

IBM Institute for Business Value

Working in the open

Accelerating time to value in application development and management



IBM Institute for Business Value

IBM Global Business Services, through the IBM Institute for Business Value, develops fact-based strategic insights for senior executives around critical public and private sector issues. This executive report is based on an in-depth study by the Institute's research team. It is part of an ongoing commitment by IBM Global Business Services to provide analysis and viewpoints that help companies realize business value. You may contact the authors or send an e-mail to iibv@us.ibm.com for more information.

By Patrick Howard, Ed Lovely and Susan Watson

Economic uncertainty, rapid technology advancements and a widening pool of global expertise are opening the way for unprecedented change in the way businesses operate and collaborate. The complexities of globalization, cross-company and cross-national partnerships, plus the evolution of multinational enterprises, are forcing enterprises to make transformational shifts in application management. We believe that a new economic environment is headed our way – one based on transparency, trust, talent and teamwork. Inside IBM, this open-collaboration model is enabling communities of our specialists to work, connect, communicate and innovate faster and more effectively. All in the context of a virtual, globally integrated workspace that focuses on increasing time to value – within our own enterprise, for our stakeholders and for our customers.

From the inception of the software industry in the 1940s, applications were managed primarily by dedicated resources co-located in corporate facilities. By the 1980s – coincident with the significant investments in supply chain management, customer service systems, retail distribution networks and other major business processes – software engineering productivity and IT effectiveness became a priority.

Along the way, enterprises were challenged to determine how best to manage and measure the impact of their applications – an increasingly critical corporate resource. Nonetheless, through the 1980s, application development and maintenance (ADM) was treated, for the most part, as an in-house function. It was costly. At the same time, expectations were lower. There were varied levels of expertise – and few reliable benchmarks.

With the advent of the Web in the 1990s, software assumed a more integral role in many enterprise business models. This allowed corporations to reach markets more efficiently, serve customers more effectively and create new sources of revenue. ADM processes and technologies became more specialized. Over time, outsourcing surfaced as a cost-effective model for acquiring and leveraging capabilities through agreements with outside service providers.

While “cross-enterprise” models helped unlock new sources of capital and drive significant improvements in IT services and practices, many organizations grappled with the challenge of accelerating time to value.*¹ During this period, the burden of supporting legacy systems began to exact a heavy toll – compelling companies in mature markets to opt for lower-cost

**The concept of time to value refers to the combination of effort, barriers, time, resources, planning and change that takes place before an organization sees tangible business value from a product or service.*

yet highly skilled IT resources in countries like India, China, Mexico and Czech Republic. Still, many enterprises were not prepared to deal with the added complexity of operating in an environment where teams are separated by time and space. The value of “labor arbitrage” (outsourcing work to labor markets in other countries, where salaries are often less than they are domestically) diminished. Meanwhile, the pace of competition picked up.

Accelerating time to value

Today, success is increasingly driven by two factors: time consumed and value received. In other words, speed and performance. In his book, *Competing Against Time: How Time-Based Competition is Reshaping Global Markets*, George Stalk of the Boston Consulting Group reports on empirical research that shows that a firm with a “2X time advantage” over its competitors will have a “3X profit advantage” in performance.²

Understandably, accelerating time to value has become a critical mandate for today’s widely dispersed enterprise environments, where people must communicate, collaborate and innovate continuously – irrespective of their locations or time zones. In the case of application development and maintenance, the ability of specialized individuals and teams to work together in this way is particularly crucial; application

software now plays a fundamental part in supporting enterprise-level strategies and processes. Inside IBM, it is integral to product launches, customer service strategies, supply chain programs and other important initiatives.

We found that by speeding the delivery cycle time of business functions through new or legacy applications, we could help improve time to value – within our own enterprise, as well as for our partners and customers. Yet achieving this goal required us to bridge capabilities across IBM and with our trading partners. The notion of a worldwide community of diverse resources offered us new opportunities to cost-effectively obtain specialized talent, implement “follow the sun” software development processes and strengthen team collaboration.

Today, we are using the open-source model and social networks to take application development and maintenance to the next level, and help meet pressing, time-sensitive performance objectives. This community-based collaboration environment, enabled by technology and fueled by social networking components, allows larger numbers of expert business and technical professionals (both internal and external) to exchange ideas, solve problems, drive innovation and deliver more value – in realtime, and in the right context. All are supported by an open-source framework that places a premium on intellectual capital, expertise, trust, efficiency and results. The focus is on increasing productivity and capacity, improving profits through time-based performance, and motivating individual and collective talent.

The open source model places a premium on intellectual capital, expertise, trust, efficiency and results.

The promise of open collaboration

Clearly, doing business worldwide is a highly complex proposition – especially when it comes to software engineering. As IBM continues its transition from a multinational company to a globally integrated enterprise, we are striving to improve workforce effectiveness and execution in several ways, including:

- **Enablement** – providing globally dispersed teams with environments that permit them to plan and execute more effectively within a highly transparent, open community
- **Measurements and incentives** – implementing a management system that focuses the attention of individuals and teams on outcomes derived, not just resources consumed
- **Practices, methods and tooling** – deploying capabilities that help simplify an inherently complex activity – software engineering – and better synchronize execution.

Addressing these issues meant taking an entirely new approach, and developing a carefully coordinated set of activities – including rethinking and reworking the ADM process from the standpoint of global delivery.

The result is what we refer to internally as “Generation Open,” or “GenO.” It is not a formal IBM product name, service or set of offerings; rather, it represents what we believe is a new paradigm for delivering enterprise applications via an open, worldwide talent network supported by new-generation technologies. It engenders contextual collaboration, and affords far-reaching visibility. It permits professionals to differentiate themselves based on value rendered, and to build their digital reputations. It applies social networking practices to the process of software development and delivery. And it has improved our time performance objectives.

Open collaboration: What IBM is achieving internally

Within IBM, the first phase of our open-source model has already produced some impressive results, including:

- A new governance structure incorporating over 140 open communities, and more than 10,000 professionals within the IBM enterprise
 - Cycle time reductions of more than 30 percent
 - A 20 percent reduction in defects noted during the testing phase
 - An 18-point increase in component reuse during the first six months of the program.
-

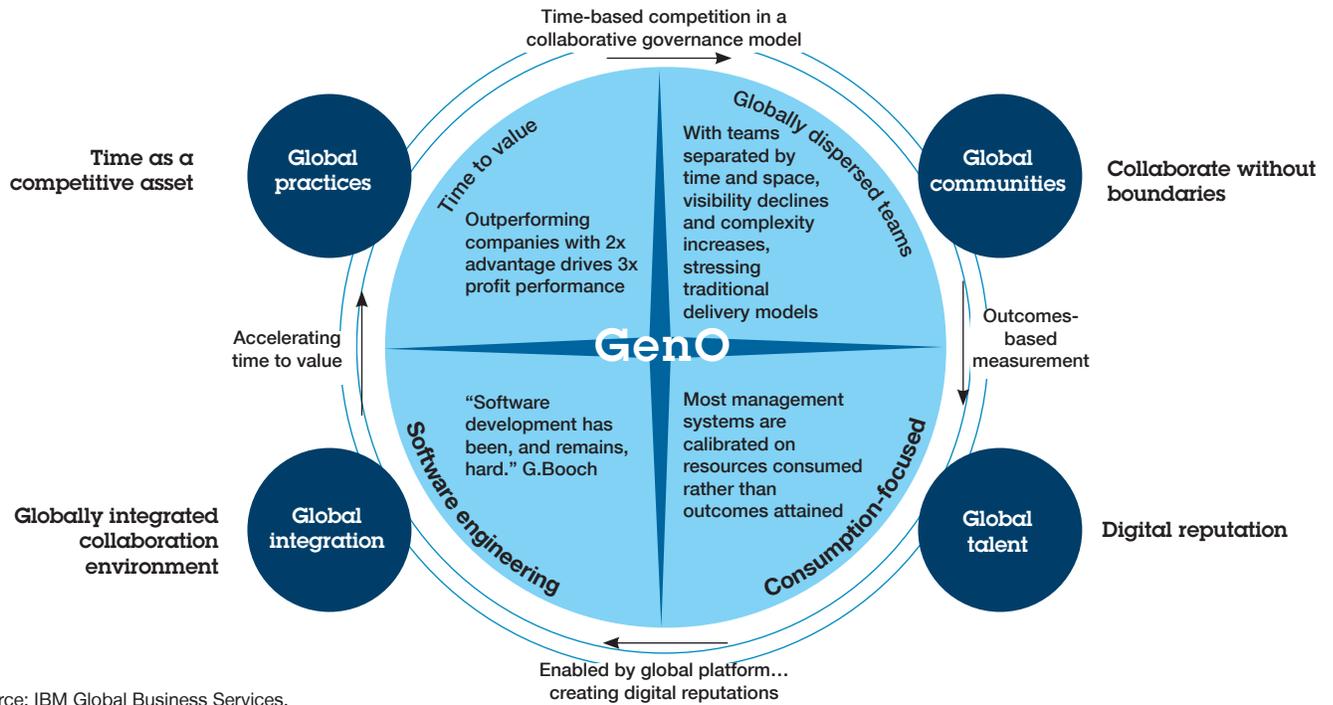


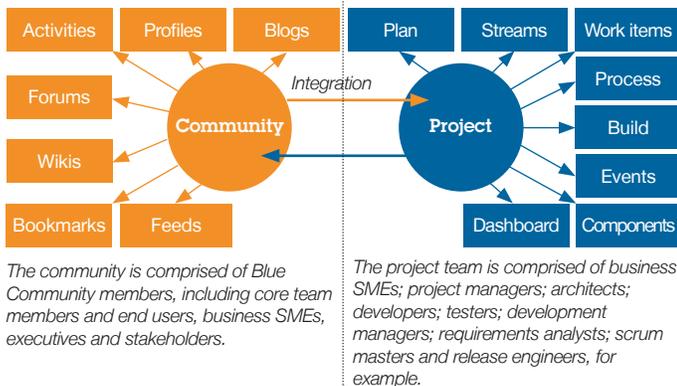
Figure 1: The IBM open collaboration model.

Optimizing time and talent in the right context

Successful ADM projects require multidisciplinary skills and team-based, in-context collaboration. The IBM Generation Open model centers on optimizing time and talent by helping to ensure that the collaborative tools teams use are presented relative to a specific business process or work assignment. For those engaged in activities such as business modeling, application design, coding and testing, this permits them to focus on the work at hand, collaborate more effectively in a highly visible environment, and differentiate their performance based on the results they achieve on a given project. The idea is quite simple: Rather than concentrate prime talent on utilization and

resource consumption, align the interests of the team with the interests of the enterprise.

Professionals and team leaders report results based on the delivery of components against targets such as cycle time, speed, quality and reuse – enabling the enterprise to achieve time-critical market and performance targets. By its very nature, the open ADM framework employed by IBM encourages and enables a sense of community. It is modeled in part on the open source environments that have become increasingly popular in the software industry – allowing users to create, integrate, share and reuse assets seamlessly and transparently.



Source: IBM Global Business Services.

Figure 2: The community network and governance structure is core.

Collaborating in “the open”

In the IBM Global CIO Study 2009, “The New Voice of the CIO,” executives identified top emerging project areas. Among them: collaboration, unified communications, social networking tools, Web 2.0 and cloud computing.³ These findings point to the prominent role that open collaboration will play in virtually every area of today’s enterprises, including application development and maintenance.

While the IBM Generation Open model helps to foster more effective collaboration, it is at the same time a well coordinated system guided by six foundational principles: Community networks, digital reputations, performance and maturity, transparency, best practices and adaptive change management. It is designed to improve time performance by synchronizing the “clock” of teams worldwide in delivering on commitments, and navigating the myriad risks that can be encountered along the way.

Two examples of how Generation Open has helped IBM increase time to value

IBM Finance was among the first business units within the company to reap the advantages of the Generation Open model. As one of its initial pilot areas, the project team created 12 communities crossing organizational and country boundaries. Open collaboration among these communities resulted in the identification and alignment of all assets used in support of the Finance applications worldwide (including the top 100 Finance components), plus standardization of the entire order-to-cash process across IBM. Overseen by the CIO’s office, one of the projects within this rollout resulted in triple the number of function points supported, while reducing the cost by half.⁴

Total Order Management is an application used for supply chain planning within the IBM Microelectronics Division. It entails multiple development and enhancement projects, plus ongoing maintenance support. Employing the Generation Open model, teams in 22 communities across the U.S., Belarus, Brazil and China have open access to education and metrics. These teams have utilized coaching and collaboration skills for training, and to develop the skills of their colleagues in Russia and China. Implementation of Generation Open has allowed these communities to not only teach their colleagues about new technologies and methods, but also to realize cost savings of approximately 20 percent.⁵

Community networks are integral to the governance and execution model. For example, at IBM we have created virtual communities that represent the underlying environment for managing, delivering and measuring work – bringing members together to collaborate and share information quickly and efficiently. Each community has operational and fiscal responsibility for a set of objectives. Community leaders are charged with orchestrating the actions needed to meet those commitments.

In the IBM model, a community brings together the business and technical experts required to drive more effective decisions and simplify outcomes. The community is supported by social technologies, including intra- and Internet forums, instant messaging, libraries, blogs and wikis.

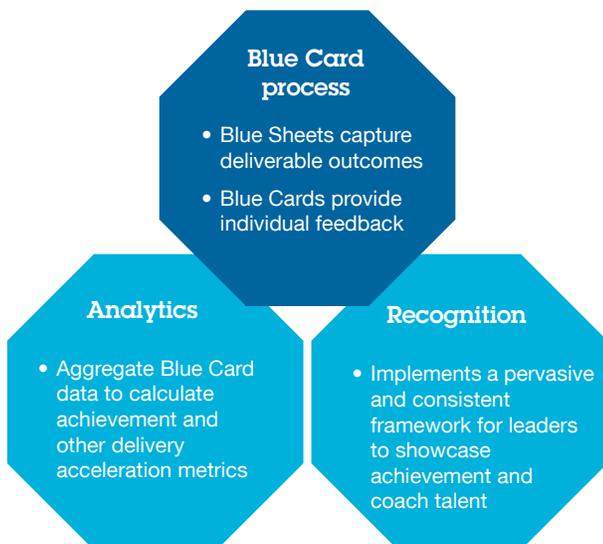
It operates “out in the open” – executing in a highly transparent environment. Roles, assignments, deadlines, status updates and deliverables are visible to all community members worldwide. Community leaders recognize that they are executing with finite resources against time-sensitive objectives, and are empowered to make the trade-offs required to meet those goals and optimize outcomes. This kind of governance model helps to improve execution and integrate professionals’ knowledge and skills to form a more effective global team.

Digital reputations are the construct for communities and professionals to differentiate their work based on value rendered. For instance, the IBM model offers numerous recognition programs at the community, country and global levels. The focus is on outcomes achieved and reputations earned. “Blue Cards” permit community members to catalog their accomplishments throughout the year, with points earned over the previous six months factored into global rankings. Managers use the information provided in Blue Cards to offer frequent feedback, acknowledge results and understand project contributions. Through internal wikis, members of the community can also nominate and publicly recognize their peers for jobs well done.

The process is simple and very “lightweight” in nature. For every assignment completed by a community member, a result is reported. Assignments are scored against four main objectives. These goals, which are the same for every assignment and for every professional developing and managing applications systems, pertain to cycle time, speed, quality and reuse. Combined, they help to reinforce the overarching objectives of accelerating assignments, identifying efficiencies and making trade-offs – without compromising quality. Just as important is the definition of the work assignment. Every assignment is clearly defined and scoped for 40 to 60 hours. This helps assure that workforce deployment is optimized across the integrated set of components required by the project.

The Blue Card process has enhanced the IBM global management system in several ways:

- **People:** All professionals have the opportunity to demonstrate value on a project. In the process, they can differentiate their performance and shape their reputation. In a socially networked environment, this offers significant incentives for people to accelerate work, earn points and identify ways to improve their standing within their open community. One example at IBM pertains to reuse, where over 4000 new assets were contributed and reused by professionals across communities – all within six months of launching the new delivery model.⁶



Source: IBM Global Business Services.

Figure 3: Blue Cards permit professionals to catalog their results throughout the year.

- **Performance and Maturity** utilizes an analytics engine to map patterns of performance over time across the open communities – concentrating on sharing best practices. “Lightweight” analytics, which are a by-product of the results reported, employ pre-built interfaces that make it easier to extract, apply and share performance-related data across platforms, and fine-tune the global supply chain for software delivery. Community leaders collect and distill the insight and information they need (global component delivery outcomes; community rankings; leadership rankings; percentage of work that meets and exceeds cycle time; asset consumption; savings from reuse; actual spend vs. planned and hours consumed, for instance) to map work against targets. Throughout, the role of the CIO remains critical in terms of leadership, governance and operational discipline.
- **Transparency** – along with trust and talent – is vital in a collaborative environment. It plays a major role in helping to drive the best possible performance among individuals working to develop and deliver software within their open community and for their clients. Auxiliary tools like blogs, wikis, social networks and tagging help determine levels of knowledge, trustworthiness, written communications skills, cooperation and expertise.⁷ For example, the wiki permits community members to share knowledge and information, edit content and document findings on a common Web page – an invaluable tool in software engineering. Knowledge paths and peer-to-peer knowledge exchange provide education across the entire community. A community register analyzes and tracks performance along the ADM path.

Core technologies help support these elements by affording visibility, context, collaboration and reuse throughout the ADM lifecycle. All work items (design, code and test) and work assignments are visible and accessible through a completely collaborative development environment that keeps community members connected and informed. Using customizable, Web-based dashboards, teams can track metrics, obtain reports, view project milestones and receive status updates in realtime. This capability allows IBM to identify communities that are thriving under the model, as well as those that continue to face performance challenges. It also permits management teams to work with community leaders to drive requisite skills development, system re-factoring and other initiatives needed to heighten community performance and meet the goal of accelerating time to value.

Measuring time and value

The IBM Generation Open model is all about increasing resource productivity and capacity, improving profits through time-based performance, and releasing captive talent within and outside the enterprise. The advantage of this model rests on:

- A collaborative governance model
 - A global delivery framework
 - Agile, TDD (Test-Driven Development) and CBD (Component Based Design) methodologies
 - Social networking systems
 - An outcomes-based approach
 - Talent management and “score cards”
 - A focus on process
 - Transparency through a technology platform for collaborative application development and maintenance.
-

What others are doing

Consider other examples of how business and social networks are successfully supporting time-to-value strategies through open, community-based frameworks that rest their success on continuous innovation, knowledge growth, collaboration and the power of collective talent.

Amazon.com, one of the world's largest retailers, operates exclusively online. This open community employs an easy-to-use tool set that helps support its federated groups of sellers. It also enables its members to rank items, offer opinions and write reviews.

Facebook is one of the largest social networking sites in the world – reporting more than 400 million users across the globe, or five percent of the world's population. The Facebook community is continually developing new applications. More than 500,000 active applications currently reside on the Facebook Platform.⁸

LinkedIn is one of the world's most popular business networking sites. Over 55 million members in over 200 countries and territories use this resource to connect with other business professionals worldwide.⁹



Source: IBM Global Business Services.

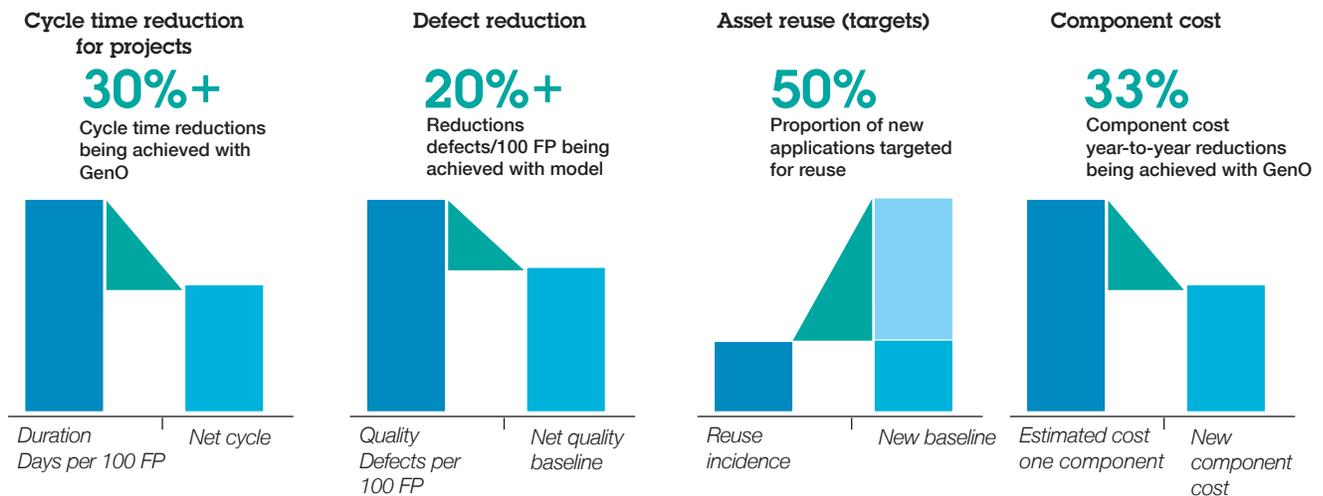
Figure 4: The IBM Generation Open best practices catalog.

• **Foundational Practices** are key to supporting the performance of the open source development community, and offer value beyond – yet complementary to – standard ADM practices and processes. IBM has developed a catalog of best practices pertaining to Change Management, the Virtual Community, Methods Adoption, Lifecycle Management and Software Engineering, Talent Management and Recognition, Asset Management and Reuse, and Reporting and Measurement. Leaders within the community use the catalog to apply the IBM model and align their actions with best practices. Recommended practices offer ADM community members guidance and training in methods and procedures, and reflect the knowledge gained by deploying the model across other disciplines. Techniques like in-context collaboration (discussed earlier) and crowdsourcing (taking a task traditionally performed by an individual and assigning it to a large group of people or community through an open call)¹⁰ allow community members to solve problems, mentor and coach within this “human cloud.”

• **Adaptive Change Management** is essential to building an adaptive workforce, optimizing capabilities and accelerating time to value. The Generation Open model at IBM incorporates a structured change management methodology and program management office to help assure the best possible performance among diverse teams. This permits community leaders to address concerns related to product quality and delays. It also enables users within the open community to collaborate and execute within a well orchestrated, well disciplined framework that crosses cultures, languages, time zones, generations and work styles. Those who excel at these objectives are used as “models” to drive improvements across communities. Measurements allow community leaders to identify top practices and lessons

learned. Training includes both classroom-based and self-paced virtual instruction; social networking techniques are employed for education, coaching and tracking.

The outcomes we have observed are very encouraging. On major programs, we have noted cycle time compression of greater than 30 percent (function points delivered per 100 days). Component costs have fallen by 33 percent, and defects decreased by 20 percent (defects per 100 function points). Furthermore, 50 percent of components delivered via new applications have been targeted to be sourced from our component library – an aggressive objective that will require investments in refactoring and SOA-based technologies over the next few years.¹¹



Source: IBM Global Business Services.

Figure 5: The IBM ADM model is setting new baselines in execution and outcomes.

Recommendations

A globally integrated, community-based collaboration model is as much about business as it is about IT. Consequently, deployment of this framework requires support from top-level business executives. When considering implementation, we advise clients to:

- Understand that both business and IT professionals must become knowledgeable in the practice of working in an open, collaborative environment.
- Seek expert advice when looking to develop an open governance model and build a suite of best practices.
- Develop a culture that engenders “transparency” – transparency being a “state” and a “strategy.”
- View time as a competitive tool, and understand the importance of deploying a time-to-value strategy.
- Realize the significance of adaptive change management.
- Recognize the elements – and the vulnerabilities – involved in building a multinational, multi-talented, multi-vendor community that can work, connect and collaborate autonomously “in the open.”
- Seek the assistance of a veteran global services provider equipped with the people, skills, technologies and methodologies needed to fulfill the promise of open collaboration.

Are you ready?

When looking to adopt an open-collaboration model, consider the following:

Do you have a strong business case for making the transformation to open collaboration?

Are you prepared to identify senior stakeholders?

Do you have a process for clarifying roles and responsibilities, and developing a global community construct?

Are you equipped to conduct an initial risk assessment?

Have you developed a globally integrated learning and training framework for community teams?

Are you prepared to invest in the necessary technologies and tools to support an open, collaborative community?

Conclusion

Application software is often on the critical path of change – compelling corporations across industries to find better ways to communicate, collaborate and innovate in what has become a virtual, globally integrated workspace.

The concept of open collaboration has, in a very short time, garnered acceptance among both business and IT executives, including those at IBM. They understand that transparency, trust, talent and teamwork are essential to driving innovation and making continuous improvements at individual, community, enterprise and global levels. Rather than holding skills and intellectual capital hostage, open collaboration allows more people to share more information, test new ideas and processes, and apply their skills and experience freely. All in a secure, results-based community that leverages the strength of collective brainpower, and rewards its stakeholders for working smarter – not longer.

Find out more

To learn more about the IBM Institute for Business Value and open collaboration, please contact us at iibv@us.ibm.com. For a full catalog of our research, visit:

ibm.com/iibv

About the authors

Patrick Howard, Vice President, IBM Global Business Services, manages application services for IBM's internal systems worldwide. In this role, he is accountable for the strategy and delivery execution for application management in support of all IBM business units, including supply chain, manufacturing, CRM, information management and corporate functions. Pat led the design and deployment of the GenO transformation program for IBM, working with leadership from the CIO office and IBM Global Business Services. Pat can be reached at pdboward@us.ibm.com.

Ed Lovely, IBM Vice President, Finance IT, is responsible for leading IBM's worldwide internal financial systems strategy; process-led transformation; application portfolio and life cycle management; investment prioritization; acquisition integration and divestiture activities across all IBM Finance processes globally. Ed is also accountable for IBM's Finance transformation, and management of IBM's financial systems' global spend. Ed has been leading the deployment of Business Analytics solutions for the enterprise, as well as IBM's GenO-4-CIO deployment worldwide. Ed can be contacted at lovely@us.ibm.com.

Susan E. Watson is Vice President, Radical Simplification and Process-Led Enterprise Integration, Enterprise on Demand Transformation, for IBM. Susan has 11 years of executive experience in various parts of IBM's Business Transformation and IT community. In her present position, she is responsible for driving integration and alignment across Business Transformation and IT through process-led strategic planning, enterprise architecture, initiative management and governance. Susan can be reached at susane@us.ibm.com.

Contributors

Carol A Sormilic, Vice President, Workforce and Web Process Transformation Executive, Office of the CIO

Cameron Art, Vice President, Application Management Services, IBM North America

Alex Kramer, Partner, IBM Global Business Services

Lynn A. Potter, Vice President, Worldwide Business Integration, Office of the CIO

Sridhar Tirupattur, IBM Global Business Services Lead, Asia Pacific/South Delivery, IBM Account

Alan C. Mingo, IBM Global Business Services Lead, North America Delivery, IBM Account

David Guiton, IBM Global Business Services Lead, EMEA Delivery, IBM Account

Linda Ban, IBM Institute for Business Value, AIS Lead

The right partner for a changing world

At IBM Global Business Services, we collaborate with our clients, bringing together business insight, advanced research and technology to give them a distinct advantage in today's rapidly changing environment. Through our integrated approach to business design and execution, we help turn strategies into action. And with expertise in 17 industries and global capabilities that span 170 countries, we can help clients anticipate change and profit from new opportunities.

References

- 1 Risley, Robert and Dan Servi. *Recent OMEGAMON Packaging Changes for Better Time-to-Value*. IBM Corporation, December 1, 2009. <http://www-01.ibm.com/software/tivoli/systemz-advisor/2009-12/omegamon-time-to-value.html>
- 2 Stalk, George Jr. with Thomas M Hout. *Competing Against Time*. The Free Press, a Division of Simon and Schuster, 1990.
- 3 “The New Voice of the CIO: Insights from the Global Chief Information Officer Study.” September 2009. www.ibm.com/ciostudy
- 4 IBM analysis.
- 5 Ibid.
- 6 Ibid.
- 7 Nevo, Dr. Dorit, Dr. Izak Benbasat and Dr. Yair Wand. *Who Knows What? The Wall Street Journal*, September 26, 2009. http://online.wsj.com/article/SB20001424052970203946904574302032097910314.html?mod=wsj_share_twitter#articleTabs%3Darticle
- 8 <http://www.facebook.com/press/info.php?statistics>
- 9 <http://press.linkedin.com/about>
- 10 Wikipedia.
- 11 IBM analysis.



© Copyright IBM Corporation 2010

IBM Global Services
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
February 2010
All Rights Reserved

IBM, the IBM logo and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at ibm.com/legal/copytrade.shtml

Other company, product and service names may be trademarks or service marks of others.

References in this publication to IBM products and services do not imply that IBM intends to make them available in all countries in which IBM operates.



Please Recycle