Book CIO Best Practices

Enabling Strategic Value With Information Technology

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Recommendation

In this compilation, renowned names in information technology describe managerial developments in their field for chief information officers (CIOs). Insiders Robert Stephens, Bill Flemming, Michael Hugos, Randy Betancourt, Alyssa Farrell, Jonathan Hujsak, Gary Cokins and Kurt Schubert – edited by Joe Stenzel – discuss IT leadership, social networking, social connectivity, cloud computing and energy efficiency. Sound management advice and a deep understanding of IT's strategic importance await patient readers. Due to their technical nature, *BooksInShort* recommends these essays to IT specialists and active or aspiring CIOs eager to grasp the forces shaping IT.

Take-Aways

- New technologies force chief information officers (CIOs) to become more innovative.
- CIOs must balance business system innovation with security risks.
- Computer science graduates who don't learn about IT's role in business management are at a disadvantage in the corporate world.
- Cloud computing is likely to be "the most profound change in IT since the emergence of the Internet."
- Cloud computing combines parallel computing, the Internet, web browsers, open source software and server virtualization.
- Indirect IT costs – electricity, system administration, executive time and opportunity costs – are all factors when a firm decides whether to embrace cloud computing.
- The information center of an enterprise consumes the same amount of electricity as 25,000 households.
- CIOs can use increasingly sophisticated metrics to identify profitable customers.
- Marketers and CIOs should know the difference between their most profitable and most valuable customers.
- Advancing social network technology poses new choices for CIOs.

Summary

Balancing Creativity and Security

New technologies, such as mobile applications, smart screens and simplified applications, will force chief information officers (CIOs) to become more innovative, but they must balance innovation with business system security. Self-aware CIOs understand their own ability to innovate. This helps them address other issues, such as which systems to build.

> "We all live in a closed system (the Earth) and therefore we all share a finite set of resources for which there are no replacements."

Employees overwhelmed with information seldom understand how to apply it. "Information filtering" helps them focus on relevant content and make better decisions. Filtering will become more crucial over the next decade as firms ask their CIOs to develop more conditional if-then statements as the basis of more efficient, relevant filtering. As an example of filtered data in daily life, consider someone who has to get to a meeting and tries to combine a smartphone's calendar, GPS and Google access to calculate the best route, find the closest gas station and determine when to depart. Information filtering would process these variables automatically. The data and technology already exist, but filtering the information would enable a seamless, rapid report. CIOs must promote "disciplined creativity," using rules to balance the

"innovative impulse with disciplinary prudence." To make employees efficient and creative, CIOs should:

1. **Clarify why the company created each IT rule** – Explain what problems rules prevent and what positive outcomes they promote.
2. **Every rule should exist for a specified time** – Review rules at regular intervals to prevent them from becoming outmoded and freezing the IT department's culture.
3. **A CIO must not make unnecessary rules** – Promote clear, straightforward design and optimal functionality. For example, compare Google's simple start page to the clutter on the start pages of Yahoo and AOL.

Beyond Systems Failures

Engineering colleges often do not teach computer science graduates about "integrated IT system and business management." Colleges may focus on engineering, but business managers need to learn capacity management, cost analysis and business strategy. Many IT business managers have to be trained postgraduation to be effective in the workplace. This deficiency in IT education originated in the industry's history. During the mid-1980s, IBM mainframes were the backbone of IT. A centralized, tightly managed IT culture grew around the mainframes, which were housed in "Glass Houses," environmentally controlled, self-contained rooms. By the early 1990s, personal computers gained acceptance and changed mainframe systems management. IBM licensed its DOS operating system to Microsoft and its CPU manufacturing to Intel, so Microsoft and Intel could sell these former IBM products to anyone.

> "CIOs get paid to help innovate and stretch."

These developments challenged IT systems managers to catch up with the new open, noncentralized environment. SAS hired two industry consulting firms – McKinsey & Company and Gartner Inc. – to monitor intellectual developments in IT. Each consultancy had a different industry perspective. McKinsey promoted IT as a strategic, stand-alone business that creates value and returns through hardware, software, relevant output and internal business processes. Gartner's approach stressed efficient IT business management. CIOs should identify what their departments can accomplish using existing tools to manage IT performance as a resource within their companies. CIOs must evaluate risks, quality, expenses and standard services to determine IT's management capabilities and costs.

Cloud Computing and IT's New Economics

Cloud computing – a disruptive, transformational, cost-cutting technology – is "the most profound change in IT since the emergence of the Internet." Cloud computing brings together parallel computing, the Internet, web browsers, open source software and server virtualization. Various combinations of these technologies now operate data centers, manage customer relationships and support business applications. Cloud computing provides almost unlimited, easily accessible computing power, resources and applications, but as IT shifts in this direction, in-house operations must change. For instance, those now maintaining data networks and applications must move toward supporting cloud-computing providers. Outside vendors will maintain data centers. Cloud computing-related changes will challenge many in-house IT specialists, as did the shift in the 1980s from mainframes to PCs.

> "The CIO is ideally suited to provide the necessary leadership to identify and enable transformation of dated, wasteful processes into a leaner set of processes."

Today's high-quality products make it easier and faster for companies to move into cloud computing and to respond more quickly to market opportunities. For instance, if a company wants to open a branch office, it can provide its newest IT products without on-site engineers to customize its products. Using cloud computing and software, the company can make the new office operational within days, with reduced up-front costs. A marriage of cloud computing and business agility best suits companies that use applications with unpredictable traffic volumes and workloads, and firms that need to periodically analyze data and share it with business partners.

> "History shows over and over again that resistance to the spread of new technologies is almost always futile (and often fatal)."

Cloud computing is not for everyone. For example, corporations that need hardware for projects lasting no more than two years should avoid it. Longer-running projects may require replacing equipment, and cloud computing can mitigate those costs. Electricity costs, system administration and senior management's time also are factors in whether to adopt cloud computing.

Eco-Efficient IT

The "Green IT evolution" falls under the CIO's purview as part of enterprise resource management, productivity and cost control. CIOs shifted many IT departments from cost centers to revenue generators, but the IT industry expects CIOs to identify wasteful practices and to assess and improve business strategies. And they have work to do, because IT uses a lot of electricity. Data centers demand between 50 to 100 watts per square foot, and future projections call for 600 to 1,000 watts. At companies with large IT departments, energy costs will run second only to labor costs. Green IT requires a transformational, companywide change, directed by the CIO, involving commitments from departments engaged in planning, purchasing, use, maintenance and disposal of IT equipment. CIOs must involve employees at every stage, from submitting ideas to monitoring compliance with new policies.

> "The information technology profession as we have known it for the last 40 years is dying; its obituary is already written."

CIOs reduce energy consumption by buying low-power hardware, identifying toxic substances used in manufacturing, reducing electronic waste and, in the US, complying with Energy Star ratings. Redesigning data centers and server-storage virtualization also produces significant energy savings. SAS, a leading software supplier for business applications, created a demonstration platform for customers that dropped presentation costs, cut staff preparation time, decreased sales expenses by 43% and reduced cooling and energy costs.

Building Renewable IT Systems

Sustainability is similar to business process reengineering, which focuses on combining business processes and transforming cost centers into profit centers. The CIOs'

approach to sustainability will be increasingly crucial as global enterprises expand through interconnected networks to share data, financial and transactional systems with users and customers worldwide. IT must understand the role of the carbon footprint, the ecological footprint and "the natural step." The carbon footprint measures greenhouse gas emissions produced by a business's operations, services and products. The ecological footprint estimates "the areal extent of biologically productive land and sea necessary to offset resource consumption and to assimilate any resulting waste." The natural step is an international measure that notes what resources companies remove from the Earth.

> "Borrowing a Star Wars analogy, listening for a disturbance in the force ultimately comes down to listening to customers – a trend that is unlikely to change for the next thousand years."

Data centers consumed more than 1.5% of all US energy in 2006, and now account for up to one-quarter of corporate IT expenditures. One "enterprise-grade" data center consumes the same amount of electricity as 25,000 households. Projections say IT power consumption will rise steadily to accommodate more sophisticated commercial, digital and Internet applications. Managing these costs requires energy conservation and more efficient systems. IT departments can reduce their ecological footprint with data center consolidation and virtualization, especially regarding servers, storage, desktop and networks. Cloud computing unites virtualized resources, giving large IT firms more flexibility while also improving their supply-chain management. Other developments include robotics, teleoperations and telepresence – advanced video teleconferencing tool with high-resolution images that link participants from up to 48 locations.

Finding Profitable Customers

Information technology helps companies identify their most profitable customers and prospects, including low-demand, frequent customers who generate high profits. Retaining these valuable strategic assets requires monitoring their behaviors and tastes to build loyalty. Customer lifetime value and customer profitability are metrics that supplement return on investment data. Comprehensive understanding of customers leads to improved product offerings and the discovery of new prospects who match the characteristics of existing profitable customers.

> "By being proactive, the CIO will emerge as one of the most important enterprise leaders in the transformation toward a low-carbon economy."

Applying these metrics requires significant amounts of data. Companies must collect, maintain and share customer data to develop complete profiles for companywide use. For example, a bank CIO should be able to identify how often customers move money, how often they respond to specific marketing vehicles and what type of debt they prefer. Such information should be available in real time to facilitate predictions of future consumer behavior and to make more specific customer comparisons, segmented by attitudes, geographies, profitability and demography. Grouping customers gives marketers and CIOs the data to develop cross-selling, retention and new product sales strategies. Given segmented, analyzed, centralized customer data, firms can use automated marketing software to offer favorably priced products to the best, targeted clients. Call centers can make immediate offers to customers based on new information. One-to-one business-to-customer communication can offer more and more personalized services.

> "Unlimited information is like limitless imagination. At some point, not only is it frivolous, it becomes counterproductive."

Marketers and CIOs can use internal managerial accounting to spot the most profitable and valuable customers. They are not the same. People nearing retirement may have significant banked assets, but offer little long-term profitability. Firms should pinpoint customers' long-term financial value and current profitability. If customer acquisition costs too much or targeted customers do not become profitable, pursuing them can have a negative effect. The CIO, chief marketing officer and the chief financial officer must balance this optimization dilemma.

The Evolution of Networks into Networking

Technological change has advanced networking's capacity and role. As bandwidth has become more available and less costly, "computational network capacity" – the "ability to store, retrieve, move and share incredible amounts of data at lightning speed" – has boomed. Work now requires corporate and personal networks, so CIOs must balance between their firms' need for electronic communication versus the "security or competition risk" of open access. In fact, "the decision to embrace social media technology is a risk-based decision, not a technology-based decision."

> "Enterprises have less flexibility in devising optimal solutions if they allow regulatory events to drive energy management policies."

Amid more rapid innovation, in computing speed and data storage, the answer hinges on determining the best business practices. Many firms prohibit staffers from using social networks, notably Facebook, at work to preserve productivity, proprietary data and privacy. However, some jobs now require access to social network sites. IT must work with that, plus the potential commercial uses of virtual reality through such sites as Second Life and OpenSim, where major corporations have an expanding presence. Other security concerns include crowdsourcing and "democratic" or "non-refereed" sources, like Wikipedia, which can amass incorrect data.

> "The main risk for the enterprise CIO and Green IT initiatives is not taking the appropriate, timely actions."

CIOs have to stay updated, find ways to accommodate these online venues that go in line with their security concerns, and set up common-sense "education, planning, processes, procedures and guidelines" for using and gaining from today's and tomorrow's information technology.

About the Authors

Joe Stenzel edits the *Journal of Strategic Performance Management* and co-wrote *The CFO Survival Guide.* Chapters: **Robert Stephens**, Best Buy, "Freedom with Fences"; **Bill Flemming**, SAS, "Why Does IT Behave the Way It Does?"; **Michael Hugos**, Center for Systems Innovation, "Cloud Computing and the New Economics of Business"; **Randy Betancourt** and **Alyssa Farrell**, SAS, "Leading with Green"; **Jonathan Hujsak**, Balance Energy, "Sustainability, Technology and Economic Pragmatism"; **Gary Cokins**, the SAS Institute, "How to Measure and Manage Customer Value and Customer Profitability," and **Kurt Schubert**, TechNova Consulting, "The Evolution of Networks into Networking."