

Knowledge Workers, New Workgroups, and New Demands for Information Management

How the innovative enterprise raises workgroup productivity

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Introduction

"It is certain that the emergence of the knowledge worker and of the knowledge worker's productivity as key questions will, within a very few decades, bring about fundamental changes in the structure and nature of THE ECONOMIC SYSTEM."

- Peter Drucker
"Management Challenges for the 21st Century"

Much has been written about managing knowledge in an organization. But what about managing the collective knowledge and collaboration among these workers? That is, how do you manage and empower the role of the new knowledge *workgroup*?

Knowledge workers pervade virtually every facet of the current work force. Fueled by technology that renders distances less important than time, today's "infoworkers" are as likely to work in homes and hotels as within office buildings. And their roles can be as diverse as freelancer, consultant, or partner -- in addition to traditional employee.

But once networked, their productivity becomes exponential. As Bob Metcalfe, the inventor of Ethernet and founder of 3Com has famously noted in Metcalfe's Law, "*the usefulness, or utility, of a network equals the square of the number of users.*"

This new class of worker and new way of working is borne of pervasive networks, new computing technologies and socio-economic trends.

Taken in aggregate, knowledge workers represent not only a new way of working, but a powerful competitive weapon — or threat — for organizations of all sizes.

What Has Changed?

The Way People Work

Today, the notion of “going to work” is defined as much by engaging in a function as it is by commuting to a specific destination. The connected world of cell phones, pagers, wireless devices and high speed Internet connections is transforming the role of workers inside and outside of companies of all sizes.

Knowledge workers appear as employees, partners, contractors, freelancers and consultants. Some are mobile, working in hotels, at airports and on the road. Others are stationary, working from home, in office buildings or manufacturing facilities. They populate all industries and job descriptions, from assembly line workers to doctors and scientists. But the one common thread running through this mosaic of knowledge workers is a connection to information.

As the number of knowledge workers grows, so too does the information they produce. In fact, in the next three years, we will produce more information than in all of past human history, according a recent study by faculty and students at University of California at Berkeley's School of Information Management and Systems. On a global basis, we produce between 1 and 2 exabytes of unique information a year, which is roughly 250 megabytes for every man, women and child on Earth, according to the Berkeley study. And 93 percent of that information is digital.

Every document we create, every email we send, and every movie we record, contributes to the vast sea of digital data.

Naturally, this data explosion will create lots of jobs. According to the U.S. Government, the five fastest growing occupations from 1998 to 2008 will all be computer-related (US Bureau of Labor Statistics, November 1999). And our next generation of workers will be even better prepared. More than 60 percent of American households with children have computers with Internet access, according to *The Economist* (Dec 21, 2000).

So how do all these people make sense of all this information?

Traditionally, companies grouped workers in organizational structures, according to project, profile and function. These organizations were known as workgroups and were arranged in a structure similar to information silos. But the new model of knowledge workgroups does not lend itself as easily or simply to such strict divisions.

The Knowledge Migration

Today, knowledge workgroups – unlike the traditional workgroups of the past – are more varied, distributed, dynamic and autonomous.

Traditional Workgroup	New Knowledge Group
Homogenous - Group of like-minded people - Organizationally similar (e.g., finance or engineering)	Heterogeneous - Different people, organizations, specialties - Organizationally disparate (cross-department)
Stable - Structure, participants firmly established - Slow to add and delete members	Dynamic - Change is integral to the process - Membership is fluid, based on need
Focused on the Organization	Focused on Productivity
Centrally Managed - Connected through a hierarchy	Distributed - May or may not be connected to hierarchy
Predefined Boundaries - Group is pre-determined - Inflexible approach (start another group)	Self-Defined, Organic - Knowledge defines the group - Adaptive to tasks
Reliant on Technical Expertise - Complex to set-up - Sophisticated management, maintenance	Self Sufficient with Technology - Rapid adoption - Learn as you go enhancements
Geographically Fixed - Few locales	Mobile - Anywhere, anytime

What Caused These Changes

“Because communication – which in the end is what the digital technology and media are all about – is not just a sector of the economy. Communication *is* the economy.”

- Kevin Kelly
 “New Rules for the New Economy”

The evolution in workgroups – as with most significant changes in today’s business environment – is rooted in the adoption of technology, and captured in a series of laws posited by three of the industry’s leading pundits. First, according to Moore’s Law, computing power doubles every 18 months. Second, predicts Gilder’s Law, network capacity grows three times faster than computing power. And third, states Metcalfe’s Law, a network’s usefulness is exponential to the number of users.

Given the power of computers, the breadth of network connections and the advantage of group dynamics, it’s no wonder people have responded according to the universal Law of Nature – creating new applications, services and job descriptions that work to their own natural advantage.

Making the Connections

Digital connections are now commonplace. Networks — once the domain of specialists confined to wiring closets and data centers — have become accessible to anyone with a modem and a browser. And traditional networked applications were quickly eclipsed by the popularity of Internet software services like Hotmail, Yahoo and Amazon.com. Almost instantaneously, more networked information existed outside the firewall than within. Pervasive computing prevailed.

Build It and They Will Come

Once the connections were in place, the people followed. Between 1990 and 1996, the number of people employed in manufacturing tangibles decreased 1 percent, while people employed in providing intangibles services increased by 15 percent.

Along with this shift from atoms to bits, came an always-on work force. Work went from a classic 9 to 5 to veritable 24 by 7. Freelancers, once the eclectic domain for artists and writers, poured into the job market, as companies sought to outsource many of the support services and non-core competencies.

According to a *Fast Company* magazine cover story in 1997, the U.S. alone had more than 25 million people making their living as what they termed “freeagents.” And of the workers still tethered to the corporation, more and more of them are now working outside the walls through telecommuting and flexible hours.

Naturally, work involves collaboration, so networked workgroups of all sizes began to appear. Virtual companies — freed from the expense of traditional physical assets — populated many of the services industries, such as advertising, public relations, and

executive recruiting. And virtual teams began sprouting up across all industries and sectors.

Virtual team may actually accelerate due to current market conditions. The rapid expansion and contraction of many technology sector jobs and e-businesses makes permanent employment more of a challenge. Yet many of the leaner companies still require talented and committed workers, according to Norma LaRosa, president of the Kensington Group, Inc. a research and strategy consultancy.

“Virtual teams are good for individuals as well as businesses,” says LaRosa. “Individuals are able to reclaim control over the quality of their lives, while companies get the talented people they need without having to pay for the overhead expense that comes with it.”

How to Respond

The opportunities created by the proliferation of new technology and concentration of knowledgeable workforce are not without their challenges for both the individual knowledge workers and the organizations to which they belong, join or contribute.

One the one hand, how do individuals effectively gather, share and publish what they know? At the same time, how do organizations benefit from the productivity of the knowledge group, while reducing disruptions inside the company?

Knowledge Workers: Managing Me, Us and Them

For knowledge workers, the challenge of balancing individual contributions with the group interaction is ongoing. In other words, how do individuals manage their knowledge without becoming islands of isolation?

- Share What You Know
 - Capture information in ways that makes sharing a forethought, not an after thought
 - Begin projects with an expectation that groups will grow, change and thrive

- Plan for Productivity
 - Embrace tools that increase productivity and help yield higher profits in less time
 - Specifically, find tools that require minimal training, so work can begin quickly

- Reduce, Reuse, Recycle
 - Reduce the complexity of technology, when possible
 - Reuse knowledge that is already learned, when appropriate
 - Recycle information through sharing, when given the opportunity

- Foster Self Reliance
 - While groups grow as a result of combined interaction, they often disintegrate based on individual failings
 - Familiarity with technology reduces reliance on hard-to-find experts, thereby mitigating possible losses in productivity

- Celebrate Diversity
 - Accommodate differences in people, places and platforms
 - Plan to communicate different platforms (Mac, PC, Linux), devices (desktops, PDAs) and connections (dialup, broadband or wireless)

- Be Exclusive and Inclusive
 - Small knowledge groups often feed larger initiatives
 - Be mindful of future compatibility with larger systems, structures or companies
 - Adopt ways of working that can be exclusive now, but inclusive later

- Maintain the Connection
 - Technologies that connect people and information are as valuable as relationships
 - Cultivate methods of keeping people connected with you and you to them

Organizations: A Whole Lot Greater Than the Sum of Its Parts

The productivity engendered by this onslaught of knowledge workers is a double-edged sword for many organizations grappling with the irreversible change in work style and direction. While the autonomy of the groups is – in many cases – what enables innovative and rapid decision-making, questions of corporate structure abound.

How do organizations benefit from the productivity of knowledge group, while reducing disruptions? Specifically, how do they:

- eliminate redundancies
 - protect assets
 - coordinate with the corporate direction
 - provide access to larger enterprise applications
 - track progress
 - conform with corporate standards and guidelines
 - manage training
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- Be Flexible
 - Provide the right tools for the right people. One size does not fit all
 - Find popular tools that work across the platforms, rather than restricting adoption

- Stay Connected
 - Link enterprise resources with knowledge worker expertise
 - Find ways to ease access to the knowledge of the enterprise
 - In a networked economy, information grows as it is shared. Organizations get stronger through connections

- Embrace the Chaos
 - Make centralized control of information an option, not a requirement

- Empower the Individual
 - In an economy of contribution, trust (but enforce) the work of those you empower
 - Be sure safeguards are in-place
 - Satisfaction breeds loyalty in a competitive market for skilled workers

- Webify
 - Let the network-of-networks work to your advantage
 - Think of ways to webify knowledge workers at the onset of a project

- Mobilize
 - The handheld revolution will only intensify
 - Start with a strategy that recognizes the power of handhelds/wireless

- Anticipate Change
 - Technology and work patterns will continue to change rapidly
 - Use systems and solutions built around open and de facto standards

- Provide Self-Service Applications
 - Tools that are sophisticated, but simple, will allow rapid productivity, rather than complex, difficult to deploy packages

FileMaker: Linking Workgroup Productivity And Enterprise Knowledge

In a networked economy, information grows as it is shared – and organizations of all sized become stronger through connections. FileMaker makes individuals and organizations more productive by linking people to information and workgroup expertise to enterprise-level resources.

FileMaker maintains a long tradition of innovation. The company is extending that tradition by fueling the productivity of knowledge workers, forging connections among workgroups, and improving the way workgroups integrate within IT environments.

Built for Productivity

As the world's most popular workgroup productivity tool, FileMaker is ideally matched to the working style of knowledge workers, allowing them to quickly create workgroup applications that coordinate activities, information and people – all without painful exposure to technology.

The application can be quickly learned and remembered by mastering a few key concepts. A natural and intuitive user interface is designed to eliminate the tedium of setting up an application, and instead helps users gather, share and publish information. Features such as layout wizards and ready-to-use templates are tuned to help knowledge workers build customized solutions in just minutes.

As people's familiarity with the product grows, so does FileMaker's potential. Experienced developers will find the capabilities of FileMaker rich enough to satisfy even the most demanding workgroup applications. As a rapid application development tool, FileMaker is capable of everything from dynamic SQL queries to sophisticated web publishing. Its "what you see is what you get" visual environment makes it simple to re-create paper forms as database layouts. And the point-and-click design approach makes it a much more rapid prototyping environment to build solutions of almost any complexity. But even at the high end, FileMaker does not sacrifice the ease of use (for both user and developer) that has long been its hallmark.

A Focus on Import, Export and Exchange of Information

Once an application has been set up, populating the database is also a function built for speed. The new FileMaker Pro 5.5 easily imports and formats data from Excel workbooks, including data that is not organized in a single orderly table. Even rich media can be imported simply. FileMaker Pro 5.5 now supports data exchange with QuickTime files and PDF documents (PDF support is with Mac OS X only).

And when it comes time to share information among a diverse group, FileMaker makes information access a matter of personal preference, not technical proficiency. Taking the term "cross-platform" to an extreme, FileMaker supports or plans to support databases on desktops, laptops, Servers, PDAs and smart phones, running Windows, Mac, Linux, Palm or PocketPC operating systems.

In fact, FileMaker Pro 5.5 is Windows 2000 logo-certified, Mac OS X native, and FileMaker Server 5.5 runs on Linux (Red Hat certified) among other platforms. FileMaker Mobile, in addition to support for the Palm OS, will support PocketPC, making FileMaker available on more than 95 percent of all handheld devices and PCs.

In addition to improving data access and sharing within a group setting, FileMaker can automate and simplify external communications. Whether it is sending a news release to

the media, a sales promotion to customers or a company alert to partners, FileMaker makes sending email with content and address as simple as a 'send mail' script for Express Outlook and Entourage for the Mac, and via a mail merge wizard with Microsoft Word for the Mac.

On The Web: What You See Is What You Publish

When it comes to network sharing, FileMaker is the only database that makes sure what you see is what you publish – whether it's over a private intranet, a public extranet or the global Internet. As knowledge workgroups become more dynamic and distributed, more often than not, the platform of choice is the Web.

Just as HTML unleashed the creative potential for graphics designers on the Web, FileMaker Pro 5.5 has added a series of enhancements to give users the ability to design and develop sophisticated, professional databases that scale from tens of users on a local network to thousands of users around the world.

FileMaker Instant Web Publishing lets knowledge workers edit and publish browser-based forms and solutions so they can provide easy access without requiring an in-depth knowledge of HTML and more advanced Web programming languages. New enhancements to FileMaker improve the table views, provide rollover button activation, and allow the easy addition of scripts steps or multi-step scripts to guide users through a Web layout. FileMaker Pro 5.5 also allows groups to customize the level of access, with features such as record-level security or read-only options.

Upping Workgroup Productivity, De-stressing IT

The proliferation of workgroups is both a blessing and a curse to IT. As a blessing, the self-sufficiency of knowledge workers and knowledge workgroups can relieve an overburdened IT department from having to manage yet another application, and free the IT group to focus on more mission-critical functions. But in instances where the data of a knowledge workgroup or the work flow process needs to be captured inside of a larger enterprise organization, the organic nature and autonomy of a workgroup tool can present a management headache for IT.

FileMaker addresses the prospect of workgroup-and-IT integration by providing both sides with tools to ease the transition, in those instances where integration is appropriate.

For the workgroup, new features like dynamic SQL queries allow corporate data to be integrated into workgroup solutions. This way, users can run their own reports on corporate data sources. In addition, ODBC data sources can now be updated as well as imported via script by FileMaker, and a developer or IT administrator can empower FileMaker users to import or update ODBC data sources without learning SQL.

For IT, FileMaker now offers a series of optional centralized management features that can bolster security and control when workgroups need to integrate with an enterprise environment. A “no new database” option at install, for instance, can limit the creation of FileMaker databases without IT’s OK. Record-by-record access privileges can add an additional layer of information security. And enhanced password security lets IT prevent unauthorized password changes – guarding against one user unintentionally changing a password and “locking out” others.

From an infrastructure perspective, FileMaker Pro 5.5 is ready to take advantage of standard IT management tools, including Windows 2000 authentication and Active server/LDAP support to integrate more easily with the rest of the corporate applications. Plus, the new FileMaker product line allows for a seamless upgrade in the future, with no file format incompatibilities. And the FileMaker Developer 5.5 software (to ship in Fall, 2001) meets IT expectations for script debugging and entities definition via new database reporting tool.

Summary

FileMaker, Inc. – the company that made database technology accessible for average computer users – now provides the new class of knowledge workgroups with the tools they need to capture, share and publish their intellectual capital in an application that defines ease of use.

Just as FileMaker once freed database applications from the confines of the data center, FileMaker is now extending the power of a database beyond the desktop to where, when and how knowledge workgroups work -- whether that is publishing over the Web, embracing the next generation of Linux servers, or downloading to a Palm Pilot.

While productivity and ease-of-use remains the guiding tenants for the product experience, new enhancements to FileMaker make it more practical than ever to connect knowledge workgroups and enterprise and IT resources when the time is right.