



CONFERENCE SUMMARY AND ANALYSIS

THE FUTURE GENERATION: TECHNICAL, SOCIAL, AND LEGISLATIVE
IMPLICATIONS FOR STANDARDIZATION

3-4 DECEMBER 2004

SOPHIA ANTIPOLIS, FRANCE

Prepared by:

Sherrie Bolin

President & CEO

The Bolin Group

Table of Contents



EXECUTIVE SUMMARY.....	3
CONFERENCE SUMMARY AND ANALYSIS.....	5
INTRODUCTION.....	5
USERS MATTER.....	6
<i>User Requirements</i>	7
<i>User Involvement</i>	10
COMPLEXITY IS AN UNDERSTATEMENT.....	11
TOO MUCH OF A GOOD THING?.....	13
COOPERATION IS NOT JUST FOR CHILDREN.....	15
CONCLUSION.....	17
ABOUT THE STANDARDS EDGE:	
FUTURE GENERATION™.....	19
ABOUT THE BOLIN GROUP.....	20

Executive Summary



In December 2004 leaders in the information and communications technology industry (ICT), government, user organizations, and academia gathered to discuss the Future Generation at a conference hosted by ETSI, Sun Microsystems, BT, CEN/ISSS, ESRI, Siemens, and Nortel Networks. In addition to the conference, a book entitled *The Standards Edge: Future Generation*™ will be published. This book contains a compilation of articles from experts around the world that address the requirement, challenges and strategies for the Future Generation. Both the conference and the book define the Future Generation as the “Internet of things regardless of device, platform, or whether the information is delivered via wired or wireless means.” Encompassing everything from RFID and sensor networks to smart homes, location based services, and medical monitoring, the technologies are widely varied but their goal is always the same: to enhance the lives of people. The Future Generation promises to bring advanced functionality and conveniences to our lives—but also threatens to enmesh us in a sea of technical difficulties and endless hours wasted on customer support lines if it is not planned for and managed correctly. The goals of the conference were to discuss the requirements and challenges of the Future Generation and begin to lay the groundwork for not only the technological developments, but also for the cooperation critical to successfully bringing the Future Generation to fruition.

Several requirements were identified. At the top of the list was a call to change the approach to technological development from technology-centric to user-centric. Today, users are expected to adapt their behavior to a technology’s requirements. In the Future Generation, it will become essential for technologies to automatically adapt to user needs. In addition to this fundamental change, other critical user needs identified included trust, usability, interoperability, and security.

Interoperability between disparate technologies was targeted as a key requirement for the Future Generation. Looking far beyond interoperability among office productivity software or basic wireless technologies, participants emphasized that we often don't know where technology is heading or how it will be used in the future. Therefore, it is essential that technologies be "open" so that interoperability can be achieved as they evolve and new technologies arise to enhance functionality. In line with interoperability needs was the difficulty of convergence. Some participants believe that as networks, for example, converge, older networks should be eliminated in order to decrease complexity and focus efforts on technologies that better serve the needs of users.

Contributing to the interoperability challenge are standards setting organizations (SSOs), the very organizations that arose to solve this problem. Today, many of these organizations develop competing standards resulting in a fragmented market that undermines interoperability. Possible solutions included vendors refraining from supporting competing SSOs, government involvement, and the establishment of an SSO hierarchy. While the majority of participants identified SSO competitiveness as a major challenge, it is clear that additional discussions and cooperative efforts will be needed to remedy the situation.

Cooperation and communication were identified as one of the most critical requirements for the Future Generation. A call for new means of cooperating and the development of innovative collaborative models was issued. In the end, this may possibly be the most difficult challenge in realizing the Future Generation. While facilitating interoperability among technologies is difficult, achieving interoperability between people across organizational and geographical boundaries can present a significant barrier. In the end, the Future Generation may mean more than the Internet of things. With significant effort and communication, the Future Generation may bring the internetworking of people to a significantly advanced level so that we achieve the ultimate goal of technology—enhancing human lives.

Conference Summary and Analysis



INTRODUCTION

What do you think of when you hear the term “Future Generation”? Do you look at the shining eyes of your kids or grandkids and feel comforted in tomorrow’s leaders? Or, do you look at the local teenagers on the corner—the ones who have mastered a new way of walking in order to keep their extra baggy jeans somewhere in the vicinity of their torso—and resolve to put off your retirement for as long as possible?

When one hundred specially invited experts were asked to consider this question at a conference in Sophia Antipolis this past December entitled “The Future Generation: Technical, Social, and Legislative Implications for Standardization,” we asked them to think about the Future Generation of information and communications technology (ICT). The Future

The Future Generation for this conference was defined as the “Internet of things regardless of device, platform, or whether the information is delivered via wired or wireless means.

Generation for this conference was defined as the “Internet of things regardless of device, platform, or whether the information is delivered via wired or wireless means.” The purpose of the conference, which was hosted by ETSI, Sun Microsystems, BT, CEN/ISSS, ESRI, Siemens, and Nortel Networks, was to explore how we can plan for and successfully

bring to fruition the future generation. Participants from the ICT industry, user organizations, governments, and academia gathered to compare ideas and plans with the intent of identifying challenges, presenting strategies, and discussing new ways to cooperate and collaborate across organizational and geographical boundaries.

Keynoting the event were Claus Hohmann, CTO of Volkswagen Autostadt; Costas Andropoulos, Head of Unit: ICT, E-Business, and Publishing; Enterprise Directorate-General for the European Commission; and Mick Reeve, Group Technology Officer of BT. Each speaker provided a different and insightful view on where the Future Generation of ICT will take us and what we need to do to realize this vision. While the conference was divided into four sections that were designed to capture the views of users, government, social and standards setting organizations, and ICT vendors, discussions across the sessions took into account all four views. This was a promising occurrence since the success of the Future Generation will depend upon cooperation and collaboration across all of these areas. As such, this report will present an analysis of the conference's major findings, rather than focus separately on the content of each session.

USERS MATTER

Congratulations, Users! It has taken decades, but it seems that your requirements are now making it into the forefront of technological planning. When the first conference in this series was held two years ago, the almost overwhelming consensus was that user needs did not matter. The belief was that users would buy whatever was provided to the market and that they could not be trusted to identify their own technological needs—especially in advance. Perhaps vendors are realizing that products will sell better if user needs are taken into account during development. Or, it is possible that products aligned to user needs require less modification in the long run. Less optimistically, it may be that this conference was held in Europe where discussions around corporate social responsibility (CSR) are more prevalent and accepted than they are in the United States. Regardless of the reason, discussions at the conference emphasized that ICT was all about the users, not the technology.

Leading this charge was Clauss Hohmann. As CTO of Volkswagen's Autostadt, a theme park designed to demonstrate the best in automotive technology, Hohmann has a deep understanding of user needs. He stated that while security, reliability, and quality are indispensable, these are

not exclusive goals for the future. Emphasizing that technology must be humanized, Hohmann stated that, “Industry must learn to show an interest in the people.”

Vendors in the audience agreed, signifying a fundamental change in the development approach for the Future Generation. With the Future Generation or the Internet of Things, it is estimated that over 60,000 million telemetric devices will be connected to the Internet. Whether those devices are cell phones, sensors, RFID tags, or technologies embedded in smart houses, it is obvious that most of them cannot require human intervention. Those that do require human interaction will have to be a lot less demanding in terms of maintenance and learning curves than current technologies require. My new web-enabled cell phone, for example, came with a 60 page user manual, which I have allotted an entire ten minutes to absorb and apply. As a result, most of the features will inevitably go unused. My PCs require several hours of maintenance each month to combat viruses and security threats, install software upgrades, and resolve interoperability problems. Since I am not an expert, they under perform at a level I would never accept in, for example, my automobile. Imagine taking these scenarios and applying them to the estimated 10,000 telemetric devices per person that are predicted to be online by 2007. Technologies of the Future Generation will have to be designed to adjust automatically to user needs, rather than the other way around as they are today.

With the Future Generation...it is estimated that over 60,000 million telemetric devices will be connected to the Internet.

So what are the key user requirements for the Future Generation? Not surprisingly, they are not very different from what they are today. While a list of over twenty user requirements were identified, the key requirements are trust, usability, interoperability, security, and cost.

User Requirements

Trust encompasses many areas, but mainly users want to be assured that the product will deliver as promised. It is not enough for the product to provide the advertised functionality; it must provide that functionality reliably and easily. If the product fails for some reason, users require quick and targeted support devoid of phone trees and irrelevant customer service

scripts. Preferably that support will come in automated repairs that are transparent to the user. This would be considered a luxury now, but a requirement if Future Generation vendors want their products to thrive in the marketplace.

Usability for the Future Generation goes well beyond the simplified graphic user interfaces that grace our computers, cell phones, and PDAs today. Products must become intuitively usable

Products must become intuitively useable, and just as importantly, able to be easily personalized.

and, just as importantly, able to be easily personalized. For example, consider location-based services delivered via a mobile device. If it is my standard dinner time and I am not near home, my mobile device might automatically present several

dining options to me. Unlike today, I would not have to key in such attributes as my location, food preference, or pricing requirements. Instead, the service would automatically detect my location, understand my dining preferences such as types of food, styles of restaurants (large or small, fancy or casual), and pricing requirements based on past behavior information that might be gathered from my credit card and bank statements that show my spending patterns, my socioeconomic class, and past dining choices. In other words, the technology would adapt to my needs. I would not have to adapt my behaviors to the technology.

Interoperability is and will continue to be a key requirement. Today, it is only a minor inconvenience when a user's devices don't interoperate as promised or at all. In the Future Generation when users become much more reliant on technology for day-to-day tasks, interoperability problems take on a new dimension. If, for example, technology that manages a user's home fails to interoperate, that home may be without heat, the refrigerator may stop running thus spoiling all the food, or automatic sprinklers may fail to put out a fire. In addition, users will not have the time to resolve interoperability problems among all of their devices. In the Future Generation, interoperability will be a fundamental requirement for technologies.

With all of the wonderful capabilities that the Future Generation promises, security clearly becomes a key issue. Not only must consumer data be protected, but malicious parties must be

prevented from tampering with the devices that will handle many parts of our daily lives. Consumers will be hesitant to adopt technologies that leave them vulnerable to threats such as identity theft and major disruptions in their lives. Foremost in many peoples' minds are privacy concerns. Often mistaken for a desire to ensure total protection of personal data, most actually want control over that data. There will be times when users will want to share specific information with a specific entity while trusting the information will not be shared beyond those parameters. Just as technology is promulgating that loss of privacy control, many of the conference participants believe that it can also provide the solution. Advancements in authentication, personalized privacy control mechanisms, and digital rights management were called for. In addition, significant work is being done in the area of data privacy standards. A representative from a prominent user corporation called for a disciplined approach to holistic data protection. He emphasized that a technological solution is not accurate. Instead, data privacy management standards should be invoked to ensure trusted protection of user information. While this idea, which falls in line with corporate social responsibility standards, has met with some approval in Europe as a way to prove compliance, it has experienced significant resistance in the US. Since it is cost prohibitive for vendors to comply with numerous data privacy policies and regulations throughout the world, it may be in industries' best interest to develop standards with a goal of these being accepted on an international basis.

In the Future Generation when users become much more reliant on technology for day-to-day tasks, interoperability problems take on a new dimension.

Cost is another user requirement demanding attention. Clearly, as the network effect for many Future Technologies comes into play, costs will decrease. In addition, standardization can be used to drive down costs by commoditizing products. To meet this requirement, new business models will likely emerge. For example, today it is hard to imagine that computers will be distributed free-of charge, but years ago no one anticipated that cell phones would be offered on this same basis. Hardware costs, however, are minimal compared to the average software expenditures of consumers and large companies alike. With more technologies becoming "essential" to human productivity, technology budgets will have to stretch further. Consumers

may no longer be willing to pay \$500.00 for an Office Suite or \$50.00 monthly for high speed Internet access. Instead, companies may lease Office Suite products such as word processors per use and provide Internet access for free if a certain amount of services are purchased each month. Clearly, the Future Generation does not just mean the future of technology, but the future of how businesses will interact with customers and generate a profit as well.

User Involvement

Although most in the audience agreed that user requirements such as those outlined previously are essential in product development, the challenge of getting users involved was considered

If vendors deem user requirements important enough to force the SSOs they support to change, then user requirements will truly become an integral part of the Future Generation.

significant. Standards setting organizations (SSOs) were presented as a viable mechanism for capturing user requirements at the appropriate stages of product development. However, the barriers to user entry are strong and the incentives for user participation are, at least perceived to be, weak. Obviously, it will be the rare individual consumer who will be motivated to participate in standardization. However, user companies

may be motivated if the return on investment (ROI) is both evident and acceptable. To accomplish this, SSOs and the members that support them will have to take several steps. Some in the audience suggested lowering or eliminating SSO membership fees. Even if these fees were eliminated, standards groups often have several meetings per year requiring costly and time consuming travel. Others in the audience suggested that standardization working groups could better utilize collaborative technology to conduct their meetings either over the phone or online. With the elimination or at least reduction of these cost barriers, user participation in SSOs may increase. This increase, however, will depend on the perceived rewards. For example, has user participation in standardization in the past been proven to result in products that better meet their needs? If so, have these products had the intended impact and ultimately improved the bottom line? For companies such as Shell, Boeing, or Deere, their standardization efforts result in significant cost savings. If the same can be proven for companies across different industries and for SMEs as well as large corporations, then the

publication and marketing of these results should increase user participation. Even if a user company believes that significant ROI will be achieved, the difficulty of choosing a standards activity and organization can be daunting. Navigating the convoluted standardization system can be difficult at best. With multiple SSOs generating competing standards, making the choice in where to invest resources becomes almost impossible. One speaker called for an architecture of standards bodies to make the standardization system easier to navigate.

Capturing user requirements early in the product development process was identified as essential by the conference participants. Standards organizations present a potential mechanism for doing this if they begin to capture user requirements for standardization and change to better meet those needs. Whether they will do so ultimately depends on member demands. If vendors deem user requirements important enough to force the SSOs they support to change, then user requirements will truly become an integral part of the Future Generation.

COMPLEXITY IS AN UNDERSTATEMENT

As the Future Generation of technologies emerges, complexity will also rise. One of the key factors behind this complexity will be convergence. Already, we have seen some converging of the telecommunications and technology industry. While many may assume that this convergence is complete and the two factions are now happily working as one industry, many would be wrong. As was evinced in this conference, the vision, goals, and even the terminology of the two industries can be quite different. Some telcos, for example, appear to define the Future Generation as NGN, or the Next-Generation Network. In simplistic terms, NGN combines voice and data networks. The term is easy to describe but the convergence of these two networks is not easy to achieve. Technology companies, on the other hand, look at the Future Generation as the plethora of devices that will be connected over the Internet. As an example, consider a question from the technology side inquiring how RFID will be handled in the future. From the telco perspective, RFID is viewed as just another application. One telco participant explained that since RFID's transmission range is short by telco standards, RFID will be handled by a normal packet network just like other applications. The information

technology representative viewed this from another perspective in which the world may be “littered” with RFID tags and possibly sensors, all generating vast amounts of data that must be made usable and meaningful to the users. While these visions have some of the same requirements in order to fulfill them, the disparate viewpoints illustrate a wide gap that needs to be bridged before the two industries can work as one.

Expand these challenges to include other industries that may be included in the Future Generation such as the entertainment industry, biometrics, and geospatial, and it is easy to imagine how complexity will arise not just between disparate technologies, but between industries that bring their own biases, goals, and terminology to the mix. Add to this the legal teams that represent major players in different industries (how do you mix the legal priorities of Hollywood, open source, and traditional telcos, for example) and then include governments with differing priorities (consider the views on privacy protection in the EU versus the US), and the Future Generation seems to require some sort of a miracle if it is to come to fruition successfully.

Miracles, however, are not predictable and so we must rely on more earthly solutions to bring the Future Generation to market. In reality, businesses will find a way to bridge these gaps if larger market opportunities are perceived. And with the Future Generation, those opportunities are promising. With individual components of the Future Generation such as RFID, sensor networks, and wireless solutions such as Ultrawideband (UWB), WiMax, and Mobile-Fi predicted to generate billions of dollars, the incentive for cooperation is evident.

One strategy that participants identified for decreasing costs and complexity was to converge networks. One telco leader outlined the goals for the 21st century NGN, stating that it should make it easier to create, buy, and use services. He believes that NGN should achieve a 30-40% reduction in end-to-end total life costs. To achieve this, increasing efficiencies and automation will not be enough. In addition to these changes, old networks have to be closed down. The United Kingdom, for example, has managed to pare its billing systems down to just fifty. However, it will need to do better than this to achieve the cost reductions that can be delivered

by NGN. In the end, participants agreed that the ultimate goal of the Future Generation network is to enable the use of any device over any network, preferably transparently and seamlessly.

As complexity rises with an increase in devices and services, interoperability will become more difficult to achieve. Maryfran Johnson, the conference moderator, pointed out that complexity continues to be the number one challenge for CIOs. The more complex an environment gets, the more difficult it is to achieve interoperability. The majority of conference participants believed that open standards are a strong and viable solution for ensuring interoperability and decreasing complexity. For open standards to remain a powerful solution, however, the process must be open and SSOs must meet market needs more effectively.

Presently, there is not an internationally accepted definition of “open” in terms of standardization processes, so any SSO may declare that they are “open.”

While in the moment it may be a great marketing tool, the term will likely lose its power unless a global (or at least national) definition of “open” is agreed upon and compliance can be proven. One way SSOs can meet market needs may be in the rate at which they produce standards (often they are criticized as either too fast or too slow), in publishing a road map, and in timing releases with business and government cycles, among other things. Most importantly, open standardization efforts must make desired technologies interoperable in a way that decreases complexity while increasing usability and transparency. The challenge of achieving these goals was highlighted and is addressed in the next section.

Most conference participants argued that the plethora of competing standards and standards bodies are undermining the very purpose they are supposed to serve.

TOO MUCH OF A GOOD THING?

Can there ever be too much of a good thing? Perhaps not in money, or possibly in chocolate, but some might concur that too many standards—and their producing organizations—might fit this category. Standards serve a valuable function in the ICT industry: They lower costs, expand consumer choices, create larger and even new markets, stimulate innovation, and, of course, increase interoperability. What happens, however, when competing standards emerge?

Do they fragment the market, defeating the very purpose of standardization? Or do these competing standards strengthen technology in the long run by forcing the market to choose the best alternative (a sort of Darwinian view of standardization)?

Most conference participants argued that the plethora of competing standards and standards bodies are undermining the very purpose they are supposed to serve. By fragmenting the market, innovation is slowed and many users adopt a “wait and see” philosophy rather than betting their businesses on a soon to be defunct set of technologies. Vendors, unsure of where to hedge their bets, often pour money into competing standardization efforts to minimize risk and ensure first mover advantage. To complicate matters further, member organizations send multiple participants to standardization meetings who often argue against their counterpart’s position, creating even more fragmentation within the system.

Adding to this complexity is the numerous standardization bodies that represent and often enforce national interests around the world. A required security standard in Europe for example, may be completely different from that in China. Multinational companies that ship products, either physically or electronically, around the world will have to invest significantly to not only meet these differing requirements, but also must remain informed of changes in the various requirements over time. As the Future Generation blurs national boundaries further, how will multinational companies understand and meet differing requirements while satisfying the ever present need to drive down costs? Standardization may offer one mechanism to achieve these goals, but it will first have to address the complexities within its own system before taking on the challenge of disparate government policies and national user requirements.

Obviously, the current situation in the standards ecosystem adds to the complexity of the Future Generation. At the very least, it makes it difficult for companies to choose where to invest their resources. When we apply this to the user community, which we hope to include in the standardization process, this complexity will likely serve to deter any interest in participating. At the other end, it costs the ICT industry billions of dollars to maintain an ecosystem that has the potential to become so fragmented that it undermines the industry that supports it.

Users in the audience called for vendors to stop supporting so many SSOs and competing standardization efforts. It is vendor funding, they argued, that create the plethora of SSOs that lead to market fragmentation. The users suggested that vendors withhold funding from rival

Just as the railroads in the US were able to build a valuable network only after the competing factions began to cooperate, so to will contributors to the Future Generation of ICT technology need to work together.

standardization efforts until the two groups stop competing and work together. Some vendors looked to users to help solve the situation. It was suggested that users stop asking for so many standards, stating that the definition of a good standard from a vendor's point of view is one that appears on a Request for Quote. Many agreed that SSOs should come together and serve a purpose and then disband. This however, rarely happens, especially when staff has been hired

and jobs are involved. In addition, there are those participants who enjoy “doing standards for standards sake” and would be loathe to end a favorite activity. A strong solution to minimize standardization fragmentation did not emerge as an answer acceptable to everyone. Perhaps market forces will ultimately prevail and eliminate those SSOs that do not effectively serve its needs. Failing this, it is possible that the fragmentation will eventually undermine the standardization system so detrimentally that either an agreed upon solution will occur or a new mechanism to achieve the goals of standardization will emerge, just as consortia developed in response to the slower processes of traditional standards development organizations.

COOPERATION IS NOT JUST FOR CHILDREN

For most of the readers, childhood carried an important lesson: Cooperate. We were asked to cooperate with our siblings, our parents, our teachers, and our friends, among others. The motivations behind that cooperation may have been different: “It is the right thing to do,” or “It is the only means to get what you want,” but the command was still the same. This same message rings loud and true for the Future Generation of technology. Just as the railroads in the US were able to build a valuable network only after the competing factions began to cooperate,

so to will contributors to the Future Generation of ICT technology need to work together. Most participants agreed, stating that cooperation leads to larger markets and thus expanded opportunities for all. Ask children whether they would rather have three slices of a small pizza or two slices of a large pizza, and they will intuitively choose the large. Most vendors would also agree. However, are they willing to take the necessary steps to get there? Are vendors willing to cooperate on standardization and compete on implementation in order to build a larger market?

During the last part of the conference, a panel to discuss this issue was held. One audience member stressed the importance of cooperation, stating that convergence of networks is only one piece of the puzzle, but the convergence of SSOs is the catalyst that will make the Future Generation happen. Another believed that individual participants in SSOs should align their actions with their company's needs. Too often, it was cited, individuals work to create standards that do not meet company needs and thus are never implemented or, if they are implemented, fail to serve market needs. Perhaps companies should take a stronger role in both training their standardization participants and ensuring that they are working to fulfill their overall business objectives.

Others cited the use of coordinating bodies to facilitate information sharing and communication. The ICT Standards Boards, for example, fulfills this role among three European Standards Organizations (ESOs) and several consortia. It was suggested that other organizations, ones that do not create standards themselves, could work to facilitate cooperation and perhaps convergence of competing standardization efforts. Individual communication was also cited as a mechanism to spur cooperation. The question was asked, "Who will communicate these conference findings to the ITU (International Telecommunication Union)?" One person answered that most of the conference participants were members of the ITU and should communicate the findings. Another participant, using technology to its utmost, sent an instant message to immediately communicate the findings to the ITU—a true example of Future Generation thinking in action.

Creation of common terminology was seen as another mechanism for facilitating cooperation. As evinced in the disparate definitions of the Future Generation between the telecommunications and technology industry, terminology may be an important step. After all, how can those working on the Future Generation agree upon an overall vision, goals, and requirements if they cannot define what the Future Generation is in terms that are easily understood by all?

If users come to expect the interoperability and ease of use that they experience in other aspects of their lives, such as gas stations for example, then vendors will surely find the incentive and means to cooperate and establish new models of collaboration.

The role of government was briefly raised. One participant asked what the role of the European Commission might be in facilitating cooperation. The reply was, “Tell us what you need. We are in the process of defining it now.” This is no different from the response often heard from US government representatives. It is the responsibility of industry—and of users—to inform the government about their technological and standardization needs. This clear communication is often lacking and puts government organizations around the world at a disadvantage in determining its ultimate and most beneficial role in standardization.

In the end, perhaps the solution lies where this analysis and the conference began: with the users. As technology begins to infiltrate more of our daily lives and the resulting complexity consumes more of our time, it may spur users to strongly express their requirements through either the government, user organizations, SSOs, or simply their wallets. If users come to expect the interoperability and ease of use that they experience in other aspects of their lives, such as gas stations for example, then vendors will surely find the incentives to establish new models of cooperation and collaboration.

CONCLUSION

This conference on the Future Generation was designed to bring people together across organizational and geographical boundaries. The goal was to explore the requirements of the

Future Generation and the challenges it bring in the present, so that government, vendor, user, and organizations can more effectively plan major change. In doing so, it is hoped Future Generation of information and communications technology will better needs of users including those of trust, interoperability, and security.

In the end, the term “Future Generation” might not just apply to information and communications technology, but to an improvement in business processes and collaboration models that will provide the most critical infrastructure for technological advancement.

is likely to academic for this that the meet the usability,

While the conference highlighted the differences in thinking between the different industries and organizations, it also helped them to see the commonalities. It provided an opportunity to exchange ideas and opinions, not only in the conference itself, but perhaps more importantly, during the breaks and social events. It was at these times that new relationships were forged and the groundwork for facilitating cooperation was laid.

differences

Hopefully, efforts along these lines will continue, providing more opportunities for communication across boundaries. Who knows? In the end, the term “Future Generation” might not just apply to information and communications technology, but to an improvement in business processes and collaboration models that will provide the most critical infrastructure for technological advancement.

ABOUT THE STANDARDS EDGE: FUTURE GENERATION™



The Standards Edge: Future Generation™ will contain a collection of articles that address the challenges facing the Future Generation of information and communications technology and examine strategies and potential solutions for ensuring its success. The Future Generation is defined here as the “Internet of all things regardless of device, platform, or whether the information is delivered via wired or wireless means.” The book will explore the need for new models of collaboration among competing and complimentary organizations, including standards setting organizations. Finally, it will look at standardization as a powerful tool for addressing some of the social, legislative, and technological challenges that lie ahead. This valuable book, which encompasses and expands beyond the conference topics, will be distributed to conference participants and key decision-makers in business, government, academia, and standardization throughout the world in 2005.

ABOUT THE STANDARDS EDGE™ SERIES

The Standards Edge series is designed to tackle the latest technological and standards issues and their impact on business. The series serves as a valuable resource to:

- Numerous Global 500 organizations, including AT&T, Hewlett Packard, Nokia, Mitsubishi, Microsoft, AOL Time Warner, and Sun Microsystems
- Senior government representatives in the US Congress, the European Union, China, and Japan's Ministry of Economics, Trade, and Industry, among others
- Leading educational institutions such as the Massachusetts Institute of Technology, Stanford University, Georgetown University, Harvard Business School, UC Berkeley, Delft University of Technology, and the University of Oslo

For further information on The Standards Edge series, please visit

<http://www.thebolingroup.com>.

A b o u t T h e B o l i n G r o u p



The Bolin Group is a strategic consulting firm specializing in oral and written communications, standardization, strategic planning and implementation, and training and development. As the premier provider in standardization consultation, The Bolin Group provides services in standardization portfolio management, research and analysis, communications strategy design and implementation, and training curriculum development. By emphasizing a business approach to standardization, The Bolin Group provides each client with the unique package of strategies, implementation plans, and communication methodologies to position their organization in the complex world of standardization.

The Bolin Group is the creator and editor of The Standards Edge™ series. This series has become one of the most comprehensive resources on critical standards issues in the current environment and now serves as a significant guide to ICT industry leaders, academics, and government representatives worldwide. The Bolin Group is currently at work on additional books in The Standards Edge series, which examine separate strategic standardization issues. For further information, please visit:

<http://www.thebolingroup.com>