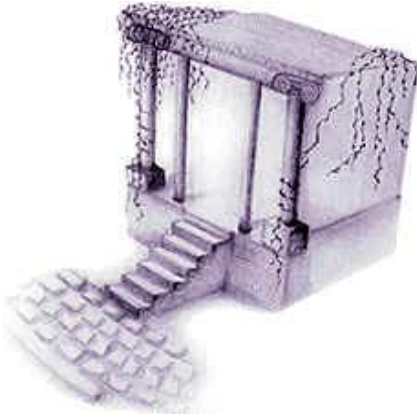
There has been much discussion regarding the terms being used in the media to describe what is happening to our businesses due to the introduction of Information Technology. The acceleration of IT adoption in our facilities profession can be directly related to the growth of the Internet and its related technologies. But with this easy and inexpensive access to communicate information has come an information glut. As we try and control the information that is relevant to what we do everyday, the term Knowledge Management (KM) has emerged as a way to describe this process.

The term Knowledge Management addresses an organization's need to acquire, consolidate and disseminate information among employees, partners and clients to create a measurable strategic advantage. KM is a collection of processes, tools and cultural issues that affects every business process within an organization. KM is a discipline that may contain several Information Technology systems as a solution.

I see knowledge as related elements of information that lead to improved decision-making or actions. Knowledge is information resident in an individual's head that fosters the creation of new ideas. Thus it is the human element that determines the relevancy of information to a situation, and which leverages this to create new information or actions.

No matter how it is described, what we really need today are tools that sift through the heaps of information already burying us so that we can identify the nuggets we need to reach the correct, but not necessarily the fastest, decision. Thus, the emerging need for Wisdom, not just quick access to information. There are no off-the-shelf KM solutions, only KM principals, disciplines and programs. The business that successfully implements a strategic KM methodology and plan will find a strategic competitive advantage as we enter the new millennium.

KM Strategic Planning

Successful KM programs will typically not use the phrase knowledge management to identify the project, but rather, they will concentrate on programs that achieve an important business benefit but are built on KM principles.

The term KM evokes a fuzzy and esoteric image, and many in the FM profession fear they will not be taken seriously if brought in as a business strategy. KM should be an important focus of all business plans moving forward, but that it must be secondary to the achievement of some direct kind of business benefit. Whatever the terminology, KM, knowledge sharing, knowledge networking, etc. it will be a "mindshare" issue in the coming years within the design, construction and facility industry. Examples of KM are: the reduction of design and/or planning time to achieve faster time to market (rapid protoyping), better access to the current library of photos, illustrations, manuals and warrantee information, employee churn management, document management and the rapid delivery of best practices (project specific to enterprise-wide) some of which are being implemented and achieved today in leading organizations.

Perhaps the easiest and most illustrative example of KM is the "frequently asked question" (FAQ) application. The characteristics are: 1) the answers are gained by experience and results (what has the best impact), 2) the answers have to be organized to be easily and quickly found, 3) someone has to decide what the right answers are, 4) the material is dynamic and becomes out of date (the needed response to a recent news event), and 5) the necessity to not have too much knowledge but that which is most useful (to cover the 20 percent of the questions that are asked 80 percent of the time). Such an example can benefit from having an organized way to structure the queries (a knowledge map, sometimes called a knowledge model) based on some categorization. Furthermore, there should be a disciplined way to solicit and submit the good answers, followed by the participation of a subject matter expert to decide what material is good and relevant enough to be included in the knowledge, or FAQ, base. It has to be done frequently enough or in response to events, and it has to be weeded out periodically to remove knowledge that is no longer relevant. Ultimately, this sort of task can benefit from an architectural framework, and that framework can be applied to other areas where the capture and accessibility of knowledge is beneficial.

Of course there are several leading organizations that have pursued KM knowing that maximizing the use of intellectual capital is smart business. This requires a visionary to see the potential and someone who can marshal the resources to get started and find the best opportunities for sharing knowledge and to begin to make the generally significant cultural shifts that are required to make KM successful in an organization.

Some organizations have gone so far as to create a Chief Knowledge Office (CKO) position. To me, though, it seems almost oxymoronic that we're trying to apply a very industrial age management concept to what everybody seems to understand is a very information age business process. What does seem to work for most organizations is the realization that there is not just one person that cerates a knowledge environment, but a

series of people. By enabling individuals to quickly learn something new in the context of captured information, you create a new dynamic of learning. In the Knowledge Economy, people find that it is easier to act yourself into a new way of thinking, than it is to think yourself into a new way of acting. Since learning is inherently a social activity and involves interacting and dialoging, the New Reality in our profession is continuous discovery and learning, which is the essence of Knowledge Management.

Starting the KM Process

A good start is to perform a knowledge/information "audit". Starting with your organization's intranet, you can begin to migrate it from a "developer/owner" view to a user view, which will help transform your intranet into a productivity tool. Being that that KM is over 50% culture, leading organizations are creating a process involving communications/marketing, a librarian and a cognitive psychologist. This process includes taking web sites on your intranet, breaking them into information objects and then using user-groups to put them in contextual settings, which are intuitively based. The start of the process is intensive, but speeds up with practice.

The technology solutions should focus on categorizing information and then capturing communities of similar thought. The ability to highlight best practices can then be communicated in a user-friendly manner. The emergence of Project Specific Extranets for Tenant Improvement, Renovation or Design & Construction work, like Evolv (http://www.evolv.vom), Blueline/Online (http://www.bluelineonline.com), Bidcom.com (http://www.bidcom.com), BuzzSaw.com (http://www.buzzsaw.com) and CMD Exchange (http://www.cmdg.com), are good foundation tools to perform this task. These "live fire" tools move well beyond the traditional CAFM-based needs of securing Record, or As-Built, documents in order to perform FM functions. These tools capture the digital DNA of the built environment that can be re-used in unique ways, including links into corporate ERP solutions like SAP, Oracle and PeopleSoft.

This new process is about leveraging the collective knowledge, wisdom and experiences of individuals to increase responsiveness and innovation of the entire enterprise. The key concepts here are collective (knowledge management is about sharing or making connections across bodies of knowledge) and innovation (knowledge management is about the application of information to unknown or new situations.)

Maintaining the Process

After designing and beginning the KM process, a FM professional must maintain their acquisition of data and translate this information into knowledge. If knowledge occurs at the intersection of Information, Context, and People, then your organization must become a learning organization in order to grow in the Age of Wisdom.

A learning organization is one where the information changes and is told in an intuitive manner, like telling a story. If the stories you tell about the market are static, then there is

no learning is taking place. Learning will take place when information is actionable. Action leads to experience. Experience modifies context. Context leads to knowledge.

When you apply human intellect to information a miraculous transformation might occur, or it might not occur. Should knowledge be conceived and brought to life then active knowing, sharing and transferring is possible through appropriate management. At this point knowledge can be power and the proper management and exploitation of this innately human asset will lead to powerful actions or, as is too often the case, die of neglect.

To put KM into an understandable context, we offer the following narrative of an interview we have done with one of our clients, the United States General Services Administration.

The United States General Services Administration (GSA)
Washington, D.C.

"Knowledge Management came on the horizon for us a year or so ago when we realized that a lot of the program elements we were looking to install for our Computer Integrated Facilities Management system were also core components of so-called KM systems. It's a peripheral area of interest for us at the moment, but an area into which we see ourselves gravitating as our CIFM
Project nears completion. As I've come to understand it, KM is not a "system", or even a "systems thing". It's a philosophy rooted in the climate of full, unrestricted information sharing (as opposed to information hoarding). The competitive philosophy, where a manager hoarded information that he/she could use to get a leg up on the competition, is anathema to KM. Rather, KM should reward the folks who fully share their information with everybody else who needs (or even wants) access to it. That's a cultural thing, and it has to be ingrained into position descriptions, performance measures, awards - all the bits of day-to-day business. An individual who knows one thing about the business that nobody else knows is not a true Knowledge Worker, since he/she is keeping that information to himself/herself. Unless the business develops, encourages and rewards knowledge sharing, KM can't work. A "Knowledge Audit" can help determine the organization's readiness to adopt KM.

Finally, as I said above, KM is not a system, but it can effectively use systems components to foster the culture. Roughly in order of importance, some of these components are Document Management (including imaging), Work Flow, Content Search and Retrieval, Content Management, Decision Support, Messaging & Collaboration, and the usual assortment of Data management products (Warehouses, Marts, Mines). KM should never be a part of IT (nor vice versa); rather, where both exist in an organization, they need to be coequals, each depending on the other for some of its functionality. In GSA, the Chief Knowledge Officer (CKO) and Chief Information Officer (CIO) have that relationship."

Bottom Line

Client efforts supporting KM are growing and promising. However, the name "knowledge management" alone is causing some hesitation among many organizations. It seems too grandiose. To gain support, most organizations are putting the focus on a pragmatic business benefit first when using KM principles. Another successful move is to shift the name to knowledge sharing, which seems more acceptable to most people. A first step is to collect information in an intuitive manner, like through individual Project Extranets. The collecting of each project's information will lead to viewing all the organization's projects to find trends, best practices and lesson's learned. The tools are available and the client needs are there. Will you be left out of the market due to your failure to act?

One of the most important elements of a successful KM implementation is having an understanding of the cultural issues that may enable or impede knowledge sharing.

**The Integration of Cultural and Technological Solutions**

An important area of KM is the cultural equation, sometimes described as Human and Intellectual Capital. One the major Thought Leaders today of Human Capital is Dr. Karen Stephenson, professor of management at UCLA. When putting the context of her anthropological work into the realm of Facilities Management, an interesting dynamic takes place that can assist the migration into a knowledge-sharing environment.

Dr. Stephenson's research beings with the understanding that every organization has people who know "things". You know who they are; its that person down the hall who chats with everyone; it's the person in charge of accepting and inputting the Schedule of Values from Construction Managers for payment into corporate Accounts Payable; it's the person in charge of grabbing the employee database for use in your CAFM package. Organizations function by way of a social network of employees influencing, giving, hoarding, or accumulating data. From this network sprout the innovations that will produce the next revenue-generating or cost saving product or service. Although no organization can survive without such a network, some organizations are beginning to realize that they can profit by analyzing these invisible, sometimes described as tacit, communication links. This is the work of Karen Stephenson.

"When you think about it, very little of the working knowledge necessary to make products or deliver services lies in the formal, procedural policies of a company," says Karen Stephenson, professor of management at UCLA. "Real working knowledge lies in the relationships between employees."

Many companies confuse hierarchical structure with their social network, but Stephenson says that a hierarchical tool such as an organizational chart reflects procedural, not social knowledge, and that the two are completely different. Dr. Stephenson says the following three roles recur consistently across social networks:

- **Hubs** are people who are socially connected to the nth degree. With the highest number of what Stephenson calls "direct ties," they hold a lot of face-to-face conversations.
- **Gatekeepers** function as human way stations on critical pathways between parts of an organization or between hubs. When information must funnel through one person on the way to another, you've got a gatekeeper. If this person likes you, they can act as a valuable information broker. If, however, the gatekeeper takes an aversion to you, they can really slow the process by withholding information.
- **Pulse takers** have the most indirect ties. Stephenson says that they are "almost the opposite of hubs. They're unseen but all seeing." These people carry a lot of influence, but it tends to be subtle. Stephenson's favorite famous pulse taker: Machiavelli.
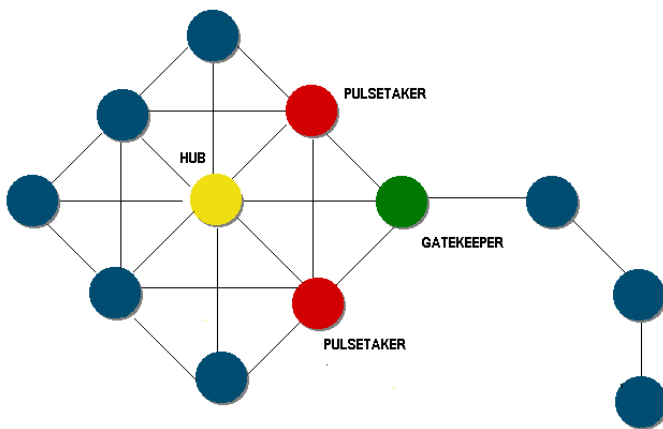

By viewing humans in these categories, you can track and measure an organization's human and intellectual capital – its collective knowledge and experience – as is its most valuable and invisible asset. This means that locating and retaining knowledge workers is the single most important challenge for any company competing in a changing environment. Knowledge capital is often untapped capital because it resides entirely within the people of the organization who are connected in invisible "informal" networks.

NetForm, Dr. Stephenson's Human and Intellectual analysis range of products and services, allows your organization to visualize and diagnose the informal networks and thereby leverage the human knowledge capital embedded in those networks for a variety of strategic initiatives. Network Analysis, like NetForm, is the most effective method of saving money because you are targeting the causal and most costly asset: human capital rather than treating symptoms.
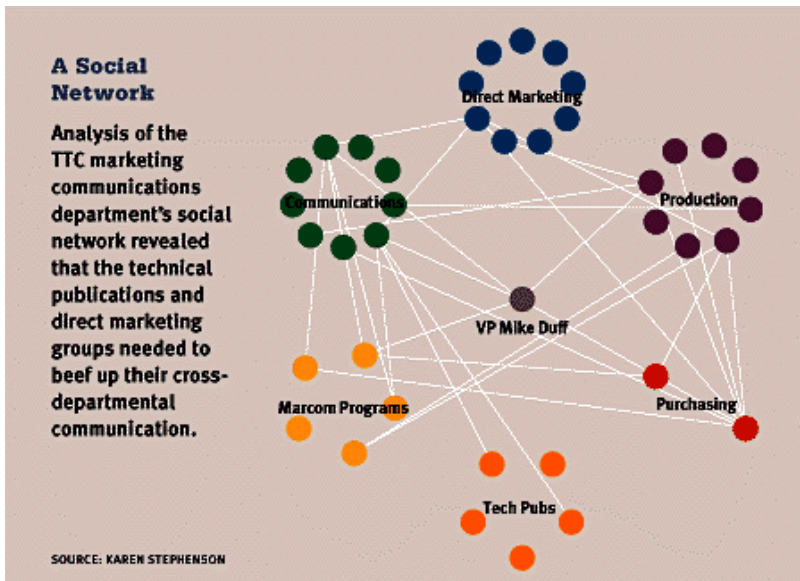
From this work, Knowledge Management can take a more comprehensive approach by combining both atoms and bits, sometimes described as "Clicks and Mortar" for its solutions. By providing a visual mapping representation of your Human and Intellectual capital networks, Facility Managers can leverage this knowledge to target market information to stimulate change, provide a framework for sparking innovation and assist in scenario planning for both the physical and cultural worlds.
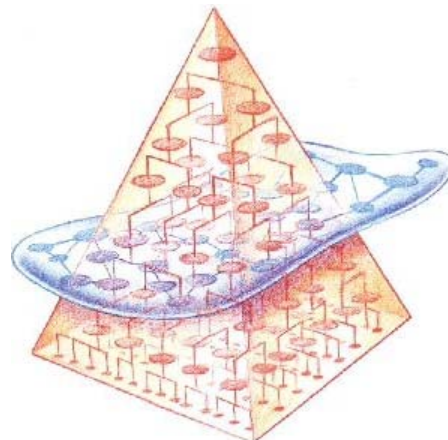
"If you're interested in incremental change, use the traditional corporate hierarchy," says Stephenson. "But if you want rapid, radical change, use the network." By asking people in your organization who they communicate with the most you can run the numbers through mathematical models that creates a graphic representation of a corporate social network. The final product looks like a computer network, or a representation of the World Wide Web, with nodes connected by numerous multicolored lines, some wider than others. Some of the busier intersections pulse on the map, highlighting important network nodes inhabited by key communicators. The map identifies the invisible influencers in each organization that may indicate those people who may not have the job titles, but indicates who is actually doing the work. These patterns of interactions within an organization are independent of its industry, nationality or size.
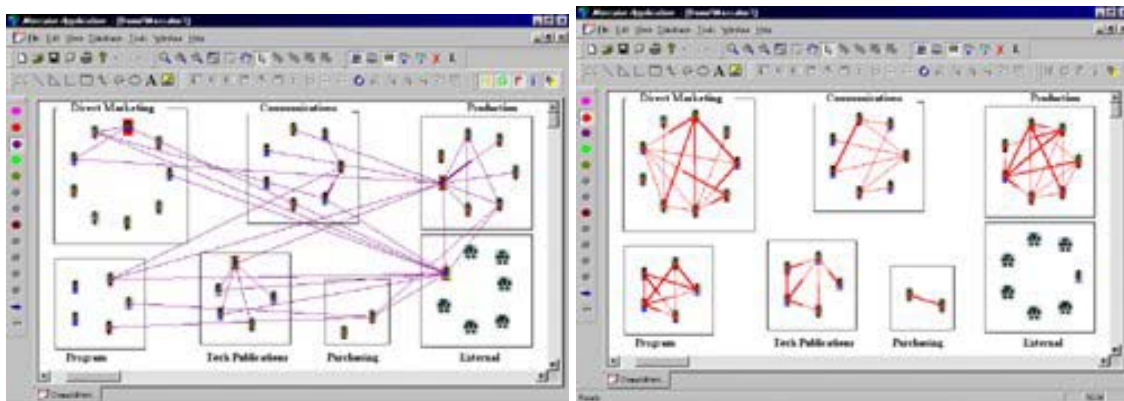
NetForm provides a 3 dimensional view of how your people culturally work together, share information and who are the innovators of change.

A Social Network

Analysis of the TTC marketing communications department's social network revealed that the technical publications and direct marketing groups needed to beef up their cross-departmental communication.

SOURCE: KAREN STEPHENSON

A Silicon Valley-based, high tech corporation used this process in a unique way to combine the power of atoms and bits into an efficient and effective knowledge distribution map that leveraged captured design and construction information, like floor plans, and integrating the corporation's cultural information, which brought a digital life cycle approach to knowledge management.   This corporation set minimum standards that the design and construction project team had to deliver at the end of the job. These basic criteria included CAD file guidelines that integrated into the client's Facility Management software package. This included; Reference Files, Layers (as needed), Drawing Process Definitions (sheet

numbering, revisions, etc.), 2D and 3D Model Deliverable Standards & Definitions (media types, etc.), Modeling Information (data sets based on the IAI's IFC), Product Information (attributes and data sets for models that enabled Operations and Warrantee information), Facility Information based on the functionality of the client's FM software (boundaries, etc.), Compatibility of the files to integrate with the client's project extranets, Compatibility of the files to integrate with the client's Project Close-out standards (as-built drawing submissions).

The idea was to then re-purpose the captured data into Facility Management and Operations processes like security, safety, risk management & insurance and space planning. One of the projects that this was used for was for their Resource Locator project.

The Resource Locator project was to allow any corporate employee to find any other employee or their information through a 3Com Palm device. By capturing the floor plans of all corporate facilities, they were then able to create "Palm size plans" that were then linked into human resource data from PeopleSoft. This allowed a user to tap into their Palm the name of an employee and the Building floor plan along with the exact location of their cubical was published for use. Information like phone extensions, etc. are also a Palm tap away. Another project, using the base of the Resource Locator, provided the ability to bring together innovative teams by locating centers of knowledge and/or experience in a graphical manner. Other Palm projects included; security tours check listing, using the Palm Plans as the graphic base; intellectual property audits and checklists, again, using the base floor plans as a guide; Facility Safety Reviews and OSHA incident reporting, which used the Palm Plans to link to the incident report for an accurate graphic representation of where the incident occurred. The basic graphic "guide" for all of these projects was the captured design and construction information that was re-used in a life-cycle approach to the data, in essence, creating a facility knowledge environment.

The use of cultural analysis for this project allowed us to plan how to expect people to share what they know. It became the fundamental issue for the entire project. How do you enable people to share information about what they do, how they work, what they want, when there is limited incentives to enable this environment of sharing? In addition to that, in order to have this pioneering project receive the proper support, management buy-in and financial backing, and a Return On Investment report had to be created.

Cost Savings

In order to effectively calculate a return on investment, we had to first understand the client's current cost basis. Activity Cost Management tools provided the means for

accurately determining the Return On Investment (ROI). For example, when a large healthcare organization with multiple delivery locations (hospitals and clinics) pays different medical professionals to write multiple reports at different times to comply with industry standards that usually only require one submission per organization, they are wasting time and money because they are effectively paying different Knowledge Workers to create the same "Intellectual Asset".

Another example would be an information systems engineer in Memphis that discovers a defect in a software product and spends 50 hours solving the problem. The cost is $ 5,000.00 in labor. If the same company does not effectively share the "result" and fifteen other engineers at different locations all spend time finding and fixing the problem, the company spend $75,000.00 to fix a $5,000 problem. The ROI is not hard to calculate, the problem is usually the lack of activity-based data. In most general ledger and cost accounting systems, there is no way to identify the cost of these duplicate activities.   Our ROI study was conducted as a **Business Value Added** (BVA) due to the limited information that we possessed, due to the pioneering nature of the project. Sometimes called the "soft dollar" approach, BVA highlight's benefits of the Facility Knowledge Environment Initiative that included:

- Improved communication
- Better customer service
- Improved access to understand choices and make decisions
- Analyzing trends
- Create future scenarios
- Decrease document management complexity

Traditional ROI: Total Benefits/Total Costs

Business investments, like the Knowledge Environment Initiative, have returns that span several years, as opposed to a single lump-sum reward. The most significant issues are defining and quantifying benefits, and establishing strong cause and effect linkages between one investment and specific benefits. Therefore, the calculation for traditional ROI is:

(# of system users, admin/management) x (salary with benefits) x (% time savings) x (productivity rating) = ROI

This will result in the traditional ROI ratio that you see in other ROI studies.

BVA - "Soft Dollar" ROI

The biggest difference that BVA has from traditional ROI is that BVA measures IT contribution not in dollars, but by its support of key goals and metrics of functional groups. The Knowledge Environment Initiative was utilized in unique ways throughout the re-defined processes that were being developed throughout our clients department. The Knowledge Environment Initiative provided an "Intangible Value", that is less a formal metric than an evaluation of "soft" benefits. The Knowledge Environment

Initiative assisted the client in keeping the amount of digital data redundancy to an absolute minimum for each facility from one central data repository to another. Finally, the Cultural Cost of Return by using the Knowledge Environment Initiative solution provided the environment for users to discover new efficient and effective ways of working that are not immediately seen by management.

Technology & Tools

The technology tools we used to deliver the digital content were based on Web technologies, along with the mobility of 3Com Palm® technologies for use in the field. Due to the nature of both the Web-based solutions (utilizing the corporate internet) and Palm solutions, we explored the knowledge-focused usage of personal Portals for useful information. Most corporate portals have been theme-based, such as a focus on corporate and individual issues as well as publishing and other types. But the use of portal technologies enables individuals to be more effective within the context of real value chains both inside and outside of an organization.

Working closely with the content developers (corporate users), cultural analysis tools, re-using captured facility information, people interaction, training and the use of a sound, yet dynamic enterprise architecture was critical to the successful implementation of the knowledge management system. We had to make the technology transparent to the user so we could stealthily capture workflow decisions that created knowledge models of information. What became apparent was that by using the cultural model, we could anticipate how information could flow more efficiently through a decision making or approval process. This provided us with the conclusion that there must be effective integration on both process and technology issues both inside and outside an organization, to be truly effective in the real value chain, and more importantly in what I call the global value chain, called by some the digital supply chain.

Knowledge Management (KM) is a critical issue in this context, and must be properly evaluated and leveraged to support the effective implementation of technologies and business processes, and must be properly aligned and in balance with the use of other critical process and technology enablers.

As mentioned before, most corporate portals are theme based; ERP portals, HR portals, document portals that focus on strategy or marketing. The real value chain comes from enabling employees with good intranet tools, opening a subset of those tools to an extranet, and finally to the Internet in an e-business vehicle. How was this achieved in the context of a Facility Knowledge Environment for this Silicon Valley-based enterprise? Solid KM architecture allowed a comprehensive tool to be specified (i.e. a catalog of information). The developed tool leveraged host data, competitive inputs from dynamic information sources, and provided some workflow tools. When all the objects in the system were described, they each contain "metatags" that "filter" the content based on the target recipient (for security and appropriate functionality). Applications then became nothing but pointers to classes and their interfaces (like a browser on a desktop or a Palm device).

Allowing a dozen or so of these "access class types" allowed us to structure applications for everyone in and around the facility organization (new clients, old clients, suppliers, resellers, VARs, partners, sales people, service people, operations people). The portal became less relevant as the process flow became the critical KM component here.

Summary

The development of our corporate facility portal represented a turning point in business computing and a sea change in how this client functions in today's electronic work environment. The emerging e-Business practices we see being experimented with today will become entrenched and commonplace within a few short months—and they will take on new forms that we can hardly image today.

The key to success in facing the challenge of this transition lies in understanding the underlying dynamics of work processes and in adjusting expectations and practices as those processes reconfigure themselves in the New Economy.

Knowledge Management Tools
- Abuzz - http://www.abuzz.com - Abuzz uses a beehive analogy to track the information people want and connections to the people, sites or contacts needed to retrieve it efficiently.
- Cipher Systems - http://www.cipher-sys.com - Cipher Systems specializes in collecting information, marrying it with predictive models and news that permit users to chart future events, forecast business wins and stay ahead of the competition.
- Pensare, Inc. - http://www.pensare.com - They sell KM modules for specific applications that work together within a company, like sales, marketing, finance and others.