

Scenario planning and the future of education

By **Daniel W. Rasmus**

Synopsis

In 2006, Microsoft developed a vision for the future of education that reflects the impact technology can have on policy and practice. In this article, Daniel W. Rasmus describes how Microsoft used its Future of Work scenarios to explore possible scenarios for learning in the future. Microsoft used a scenario-planning process to explore education through the lens of work, examining educators, learners, and administrators in the context of creating, synthesizing, absorbing, sharing, and managing information. This approach provided a unique perspective through which to view the application of commercially available software to solve the challenges of learning while concomitantly generating ideas that might not have arisen from a strictly pedagogical perspective.

If education is to contribute to the sustainability of global economies, its institutions will face the same pressure to adapt as the governments, businesses, and communities it serves. Educators will need to face uncertainty in order to embrace the future. In doing so, they will need to create a context for what is known, or thought to be known, as well as a means to explore a wide range of possibilities for what cannot be known. Scenario planning, a strategic process of exploring uncertainty, is a technique designed to challenge assumptions, identify contingencies, anticipate game-changing events, spur creativity, and, most importantly, identify actionable implications that make plans more robust and resilient.

If employed as intended, scenario planning can help educators develop innovative responses to strategic imperatives and current and future challenges. The strategic principles that emerge from the scenario-planning process are meant not to be exhaustive but to point toward policy implications for an uncertain future. Scenarios help frame aspirations and create a context for contingencies. Much as today's technical architectures for learning are driven by an extrapolation of global network-enabled social behavior, education can benefit from policy that creates fluid institutions not ones where the strategy is constantly in flux but ones where policy is adaptive.

In 2004, the business division of Microsoft created a set of scenarios that describe alternative possibilities for the future of work on a rolling ten-year horizon. The scenarios have been applied for a range of purposes, including the development of a vision that anticipates future business situations through the lens of potential social, economic, political, technological, and environmental developments. The scenarios

have also been applied to education and learning as a form of work, creating a unique perspective on how technology may help shape tomorrow's educational experience. This article presents the processes that led to the Microsoft vision for education, and it suggests how educational leaders may use such processes to elaborate a range of distinctive futures for their own institutional needs.

The scenario-planning process

Scenario planning is not a deterministic process but an intuitive one based on consensus. Although individuals can reason toward conclusions from within scenario logics, it is not always possible to establish clear causal effects. However, since the process is not meant to provide singular, iron-clad predictions, any debate about the scenarios provided below would be secondary to their main purpose in illustrating how the process works. By allowing educators to anticipate possible future influences on education, scenario planning can help them become more resilient in the face of change.

Scenario planning begins with uncertainties about the question at hand, in this case, "What will work look like at the end of the next decade?" Explicit agreement on a set of uncertainties can defuse bias and disarm personal agendas, taking particular concepts off the table as ultimately indeterminate. This process reveals a kind of wave-particle duality in concepts of the future, focusing attention on the fluid, wave-like nature of a concept and away from its more deterministic particle form.

In crafting an initial response to the key question, a team from the Microsoft Business Division consulted with company representatives from the Office and Windows development teams; with representatives from our education, public sector, facilities, and product planning departments; and with outside experts to develop a list of uncertainties that were critical to the future of work. The original list of uncertainties ran to well over 100 items; after extensive discussion among team members, each member selected their 3 most critical and important uncertainties, which narrowed the final list to fewer than 20 (Exhibit 1 included at end of document). This culling process, common to scenario-planning exercises, sets consensus priorities and develops crucial buy-in for the team that will eventually use these critical uncertainties as elements of, or even characters in, the scenario narratives.

The next step in scenario planning involves identifying extreme possibilities for the various uncertainties and then combining these possibilities in various ways to identify the combinations that allow for the richest and most diverse narratives. For instance, education may develop into a driving force for innovation with a leading role in society or it may be marginalized, seen as largely irrelevant, and left to survive on subsistence budgets. If we overlay those dimensions with the less central uncertainty about where and how people will store personal data, we may end up with scenarios describing a strong, bleeding-edge education system in which people keep their data

on keychains and, at the other extreme, a weak, struggling education system where people store their data on the Internet. The framework that arises from this pairing is obviously limited; it does not support expansive narratives, nor is it inclusive enough to capture the range of possibilities for other forces. This does not invalidate these uncertainties as important forces, but it disqualifies that pairing as a candidate for the primary strategic drivers that shape the narrative.

In the context of the Microsoft focus on the future of work, we needed to identify uncertainty combinations that would create challenging contexts for the evolution of the workplace. The team settled on the tensions around globalization and organizing principles for the world. The extremes in this construct revolved around acceptance or rejection of a network-centric orientation versus the continuance of hierarchical structures. This pairing created a powerful story framework upon which a set of four vivid scenarios could be constructed (Exhibit 2 included at the end of this document).

In creating these scenarios, Microsoft deliberately avoided the identification of precise certainties. The primary motivation for the future of work scenarios was identifying gaps between currently available software and future workplace requirements. With this as a strategic imperative, the definition of predetermined elements, like the McREL (2005) conclusion that “Technology will enable customized learning to occur any time, any place” (4), would have artificially constrained the process — limiting possibilities for scenarios such as Frontier Friction, for example, which imagines a future in which a terrorist act aimed at technology (and specifically at electronic representations of money) precipitates a widespread rejection of technology. Forcing a technology company to imagine such a future does precisely what a scenario should do: Challenge prevailing assumptions that can, if allowed to persist through the process, inhibit the range of other possibilities. The result of such inhibition can be seen in Miller’s (2003) examination of tertiary education for the Organization of Economic Cooperation and Development, where the graphic clearly illustrates the choice of constraints among conceivable futures (8). Rather than inhibit the range of possible futures, Microsoft chose to let the uncertainties play out against the widest range of interactions; in this way, emergent implications of an uncertainty are more likely to emerge from the interplay of narrative elements, much in the spirit of Schwartz’s (1991) assertion that “Scenario creation is not a reductionist process; it is an art, as is story-telling” (108).

The resulting scenarios have been shared with a wide range of Microsoft customers, including public sector agencies, elected officials, and business leaders. In some cases these conversations have led to deeper insights about Microsoft and its thinking; in others, they have helped organizations reflect on their own strategic imperatives and even seeded new scenario-planning processes within customer or partner organizations. They have also offered a framework for understanding possible outcomes for the Microsoft Office Information Worker Board of the Future, a program in which young people, age 17-24, are brought together to help Microsoft better

understand attitudes about work among the Millennial generation and examine the popular conceptions and misconceptions about this generation (Rasmus 2004, 24). The Board of the Future used the scenarios to play out the implications of survey results and test their predictions about the future of work.

Seeing education as work

The Microsoft education vision emerges from its understanding of education and learning as a kind of work; the specifics of that vision are the result of a process called wind tunneling, an intellectual exercise for testing fitness and developing the implications of an idea within the logic of the scenario. Education is an uncertainty in the future of work, but the fitness of educational decisions may be tested in the context of the various scenarios. When strategic considerations are played out against the four scenarios for the future of work, several possible futures emerge for education, each with its own character (Figure 1).

Definition: Wind tunnelling

Wind tunneling can be thought of as an intellectual exercise for testing the fitness of an idea or concept, much as a wind tunnel tests the fitness of an airplane or automobile design. In a wind tunneling exercise, a concept, product, process, or even a persona is placed into a future scenario and the team assigned to develop that scenario visualizes how it would be represented, if at all, in that particular future. In the strategic dialogue that generates scenarios, wind tunneling offers a process by which elements of a system can be played against possible futures to reveal the different ways in which those elements might influence, and be influenced by, other factors in the scenario. The process forces the organization to challenge assumptions and fosters creativity in imagining scenarios.



Figure 1

In Proud Tower, for instance, a world where corporate interests dominate and corporations subsume much of the role now played by government, education is closely aligned with corporate objectives. In this scenario, education must ensure that workers can contribute appropriate levels of value to corporations. Curriculum is targeted toward the requirements of local organizations as those are the most likely employers for graduates. Although travel is not restricted, economic forces motivate people to remain associated with their local employment environment. Colleges and universities are seen not as separate institutions but as part of a continuum of learning and preparation that extends through employment. Students who excel and demonstrate the motivation for higher education receive that education with the expectation that they will later return the corporation's investment. Early identification of aptitude is seen as a competitive advantage as measures can be taken early in a child's education to motivate him or her toward local corporate loyalty, avoiding the costs of losing talent to external recruiting.

It is not, however, Proud Tower that drives the Microsoft vision of education as work. Rather, our vision more closely reflects the results of Freelance Planet, a world of expectations that closely mirror current developments in the emergent, network-centric workplace. In this future, companies divest their non-core competencies until they are holding companies with only brand, money, and partner relationships to manage directly. Partner relationship skills determine an organization's ability to attract and retain talent, not just through pay but by creating interesting work experiences and environments so workers want to associate with them. Schools in Freelance Planet are dynamic institutions created and funded by affiliations of parents, communities, educators, employers, and regional governments. Their function is to provide students with a wide range of skills to make them competitive in a global labor market, to encourage entrepreneurship and innovation, and to provide an outlet for creative expression. Learning occurs both independently and in collaborative peer groups, and most of it occurs online.

One way to create even more illustrative futures is to populate the potential futures with people who live and work within the logic of the scenario. Although generic individuals can serve as representatives of a future, the best outcomes result from the creation of role-based characters. Roles provide a context for deriving more specific implications within industries and a more dramatic way to drive home the differentiators between various futures. The planning process benefits from populating futures because participants relate to the potential lives of the characters, often resulting in deeper strategic exploration. In the context of the Microsoft process, the roles also act as a means of expanding insights about the personal impact of technology within the industries and institutions that form its customer base. In constructing its vision for the future of education, Microsoft asked students from Eton College to identify characteristics of students who lived in the futures identified in the scenario-planning process; the Future of Work team created narratives based on these characteristics and informed by the logics of the various futures (Exhibit 3,

Wind tunnelling (cont.)

In the case of the Microsoft education vision, several areas of technology as well as social and economic forces were wind tunnelled against various aspects of education. Where would learners get information in Proud Tower, and how would that be different in Continental Drift? Who would employ teachers in each of the scenarios? Where would education funding come from? What organization would create curricula?

When the various aspects of education had been wind tunnelled, the team developed a perspective on how those elements would fit together. A view of education emerged as the constraints placed on the various elements by the scenario influenced the development of the particular attributes of education in each scenario. Continental Drift, as a world of nationalist and regional bias, has a strong, centralized, government-controlled education system with nationalistic overtones. In Freelance Planet, the tone and character of education is personal; learning results from the interaction of learners within a complex ecosystem where questions often end in debate rather than an answer.

included at the end of this document). These narratives vividly illustrate the distinctions between futures in terms of culture, attitude, and values.

Finally, and most importantly, while educational institutions may formulate a vision based on a scenario they judge to be most plausible or desirable, they also need to consider the development of strategies that are sufficiently resilient, flexible, or adaptable to address more than one possible scenario. The wind tunneling process described above can serve as a foundation for this form of decision making as well insofar as it allows planners to discern the extent to which a single strategic decision may have beneficial outcomes across multiple scenarios. As a further result of this process, Microsoft has identified ten strategic implications for the future of education (Exhibit 4 included at the end of this document).

Conclusion

As an instrument of strategic planning, scenario planning can be a way of maintaining competitive differentiation not only for corporations but also for public-sector entities such as educational institutions. For those charged with creating meaningful education policy and practice, it is important to create plans that are resilient and that drive curricula that prepare students for any future they may encounter. As valuable as scenarios are to corporations and to public institutions, it is perhaps this last point that makes them indispensable to education: Educators are preparing students for a future that neither teachers nor students can foresee with certainty. The range of possible futures facing today's youth and the necessities of global competition obligate education policy makers to exercise peripheral vision at its most acute level to create programs that stretch administrators, educators, students, institutions, and communities to anticipate a range of outcomes rather than settling for easily measured outputs.

In promoting such foresight, scenarios allow educational institutions to consider larger questions when formulating policy decisions. For most educators today, goals are established by the political organizations, public or private, that own the learning environments. The leaders of these organizations and the strategic plans they develop are usually driven by the perceived need for short-term measures of achievement: standardized test scores, funding, external recognition, and reelection, among others. However, strategic plans, as Michael Porter often points out, are not visions (Hammonds 2001), and when short-term policy decisions are divorced from any broader vision, their value is compromised. In this context, scenarios can expand the scope of strategic planning by challenging the assumptions that drive such shortsighted objectives. Scenarios can guide an exploration of values questions — *What is the ultimate measure of success in education?* — and promote thinking about the social and political goals of education — *Is the goal of education to produce citizens prepared and motivated to engage in the political process? To equip workers with the skills to contribute to the private or public sector? To guide people toward*

lifelong learning? Educators who use scenarios have not only a means of creating plans that confer competitive advantage but also a vital vehicle for refining their overall mission.

Scenarios can help educators and policy makers develop creative responses to challenges, unveil new opportunities, and avoid the myopia of simple trend watching. They can also be used to educate constituencies about the work of policy makers, offering engaging illustrations of the long-term implications of change. One of the biggest benefits of scenario planning comes from the strategic dialogue generated during their creation, which moves planning from questions of tactics and strategy to a more comprehensive vision of institutional values and purpose.

Exhibit 1: Critical uncertainties for the future of work

The Future of Work team collaborated with various stakeholders to create a list of critical uncertainties and suggested polarities (table 1). The categories that make up this list entail a number of questions, including the following:

- Does globalization continue unfettered, or do ideological, economic, or political forces drive toward a return to regionalization?
- Do people get to retire, or do they continue to work in order to retain a work identity or to fund a lifestyle, including healthcare? While demographics are more determinate in the ten-year horizon, this question becomes more uncertain at longer timeframes.
- Will decision making be ideological or pragmatic? This question may have a large impact on workforce and immigration policy, in that an ideological framework may shut certain classes of workers out of the economy or create less fluid immigration policy than local, regional, or national interests may dictate if examined in a rational, pragmatic way.
- Will the organization structure of the world be hierarchical or networked? Perhaps more pointedly, will the world recognize the networked aspects of work and create management practices, representations, and technology that explicitly manage through networks rather than hierarchies?

Polarity A	Critical uncertainties	Polarity B
Segmented	Blend of work and home	Punctuated
Regional/local	Geopolitical and social world	Open/global
Irrelevant/subsistent	Education	Influential/leading
Rediscovered childhood	Multi-tasking	Old Younger
Highly protected	Intellectual property	Open
Component	Intellectual property	Document
Low adoption/human integration	Self-organizing technology	High adoption/adaptive systems
Search/reactive	Self-organizing technology	Context/proactive
More of the same?	What's after the Internet	Semantic Web
Emerging markets	Locus of innovation, wages, and capabilities	Western-centric
Reused and reapplication/nostalgia	Invention vs. reapplication	Innovation and invention/vision
65	Retirement age	Never
Ideological	Decision making	Pragmatic
Slow and managed	Pace of innovation and adoption	Rapid and fast
Distributed	Population and wealth	Concentrated
Networked	Organization form	Hierarchical
Antagonistic/disruptive	Popularity of the United States	Popular/influential
Traditional	Business models	Entrepreneurial
Balkanized	Connectivity	Pervasive
Local/personal	Data storage	Networked/personal
Specialized	Devices	Converged
Physical	Money	Information

Table 1

Exhibit 2: Scenarios for the future of education

The process of assessing uncertainties and overlaying pairs of uncertainties resulted in four rich scenarios (figure 2). Although the illustration represents only the highest level of abstraction, it is readily apparent that the characteristics of the four worlds will have very different implications on a number of levels. Proud Tower represents a world where corporate needs outweigh individual and even national needs and where workers strive to satisfy the needs of their employer; with a small set of employers dominant in any given region, seniority and a steady climb up the corporate ladder are paramount. That world contrasts with the severity of regional and ideological boundaries in Continental Drift where regional organizations dominate the economic landscape and where those organizations, and certainly their employees, are subservient to the ideological pressures of the host country.

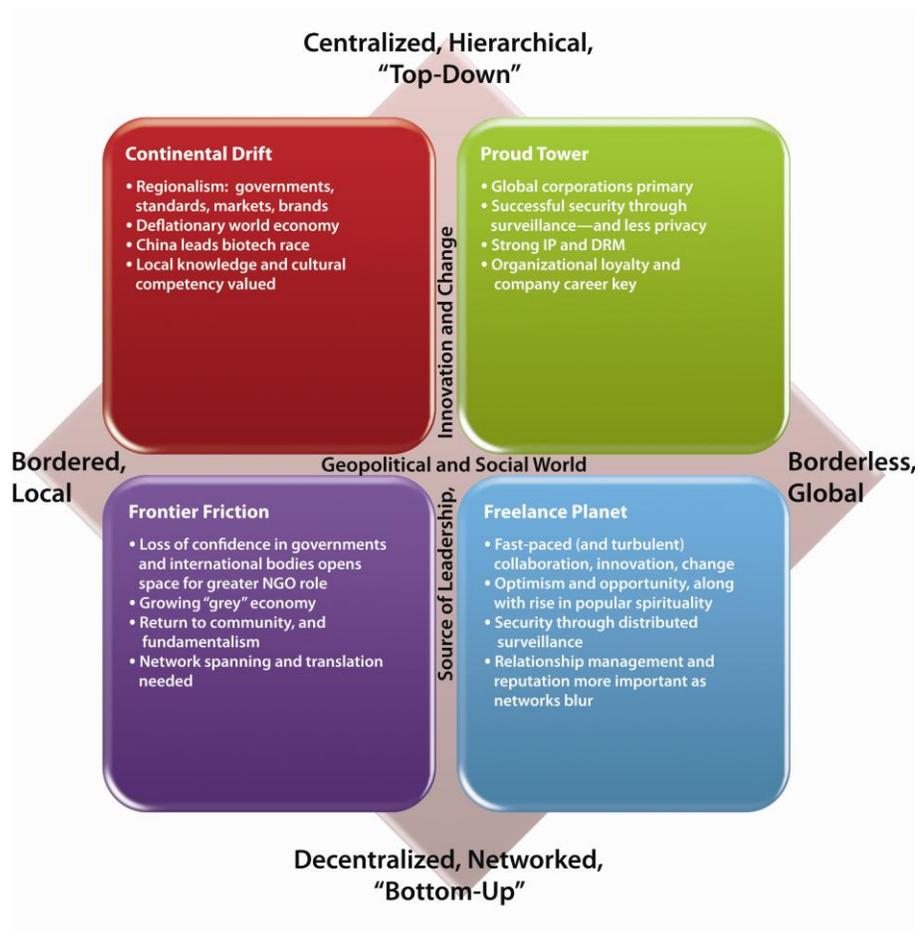


Figure 2

Exhibit 3: Narratives of the future

The *Future of Work team* created narratives based on students' extrapolation of key characteristics of students and learning environments in each scenario (Rasmus 2007). The result was a vivid illustration of what life is like for students and workers in each of the futures described. In Proud Tower, for instance, Thomas is a corporate learner:

With good marks in math, he thinks he will be able to follow his father as a successful manager at BPRDS. They are, after all, paying for his education. Thomas and all of his friends learn for BPRDS. When they graduate from college, their test scores will help determine if they go on to university or not. Most from this rather prestigious middle management enclave do, but in the country, where the association between company and culture becomes vague, fewer students matriculate. For Thomas and his friends, there is little beyond school and neighborhood. Everything they do is designed to prepare them for work at BPRDS. The company, however, has regular meetings with students from various other schools around the world run by BPRDS or one of its subsidiaries. Work is collaborative, his father often says, so it is never too early to learn to work with other people.

By contrast, the chaos and openness of Freelance Planet results in a different kind of student and a very different narrative:

Today's assignment is to initiate negotiations with other students across England in order to create the ace project team for the next phase of the project. They have a full project description. They also know, from past experience, that the project description is probably rubbish and will change a dozen times before their assignment is due. Cameron wants to attract smart, flexible students. But then, so does everyone else. He wants people he can rely on to think around problems, but mostly he wants people he can trust while having fun.

In Continental Drift, isolationist governments control both the content and the manner of learning:

His books and learning material were increasingly becoming electronic, as the Internet waned in influence. The books, his instructors told him, could be more easily updated with current information when they were digital. Stephen suspected that they could also more easily forget things as well. As he read some history it seemed that parts were hastily written. Story lines were confused as plot lines abruptly ended with little explanation. It seemed to Stephen that his grades were not as important as his parents made them out to be. In other words, receiving good marks was not a

huge struggle, because not even the teachers knew what to grade on anymore.

Frontier Friction, devastated by a catastrophic attack on the world's computerized financial systems, is a much smaller place than the other scenarios. Samuel's education is driven by a strong sense of community and self-reliance:

Having managed to put together a collection of books on child psychology, that became Samuel's major, so to speak, at least his area of concentration. That was his first assignment when he arrived at Eton-Thames College. Other subjects were taught as materials permitted. Some instructors created their own material, others cobbled together enough for shared books, others participated in school barter programs where books were exchanged with other schools for a year, and then hopefully returned.

Reference

Rasmus, Daniel. 2007. Microsoft Future of Information Work Scenarios: Students of the Future. Microsoft Business Division.

[http://www.innovateonline.info/media/scenarioplanningan-supplement1\(2819\).doc](http://www.innovateonline.info/media/scenarioplanningan-supplement1(2819).doc) (accessed May 28, 2008). Archived at <http://www.webcitation.org/5YADZqcGr>.

Exhibit 4: Strategic implications for the future of education

The wind-tunneling process produced a number of strategic implications for the future of education embedded in the scenarios for the future of work. Not all of the implications were robust against all futures, but these implications were identified as priorities:

Integrated learning must demonstrate relationships between disciplines.

Technology should be integrated at the earliest stages of learning so that it is learned like a language rather than as a skill.

Physical locations for learning will be seen as “learning hubs” that adapt to changing demographics.

Lifelong learning will be demonstrated by integrating educator learning into the learning experience of children.

Education will move to an emphasis on mastering complex communication, critical thinking, and systems thinking skills.

Education will need to provide experience for both self-directed and team learning, including the development and assessment of interpersonal skills, collaborative skills, and personal accountability.

Assessment will move to a kind of “triple bottom line” accounting where outcomes are measured in a number of social and performance dimensions.

Global learning will develop with well-defined partnerships among institutions and students around the world.

Institutions will engage in proactive transparency where information is shared internally and appropriate information is shared with administrators, family services, parents, and other stakeholders.

Collaborative teaching environments will allow educators to take advantage of the skills, expertise, and experience of other educators; clear compensation models will be developed to reward participation in such collaborative endeavors.

References

Hammonds, Keith H. 2001. Michael Porter's Big Ideas. *Fast Company* 44: 150-156. <http://www.fastcompany.com/magazine/44/porter.html> (accessed May 28, 2008). Archived at <http://www.webcitation.org/5XUXyR2aV>.

McREL. 2005. *The Future of Schooling: Educating America in 2014*. Aurora, CO: Author. http://www.mcrel.org/PDF/LeadershipOrganizationDevelopment/5052IR_FutureofSchooling.pdf (accessed May 28, 2008). Archived at <http://www.webcitation.org/5Xd6Ccv1n>.

Miller, Riel. 2003. *The Future of the Tertiary Education: Scenarios for a Learning Society*. Paper presented at the OECD/Japanese Seminar on the Future of Universities, Tokyo, Japan, December. http://www.mext.go.jp/a_menu/kokusai/forum/04022701/004/001.pdf (accessed May 28, 2008). Archived at <http://www.webcitation.org/5XUXqCST9>.

Rasmus, Daniel. 2004. Information Workers of the Future at Microsoft. *KM Review* 7 (3): 8-9.

Schwartz, Peter. 1991. *The Art of the Long View*. New York: Currency-Doubleday.

Biography

Daniel W. Rasmus

Director of Business Insights
Business Division, Microsoft

Daniel W. Rasmus guides the research process that helps Microsoft envision how people will work in the future, analyzing trends in technology, society, education, labor, and economics to devise scenarios used to develop products for tomorrow's work force. As part of these efforts, he represents Microsoft on the Board of Directors for the Institute for Innovation and Information Productivity and serves as a national advisor to the National Workforce Center for Emerging Technology. Rasmus also coordinates the Microsoft Office Information Worker Board of the Future, an advisory panel composed of college-aged students who share ideas on how to serve the Millennial Generation as they join the workforce. Before joining Microsoft in 2003, Rasmus was an analyst with Forrester Research, Inc. His achievements included inventing conceptual frameworks for enabling the future of work, including adaptive workspaces and intelligent content services.

Rasmus is involved in a number of industry and public sector organizations, including The National Association of Workforce Boards, the National Educator's Workshop, and The Front End of Innovation. He was recognized as a Distinguished Speaker by the Microsoft Executive Briefing Center in 2007.

As a technology writer, Rasmus has worked on staff at PC AI Magazine and Manufacturing Systems Magazine and has been a columnist for several other publications. He has authored nearly 200 trade journal articles and four books, including *Listening to the Future*, which was published in 2007. His upcoming book, *Management by Design*, will be available in 2008 from Wiley.

Rasmus attended the University of California at Santa Cruz and received a certificate in intelligent systems engineering from the University of California at Irvine.

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