Disability and Information Technologies (Dis-IT) Research Alliance

2005 INSTITUTE
Inclusive Information Technology and Business Success

May 10-12, 2005
Winnipeg, Manitoba, Canada

www.dis-it.ca

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Overview

"Inclusive Information Technology and Business Success," the second institute of the Disability and Information Technologies (Dis-IT) Research Alliance, was held in Winnipeg, Manitoba, Canada from May 10-12, 2005. The theme of the institute was "How do we address the needs of industry and people with disabilities in the development of emerging ICTs?"

The 2005 Dis-IT institute was successful in attracting a number of participants with industry experience including: Monica Ackermann (Assistive Vocational Technology Associates), Doug Brolly (RBC Royal Bank bis Group), Marcia Cummings (Rogers Communications Inc.), Dave Dougall (Research In Motion), Umang Dua (Issist), Steve Jacobs (IDEAL Group, Inc.), Helen Maskery (Maskery), Susan Mazrui (Cingular Wireless), Jeff Pledger (AbleTV.net), and Jim Tobias (Inclusive Technologies). The presence of the industry perspective provided many opportunities for communication between industry and researchers, academics, government, service providers, and disability advocacy groups. Many presentations focused on creative and effective strategies for communicating to industry the importance of developing information technologies that are accessible to people with disabilities.

Dr Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland, Australia) was invited to assist the Dis-IT Research Alliance in developing an interdisciplinary framework for understanding the social construction of disability and information technology that addresses and engages with industry. Dr Goggin, along with colleague Tim Noonan (SoftSpeak Consulting, Australia), also discussed the collaborative model used by the Australian disability community of working with the IT industry in Australia.

Daily sessions on the following topics were held at the University of Manitoba:

- What is required to create a Canadian IT industry that is successful/profitable and produces technology that is accessible to and inclusive of people with disabilities?
- How can we develop information technologies to enhance the participation of people with disabilities?
- Are accessibility standards, regulations, guidelines, etc. the way to achieve a Canadian IT industry that is successful/profitable and inclusive of people with disabilities?
- Partnership regulation models.
- From technical innovation to innovative thinking: What is it that precludes manufacturers of mainstream technologies from designing accessible products? Do competitive market forces work against designing for access?
- Challenges of engaging industry in research on accessibility

The University of Manitoba's Interdisciplinary Master's Program in Disability Studies offered a complementary graduate course from May 9-17, 2005. "Selected Topics in Disability Studies:

Industry and Persons with Disabilities—Conflicting Information Technology Needs" (162.704) included the institute sessions May 10-12 and an additional week of classes.

Forty-two people attended the institute, including people with disabilities, researchers, academics, students, service providers, and representatives of disability organizations, industry, and government.

About the Dis-IT Research Alliance

The 2005 Dis-IT Institute was presented by the Disability and Information Technologies (Dis-IT) Research Alliance. The Dis-IT Research Alliance is a three-year project bringing together leading researchers, representatives of disability organizations, government, industry and service providers who are studying how to ensure that Canadians with disabilities can be part of the innovations and emerging information and communications technologies of the knowledge-driven New Economy. Dis-IT is examining how information and communications technologies can increase the quality of life and the inclusion of Canadians with disabilities in four areas: employment, post-secondary education, retail and public services, and democratic participation. It is funded by the Social Sciences and Humanities Research Council of Canada (SSHRC)'s Initiative on the New Economy (INE).

Summer institutes are an integral part of the knowledge dissemination component of the research alliance. They provide opportunities for participants from various backgrounds to share their ideas, information, and perspectives and meet face to face and through innovative and accessible technology. An earlier Dis-IT Summer Institute, "People with Disabilities and New Technologies: A Social Barriers Approach," was held June 14-18, 2004. A conference showcasing the findings of the research alliance will be held in fall 2006.

Tuesday, May 10, 2005

PANEL DISCUSSION: What is required to create a Canadian IT industry that is successful/profitable *and* produces technology that is accessible to and inclusive of people with disabilities?

Host: Doug Brolly (RBC Royal Bank bis Group)
Panelists: Jim Tobias (Inclusive Technologies, USA), Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland, Australia), Kier Martin (Council of Canadians with Disabilities, Canada)

Panelist: Jim Tobias (Inclusive Technologies)

In the opening presentation of the institute, Jim Tobias provided insights into the workings of industry and identified opportunities for communicating with industry regarding accessible technology. His presentation focused on two concepts—product ecology and the accessibility value chain.

Product Ecology

Using a series of animations, Tobias illustrated that products do not exist in isolation, but interact ecologically in dynamic relationships that change as new technologies emerge to compete or cooperate with existing products and other new products:

- primary products perform a primary function (e.g., a pencil and paper record information);
- secondary products (e.g., pencil sharpener, stapler) support primary products;
- product categories cooperate (e.g., pencil, sharpener, paper, and stapler);
- product categories compete (e.g., computers compete with the pencil and paper for recording information; various kinds of paper clips and clamps compete with the stapler for fastening pages);
- products that once performed their function well (e.g., computer diskettes) become inadequate and obsolete when new products with greater capabilities emerge (e.g., recordable CDs).

For technology to be accessible to people with disabilities, mainstream products must interact with assistive technology, and mainstream products must support accessibility while interacting with other mainstream products. As an example of how product ecology affects people with disabilities, Tobias described how English captioning was omitted from many early DVDs, despite the massive storage capacity of DVDs.

> "DVDs are meant to be distributed universally and globally, and when they developed the protocol, they had huge numbers of spare tracks for text, because they knew they'd have to have sub-titles for all of the different languages. At first blush we thought 'Oh great, that's going to be wonderful, you know that we've got all this room.' But in fact, for many English-produced early generation DVDs, there were no English sub-titles available. If the film was spoken in the English language there was no English captioning available—they had literally used up all the space for other languages. Therefore we had to go back in there and fight for something that we never thought we would have to fight for."

English was omitted from the captioning because the movie industry had assumed that all English-speaking viewers would listen to the audio track, and only non-English-speaking viewers would need captioning. Tobias commented that this omission could have been avoided if people with disabilities had been involved at the development stage.

> "The lesson that I take away from that particular one is that when engineers come to us and say 'Oh don't worry about it, there's so much spare capacity, I mean you'll never, never run out of space, so you could put anything you want in there,' we have to kind of smile and say 'Yes I'm sure you're right, but can we just be in that meeting where they sit down and apportion out the text capability?'"

Tobias emphasized that product ecologies are extremely complex and not necessarily predictable. For example, podcasting—a method of subscribing to audio programs that are automatically downloaded to computers, iPods and other portable music players—has created an unpredicted use for portable music players.

> "We never would have guessed that something like that would evolve. So we're kind of trying to hold on to this accelerating luge [a small racing ice-sled] of technology and trying to understand what the implications are for people with disabilities. We're not in the research and development headwaters enough; we're kind of at the estuary, where all of this stuff winds up and we need to forge upstream so that we can get into that space and give some early comments on what's happening with these products over time."

The Accessibility Value Chain

In a business value chain, Tobias described products increasing in value because of their interactions with other products and the actions of other companies, and even customers.

> "An idea that's very common in industry, but I don't think is well understood outside of industry, is the value chain; meaning that not only my company, but everyone upstream and downstream from me has a role to play in increasing the value of my product. It's counter to the nineteenth and early twentieth century view of commerce which was very competitive and very zero sum. A value chain concept says 'no, that's not really true,' that there are ways that you can cooperate with people up and down stream from you that can make your product much more valuable."

To illustrate, Tobias explained that the unpredicted emergence of podcasting has added value to the iPod (and other portable music players) because it has provided a new use for these devices.

Tobias listed and described seven "links" in the accessibility value chain, all of which have roles to play in ensuring that technology is accessible to people with disabilities:

1. platform vendors
2. tool vendors
3. application developers
4. value-added resellers
5. purchasers
6. end users
7. research/policy

Platform vendors like Microsoft and Sun are "at the top of the value chain, which is earliest upstream…Most of those companies have accessibility programs with some pretty good guidance and resources on accessibility. If it's [a platform] not run by a company, like XML or HTML, there's a standards body and most of those have accessibility committees. So there's a lot of work going on at that level."

Tool vendors are companies that make aftermarket tools and utilities like add-ons, extensions and third-party controls which provide enhancements to other software. Tobias described tool vendors as "kind of invisible links in the value chain, to people who are not in the industry… We need to make sure that they're taking accessibility into consideration as well. Third party controls are a major source of inaccessibility right now in software applications and dynamic websites, so this is an area that's undergoing some accessibility exploration right now, kind of hit them over the head with a stick and feed them a carrot and try to get them to go in the right direction."

Application developers are the main participants in the software industry. They have opportunities to gain "upstream" guidance about accessibility from platform and tool vendors, but should be incorporating universal design in their practices. "I ask software companies to keep track of the feature requests that have to do with accessibility…to make a category on the list of features that says 'accessibility,' and then a list of what those features are… And then use accessibility as a tie-breaker if there is competition—and there is ferocious competition for getting features into new versions of a product. If one feature adds a little bit more accessibility or usability than another, use that argument to break the tie and go for the similar useable feature."

Value-added resellers (VARs) customize and re-sell existing products. One type of VAR is system integrators who purchase, customize and re-sell software (e.g., installing a company's logo, stationery, address book, etc. in Microsoft Outlook). Tobias identified them as important links in the accessibility value chain because they "are kind of the last mile out to large organizations and so to have them sensitized to accessibility, to have them understanding the accessibility features of the product and how it fits the needs of the organization that they're selling to, is a very important and very often missed piece." VARS usually cannot add much accessibility, but they can protect accessibility features from being overwritten or unimplemented.

Purchasers select and procure products for large organizations. Due to Section 508 of the *Rehabilitation Act*, purchasers in U.S. federal government agencies are responsible for the accessibility of the products they purchase. "They're the kind of gatekeepers into the public sector. If you as a company understand what your [products'] accessibility features are, you should be able communicate it to these purchasers. On the other side, purchasers should have access to expertise about accessibility."

Tobias said industry has much to gain from consulting with end users with disabilities, because they are a "gold mine" of information about accessibility. "I really encourage companies to reach out through advocacy organizations or however they recruit people with disabilities, to average users, very sophisticated users, policy-oriented users—the kind that wear a few hats as the consumer but also advocate—they can be very valuable in getting that information out there."

Industry needs what the research and policy communities have to offer, because companies do not understand their customers as well as they should. Getting their attention, however, isn't easy.

> "We need to make our very impressive statistics look like the market research numbers that they get from other market niches. If we have lots of numbers with

> lots of money and lots of users with suppressed demand, users who want to be able to use these products and they're frustrated—how many times does a company have a chance to sell to somebody who's been waiting at the door for five years to get in to be able to use a piece of software?"

In closing, Tobias said "We need to make sure that we're coming to them as partners and that we make an effort to understand their business and that we try to match up technologically sophisticated folks on our side of the picture with their own technologically sophisticated folks."

Discussion:

Steve Jacobs (IDEAL Group, Inc.) asked how advocates for accessible technology who understand the value chain can use that knowledge to exert a positive influence on industry. Tobias recommended being opportunistic by understanding individual industry contacts and crafting a message that is specific to a particular audience.

> "If you have a contact in the regulatory department, you have to craft a message that makes sense to that person. You cannot go and talk to that person about technology; first and foremost, if, you know on the other hand if you have a technology contact, someone from an R & D centre or what have you, you have to have a message in hand for them as well. It's the sociology of organization; it's nothing more sophisticated than that, nothing more technological than that."

He recommended a shift in mindset for disability organizations towards "left-wing marketing".

> "It's a skill. If you can learn Sociology and Psychology, trust me, you can learn marketing. It's a hell of a lot easier, it really is, it's a mind set, it's a change of perspective, you're really talking about kind of a left-wing marketing, if you think of it in political terms. Its extending the customer base, right, that's the argument, and we just have this new idea of who the customer is. We're going to hit them as individual consumers, organizational users, all of that stuff, it really is business savvy and understanding how these companies work and why they're structured the way they are."

Laurie Beachell (Council of Canadians with Disabilities) asked Tobias to discuss the difference between engaging industry in a targeted initiative for a specific problem versus a more systemic approach through regulatory reform. Tobias responded that regulations are necessary to get attention from industry but that they are less effective for implementation,

citing the example of the *Americans with Disabilities Act* in the US. "Our experience has been that regulations were necessary to get the attention of industry, but they made terrible implementation tools." He suggested that the Canadian system is more collegial than the American system because it has more integration between the public and private sector.

Gary Birch (Neil Squire Society) raised an ongoing concern about the cycle that advocates for accessible technology sometimes find themselves in when trying to work with industry. He described a number of experiences participating in large IT companies' accessibility groups. In one particular instance, the Neil Squire Society had built a prototype within the company's accessibility group which, based on a company's technology, was shown at a trade fair and produced excitement. In the end, however, the accessibility group has limited ability to move the accessible product out to the company's design group, and the company developed subsequent products which were completely inaccessible.

> "They did invest, they came up, they traveled, they sent us technology. And then new versions came up that totally wiped out all the work we had done. The internal accessibility people didn't even know where to begin to try and fix that. They said, 'well, those are decisions made by product engineers.' And they didn't even seem up to the challenge of trying to change that. So that's the kind of cycle we find ourselves in, with, frankly, very little resource in the sector, it's very hard to keep coming back to them."

Tobias acknowledged that there are many difficulties in influencing industry to develop accessible technology and there are drawbacks to using only an economic argument to appeal to industry. "The downside of buying into the business strategy idea is that you die by that same sword." He noted, however, that companies are truly only ever motivated by the bottom line, but that "Companies can't do everything that's profitable. They can only do what is *most* profitable."

Tobias explained it is very difficult to get companies to invest in accessible technology because they are uncertain how their investment will affect sales.

> "If a company has a million dollars to spend on something, advertising people can go into a meeting, and they can say with absolute certainty 'if you give us this million dollars it will result in three million dollars worth in sales,' because they keep those measures, they know those numbers. The best we can say is, 'If you give us a million dollars, we're pretty sure you'll get a few more sales.'"

Tobias suggested that value-added resellers who customize and re-sell existing products have the potential to successfully produce accessible IT. Gary Birch was quick to point out that these

types of companies (especially in the software industry) tend to be reactive, and by the time they have created an added-value product, the next version of the product upon which it is based has come out, making the accessible value-added product obsolete. Tobias agreed with Birch and gave an example of Microsoft Windows and AT companies that develop screen readers. "These companies were getting the new version of Windows the same time it became available to the public. It took nine months to re-engineer their screen reader to match up with the new version of Windows. During those six to nine months you were out of luck if you needed to use a screen reader." Tobias stated that Microsoft has now recognized this problem and is doing a better job of involving AT companies in their development stages, but most companies have not.

Panelist: Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland)

Gerard Goggin presented the paper, "The Business of Digital Disability," in which he defined and explored what he called the "paradox of inclusivity and information technology (IT)" both in Australia and internationally. His presentation opened with background information about DSaRI and the collaboration between DSaRI (Australia) and Dis-IT partners (Canada), followed by an exploration of his thesis on the paradox of inclusivity and IT, including a history of IT in Australia and a synopsis of the discussions of this paradox in an international context. He concluded that there has been an historical shift in the twentieth century from the national government, or welfare state, to the world of business as the source of authority and power in the development of inclusive technologies. He offered several strategies to consumer advocates and researchers for responding to this shift and commented on the need for "co-regulation" among community, industry, and government partners. "As much as we need a market-driven approach and self-regulation, we also require the guiding, custodian and directive roles of our standards-setting bodies, regulatory agencies, and governments."

Goggin suggested that collaboration between Canada and Australia is particularly "fitting" for a number of historical and cultural reasons.

> "Both [countries] have relatively small populations with medium-size economies and domestic markets, by global standards. Both Canada and Australia had their experience with colonization, questions of belonging, of achieving just settlement with their indigenous peoples, and the difficulties that distance in geography raise. …I think the two countries share more issues than many other countries do—of economic sustainability, prosperity and living standards—in a time when the realities and ideas about nation states are transforming; and also issues of equality and citizenship for all members of our societies, particularly members of

> marginalized groups. When much discussion of developments of the information and communication technology focuses on industrial powerhouses worldwide, especially the US, there is much to understand and debate in the experience of other countries and regions, especially our own."

Goggin introduced his thesis of the paradox of inclusivity and IT by first identifying information technology and communication technology as "the master themes of our age" because they are "at the interface of social, cultural, and industrial transformations in our lives," and "technologies are critical to our systems and productions but also of consumption." IT is particularly important to disability research and issues because it plays an important role in "the way that disability is conceived, experienced, and framed in society." Goggin and his colleague Christopher Newell describe the role of technology in the lives of people with disabilities in terms of "intimate relations." They recently co-edited a special issue of *Disability Studies Quarterly* in which various debates about disability and technology, and the "intimate relations" between them are explored, including issues to do with life and death, ethics, embodiment, and power. Goggin acknowledged this experience of co-editing with Newell as the process by which he came to articulate the paradox of inclusivity and IT.

> "One of the things that we've been struck about is that disability is often invoked as a warrant for the development of new technologies, yet in that process the kind of rhetoric of those claims and the promises are not often interrogated or thought about. Nor are the uses, the unexpected uses, and ends of technologies scrutinized. One of the issues is the introduction of new technologies can often have accessibility built in but can also create new forms of exclusion."

To illustrate the paradox of inclusivity and IT; Goggin related a story about traveling to the institute from Australia. When he and his colleague Tim Noonan, arrived at the Vancouver Airport from Australia and made their way to catch their connecting flight to Winnipeg, they encountered a series of inaccessible self-service check-in kiosks. When they remarked on the lack of accessibility to airport staff, "Her reply was quite instructive, because with a wry and long-suffering tone, she said that point of the new technologies is to cut jobs." Goggin's story illustrated that, in general, people's "understanding of the power relations of technology did not incorporate disability and accessibility" and that "22 years after the 1983 International Year of Disabled Persons, information accessibility is still not routinely considered."

> "This [story] for me encapsulates the paradox of inclusive technology. On the one hand, it would appear that the arguments, once you sketch them, are compelling. [Inclusive] technology would be accessible, easier to use, and more attractive for many people. IT businesses would have more customers, more revenue, and would be more profitable. But as we know, there are cases—

> although there's some positive recent advances—where the needs and uses that might be imagined for people with disabilities are overlooked, omitted, neglected, or not considered. This has really profound economic, social, cultural and personal costs. It is a lost business opportunity."

Goggin turned to international discussions of the paradox of inclusivity and IT. He on two recent reports, the 2002 US-based World Institute on Disability report, *How to Create Disability Access to Technology*, and the 2004 US National Council on Disability report, *Design for Inclusion: Creating a New Marketplace*. The World Institute of Disability report offered a number of recommendations based on interviews with stakeholders and disability activists. Goggin summarized these recommendations as "the important quality of *accessibility champions*; the need to value disability and people with disabilities; the need to weave accessibility into the DNA of the company; and to talk about things such as publicizing and marketing a company's accessibility policies and products internally and externally."

Goggin listed some of the findings and conclusions from the National Council on Disability report, which included that:

- a market for universally designed products and services exists
- universal design principles can be incorporated into current design practices; products designed to be accessible sometimes do not actually met the needs of users with disabilities
- legislation is both a facilitator of and barrier to universal design; that many barriers to universal design remain
- Recommendations from this report included the message that "you can both be good and do good through inclusive technology and make money at the same time. Or, in the strong version of the claim, doing good in this manner *can and will* make you money."

Goggin cautioned that inclusive technology requires long-term communication among different sectors in society. "Actually achieving this can require much coordination, commitment and action between the non-commercial, as well as commercial sectors, institutions, and actors."

Goggin shifted to a discussion of the Australian experience of inclusive technology, particularly in relation to the 1991 and 1997 *Telecommunications Act*s and the 1992 *Disability Discrimination Act*. The 1991 *Telecommunications Act* included a definition of "universal service," which suggested that telecommunication service should be accessible to everyone. Accessibility in this case, however, was "defined as a geographical concept. So within wherever you were within the nation, you should have access to telecommunication." Issues to do with disability and accessibility, however, were not part of this definition of universal access. Goggin commented that even policy makers who were not familiar with disability issues noticed the inadequacy of the definition of "universal service". "A whole set of issues

around disability and accessibility were becoming much more clear even to policy makers who have not been more familiar with them, such as the need to recognize the communications of Deaf people, for instance, and provide access to TTYs [text telephones] at affordable rates." Both the government and the former monopoly telecommunications carrier, now called Telstra, did not provide for these accessibility issues.

A year later, the 1992 *Disability Discrimination Act* ensured that discrimination against people on the basis of disability was illegal. Goggin explained, however, that "the telecommunications industry sought and was granted an exemption from this *Disability Discrimination Act* for a number of years." Thus, disability was missing from the definition of accessibility in the *Telecommunications Act* (of 1991) and telecommunications was missing from the *Disability Discrimination Act*. Government policy changed, however, after a case against Telstra (then Telecom Australia) was taken to the Human Rights and Equal Opportunity Commission [HREOC], which ruled that Telstra was required to provide accessible text telephones. As a result, the 1997 *Telecommunications Act* finally included a definition of "universal service" that included accessibility for people with disabilities. Goggin referred to this sequence as the "first phase" of inclusive technology in the area of telecommunications in Australia, "in which we can observe a lot of resistance on the part of the dominant carrier about the possibilities for inclusive technology. In this first phase, there was kind of a shared assumption that disability was an extra cost, a bit of a nuisance, and should not be allowed to interfere with the historically significant task of telecommunications reforms."

In response to this first phase, the disability and consumers movements mobilized with a focus on laws and policies. There was also much dialogue between the telecommunications industry and the disability consumer movement.

> "Ironically, through this period in the 1990s, there'd actually been a lot of dialogue particularly between Telstra, the main carrier, and the consumers in which the disability movement was involved in. It was actually a very good process. A consumer council was set up in the late 80s that's still going today which genuinely gave consumers and organizations of people with disabilities some input into corporate policies."

Since 1997, the second phase of activity in Australia, there has been the rise of self-regulation, whereby the responsibility for regulation in a number of areas has been given to industry itself. This shift was in part influenced by the ideology of the conservative Liberal-National Party government which was elected the previous year. In 1997 the telecommunications industry established the Australian Communications Industry Forum (ACIF) which assumed responsibility for regulatory issues that had been, until then, the responsibility of the Australian government. Goggin introduced the ACIF Disability Advisory Body (DAB) as a

case study of international interest because the DAB, "which is drawn from broadly represented disability organizations and chaired by our colleague Christopher Newell, has provided a key meeting place for consideration of not just current but future telecommunications issues." Goggin commented that in Australia, "industry self-regulation has been very important. It's been institutionalized. It's really kind of co-regulation in a sense—because it's buttressed by a legislative framework. This body of the ACIF develops guidelines, and then the regulatory body in Australia, the communications authority, approves that code, and then it can be enforceable." He closed the case study of the ACIF DAB by emphasizing the importance of the communication between industry and consumers with disabilities. "This self-regulatory process is very much in its aspiration and its operation, I suppose, driven by the industry and the consumers having a kind of dialogue between those two parties."

Goggin next described the role of Australia's Human Rights and Equal Opportunity Commission (HREOC) in the development of inclusive technology. "The Human Rights and Equal Opportunity Commission has been very crucial for at least symbolic action." For example, in 2000 the HREOC found against the Sydney Organising Committee for the Olympic Games for their refusal to make the Olympic website accessible. Goggin commented that overall, "the Human Rights [and Equal Opportunity] Commission is just not seen as central from the perspective of industry, government, or regulatory actors." Goggin identified the Australian Competition and Consumer Commission as more effective than HREOC because it "is seen as quite central and quite powerful." Goggin suggested that the ineffectiveness of the human rights approach to making inclusive technology in Australia is due to government politics. "The Human Rights [Commission] has also just been systematically undermined by our conservative [Liberal/National Party Coalition] government since it took office in 1996."

Goggin pointed out, however, that this same government has supported important research on disability and IT. "There's been quite a lot of interesting research work that's occurred. And some of it is actually funded by the government through particular provisions in the *Telecommunications Act* that came about by happenstance." On the other hand, he added that the government has, in the case of Voice over Internet Protocol (VoIP), put what it considered to be "industrial innovation" ahead of accessibility issues.

> "There has been a whole-of-government neglect of inclusive technologies, all the more surprising given that research is available. The government prevailed over the ACIF with respect to Voice over Internet Protocol. The government just wanted that ushered through—what they saw to be industrial innovation—and didn't want the disability accessibility processes and requirements applying there."

Goggin offered several recommendations and suggestions. He repeated his earlier assertion that "the spotlight has swung from focusing on the state, to focusing on business," and suggested that making an economic argument to industry for inclusive technologies is more effective than human rights or social responsibility arguments. "Rather than persuading business to do things for altruistic good corporate citizenship reasons, [persuade business] to do so out of its own self-interests. There is a lot of promise in this new conversation on business and inclusive technology." He commented that in Australia in particular, these economic arguments are important to make, as there has been a "failure of inclusive technology to materialize in a widespread way" despite general disability discrimination laws that were passed in the last fifteen years.

He pointed to Bruno Latour's *Aramis, or the Love of Technology*, and "actor-network theory" as a useful strategy for understanding disability and technology. Latour's motto is to "follow the actors." This method is useful in understanding the future of inclusive technology, Goggin suggested, because "those who have an interest in the technology, who invest in it—financially, emotionally, and otherwise—are the actors who can tell us what we need to know about the strange and contingent ways that technology is created and what we can do about it."

Goggin offered a number of recommendations for achieving inclusive technology and business success, including incorporating disability "into all aspects of the design and shaping of technology," acquiring strong models for fostering partners and instituting "systems of co-regulation," and including disability in discussions of disability and technology at the national level as well as in discussions about innovation.

> "Disability, in some way, still seems to be missing when we talk about innovation. So when we think about the whole discourse of innovation—democratic innovation, open-source innovation—I haven't yet seen disability talked about in that respect and I think it's a really interesting area and in some ways captures the speed at which this happens."

He emphasized the important roles that people play nationally, as well as at an every day level. "In the world of international trade rules, standards-setting activities, and the power of transnational corporations, as national actors we need be all the more creative…We need to continue to devise genuine partnerships between people with disabilities, and those who do not identify as people with disabilities, such as myself, to establish and maintain relationships, in service of ending oppression." He called for disability issues to be included in national, regional, and global policy in the areas of innovation systems, technology, and economy. Goggin emphasized the need for openness and honesty in the "long struggle" for inclusive

technologies. "To bring about inclusive technologies I suspect we will need for a long time to come to openly, honestly, and generously discuss matters of power, injustice and practices of exclusion. People with disabilities as we know still face a long struggle to be accepted in society, as equal members of their national communities and cultures."

Goggin closed with the following encouraging remarks.

> "So, as the state reinvents itself, at the most general level we need a re-emergence of the governments that act in the interests of all their citizens and non-citizens. And I think we need human rights law, policy, and practice that puts disability at its heart, and instantiates this—inclusive technologies—and provides a permanent, unalterable political and ethical framework, in which we can collectively bring about inclusive technologies, a fair and just society, in which the business of digital disability may prosper."

Discussion:

Monica Ackermann (Assistive Vocational Technology Associates) asked Goggin how the disability rights movement has informed technology and telecommunications development in Australia. Goggin responded that the disability rights movement "has been incredibly important," however, due to lack of resourcing, there have been difficulties in achieving an organized national disability movement. Tim Noonan (SoftSpeak Consulting) explained that "people actually use their holidays, their vacation time, to do their disability activism work, or their presentations as consumers." Noonan also commented that the disability rights movement has been effective, though not aggressive. "I'd say that Australia doesn't really have a history of very aggressive disability rights, but certainly in places it's been quite progressive, pretty much coming from a conciliatory perspective. But that perspective may be biased because of my grounding in the blindness field."

Goggin described why the disability rights movement has been especially effective and involved in the telecommunications technology area.

> "There are a good number of people with disabilities who have been involved in the telecommunications, policy and advocacy standards area in Australia since the late eighties. And some of those people have been key figures in the [broader] consumer movement as well. So there's been a strong alliance between the consumer movement in telecommunications and the disability organizations."

Francis Charrier (Dis-IT Research Alliance) inquired about the role of open source and free software implementation in the paradox of inclusive technologies. Goggin suggested that open

source technology has a role in discussions about innovation and the new economy. Jim Tobias (Inclusive Technologies) suggested that open source technology embodies a myth of technological utopianism that offers much promise but little follow-through, particularly regarding accessibility.

> "I'm thinking specifically of the Linux-oriented accessibility work that has been done, especially the Gnome Accessibility Project and others. You were talking along the lines of technological utopianism—we have this view, that with better and more technology all the time it's going to be better for more people—I think that that is something of a myth that is embodied in much open source work. It's unfortunate that the follow through which is in the nature of a proprietary business—the support, the documentation, the ability to reach somebody who can speak authoritatively about how you do or do not turn something on—is entirely missing in the open source community, especially with respect to accessibility."

Panelist: Kier Martin (Council of Canadians with Disabilities)

Kier Martin, Coordinator of Programs and Services at the Independent Living Resource Centre (ILRC) in St John's, Newfoundland, approached the session topic from the perspective of consumers with disabilities. The St John's ILRC Community Access Program (CAP) site is consumer controlled, open to the public, and uses Web-4-All, a package of assistive technologies developed by Industry Canada and located in many public internet access sites across Canada. The ILRC-CAP site provides consumers with hands-on access to adaptive technology, one-on-one and group training, and offers information and support to the disability community, private sector, government, and schools. Martin emphasized how the ILRC-CAP site is committed to self-assessment, where people with disabilities decide for themselves what kind of technology works well for them, as opposed to third party assessment.

> "We follow the model of a self-assessment tool. What we do is invite people to come in, put their hands on the technology, try out what they want. I'm not going to sit down and tell anyone, 'this is what is going to work best for you.' People come in and try out, and pick what works best for them. It might be a laptop, it might be a standalone machine, it might be a voice output system, big keys keyboard. People just try everything out in combinations and pick what works best for them."

The St John's ILRC-CAP site is overseen by a steering committee made up of local businesses, accessible software developers, academics, volunteers, and consumers. Many youth with

disabilities have gained employment in the IT sector through internships with the Web-4-All Program and CAP program. The site also offers a computer club that meets every week for which the topics and activities are chosen by the club members. The computer club addresses what Jacquie Ripat (University of Manitoba) referred to at the 2004 Dis-IT Summer Institute as the affective, or emotional, aspect of technology because it offers a safe space for people to interact with technology. According to Martin, the computer club makes the technology less intimidating. "What a lot of people say about this computer club: it's empowering, and it demystifies technology."

Martin summarized what people with disabilities do not want to have in their information or adaptive technology products. He referred to past research with which the St John's ILRC has been involved, including Web-4-All and the participatory action research project, Women and Adaptive Technology (WAAT). In Martin's experience and from recent research findings, people with disabilities do not want a medicalized or institutional look to their adaptive technology. "They like anything that's nice looking—so it's not medical, it's not beige. People don't like beige." People with disabilities also do not want high costs. For example, the more expensive voice browser, JAWS, need not be the only option offered to consumers with disabilities. "There are a lot of high-end web browsers and [technologies] like JAWS, it's kind of like the Mercedes or Cadillac of voice browsers, and you're looking at a price tag of about $1500. There are a lot of other products out there on the market, that work well, and people just want to hear all their options."

Martin added that people with disabilities do not want unseen products or third party assessment, which gauges people's adaptive technology needs according to their disability only. "Limited to their disability-specific boxes, a lot of people go through assessments by third parties on a regular basis. They're assessed by their disability, not what works with them." He explained that third party assessment often results in people with disabilities eventually discarding the AT [adaptive technology] product and making comments like, "'I never knew how to use it, I never really liked it, so I gave up on it. I put it on a shelf, it's never been used again.'" Martin pointed out that people with disabilities often feel "over-teched" from a lack of training and peer supports for using the technology, as well as from having too many devices with little or no access to support and assistive technology that does not work well in all aspects of life (e.g., school, work).

Martin addressed the myth that technology can solve all access problems. He acknowledged that both consumers and developers need to be involved in order to make technology accessible.

> "There's no special little USB compatible magic wand that you're going to plug into your computer and it's going to make all your web pages accessible. People

> need to be made aware upfront that it's going to take a lot of training; it's going to take dedication to figure out how to use those products. Vendors also need to know that there's going to be people calling in and saying, 'how do I fix this? Where's the best place to get it fixed? Where can I get upgrades, service agreements?'"

Martin discussed what he called "the old is new," which is the missed opportunity by industry to recycle or refurbish older AT products. Often AT users still use old versions of technology and have no desire to upgrade these products. "They don't want to let go of their old products or their old computers. It still works well for them. Refurbishing and offering older products to consumers is a little-supported market. Someone's computer gives up…or they've lost that original CD for that product, but it's what's worked well for them in their life, they still want to access that software. A lot of times it's hard to track down these older versions of AT. Many people do not want the upgrades."

Martin then discussed what consumers with disabilities *do* want. Like all consumers, they want:

- variety, stylized, customized technology
- portability
- access
- choice
- mainstream look and name
- support and training
- cost efficiency

He also outlined what "the ideal consumer" would be for business. The ideal consumer would:

- be well-informed
- be willing to take a risk
- know what they want or don't want
- ask questions
- have relationship with company

Martin emphasized the importance of the relationship between consumers and IT/AT companies, which includes service agreements and repeat service. "What I look for in a lot of companies; if a product is upgraded in the next year or two, what's my service agreement? If a new version comes out, I want that new version. I think some of the smaller vendors in our community have really latched on to that to get people to keep coming back." He discussed how smaller companies in Newfoundland offer service agreements that ensure that consumers will be informed of any available upgrades, that upgrades. These upgrades will be ordered in

at the consumer's request, and their technologists will be trained in "some of the bugs and glitches that you're going to encounter if you upgrade."

Martin concluded by recommending the universal access model in the development of information technology. This model ensures that technology is accessible to everyone, including consumers with disabilities. The appeal of the universal access model is that people with disabilities are included in all aspects and stages of the development of technology, including the design stage. Martin suggested the need for evolving disability access guidelines to ensure the success of the universal access model in the development of technology. "Universal access will continue to change, therefore access for people with disabilities is going to continue to change, and that's the reality with the new operating systems."

Discussion:

Deborah Stienstra (University of Manitoba) asked Martin to describe what he sees as the tensions between adaptive technology and wireless technology and the role that wireless technology plays at the St John's Independent Living Resource Centre Community Access Program (CAP) sites. Martin responded that wireless is affordable and made available at the ILRC CAP sites, and gave an example of how wireless improves accessibility.

> "The wireless relationship has opened up a lot of avenues for myself and other interns. Ideally, some of them will talk about smart card technology over the years, wireless technology. Being able to go into a bank, for example, and being able to access your banking information wirelessly would be an ideal situation for folks. So wireless has bullied its way right into the centre, it wasn't an option not to offer, support and explore it. It's also affordable."

In response to a question by Marcia Cummings (Rogers Communications Inc. and Alliance for Equality of Blind Canadians), Martin described how smart cards and Web-4-All work at CAP sites. When smart cards are inserted into a computer that uses Web-4-All, the user's preferences (AT programs and settings) start up automatically. When the smart card is removed, the computer returns to its previous configuration. The combination of smart cards and Web-4-All follows the universal access model: smart cards offer privacy and individual accommodations for individual users, thereby making Web-4-All accessible to everybody.

> "What really needs to happen with initiatives like this is larger companies need to come on line, and see the potential: how people grabbed up those cards and we couldn't keep them in our site. People started going around to other Community Access sites, [asking] 'Where's your Web-4-All?' We did a Web-4-All project in our province and [since then] 84 public internet sites have Web-4-All

> units and other adaptive technology. Most importantly, youth with disability were hired in every one of those sites to train technicians, train librarians, train teachers of the potential of the products."

In response to a question from Mary Frances Laughton (Industry Canada), Martin described the need for evolving requirements regarding accessibility and technology, using smart cards as a case study. "The smart cards were great until Windows XP came out, then suddenly because the smart card devices ran on serial ports, Windows XP didn't support that driver, so we installed the service pack for XP and then it worked for a while. And [then] Service Pack Two came out, and all the lights went on in the hallway."

Joan Wolforth (McGill University) picked up on Martin's discussion of third party assessment and related it to McGill's adaptive technology lab and students with disabilities. She agreed with Martin that it is important for each student to choose their own adaptive technology, rather than for a third party to assess students according to their disability. She suggested that the reasons for third party assessment have to do with how funding agencies operate, how industry markets products, and employers' adaptive technology standards. Monica Ackermann (Assistive Vocational Technology Associates) added that employers tend to list adaptive technology according to disability, not to individuals. For example, a list will read as follows: disability: blind, AT: JAWS; disability: blind, AT: Kurzweil; disability: mobility impaired, AT: Naturally Speaking, etc. Wolforth summed up the problem with third party assessment and disability-specific technology. "Some of the work we have to do with the way that industry markets products, and also the way that agencies fund products, is to build in that very thing that you're saying. It should not be a third party decision, it needs to be an individual's decision about what they like to use."

Laurie Beachell (Council of Canadians with Disabilities) raised the topic of the digital divide, pointing out that people with disabilities are part of what "we generally, as an advocacy association, describe as poor." He asked Gerard Goggin and Jim Tobias if there are statistics in Australia or the United States about the access people with disabilities have to technology, adding that there are no such statistics in Canada.

Gerard Goggin described the current research on access to technology for people with disabilities in Australia as "patchy," mostly quantitative studies by the Australian Bureau of Statistics regarding the number of people with disabilities who are connected to the internet. He commented that the "counting activities" to produce these statistics are "driven by notions of the information economy and in some sense around the rhetoric of the digital divide debate." Tim Noonan (SoftSpeak Consulting) added that many of the statistics in Australia dealing with disability are often related to aging.

Jim Tobias described the statistics about people with disabilities' access to technology in the United States as "little snapshots," including statistics on household use of information technology from the National Telecom and Information Administration and statistics on users of audio description services from the American Foundation for the Blind. He agreed with Beachell that it is important to acknowledge the digital divide in research on inclusive technology, stating, "if we only serve the leading edge super-crips, we really haven't done our job."

Beachell's question sparked a discussion about the digital divide. The discussion included both anecdotal and qualitative research evidence of certain populations among people with disabilities who do not access technology. Audience and panel members offered reasons for the lack of access to or interest in technology—what Michelle Murdoch (Council of Canadians with Disabilities) called "a big disconnect" between people with disabilities and technology. For example, Tobias said people with disabilities who do not access technology tend to be "people who are older, less well off, less educational attainment, and have acquired disabilities by aging. They are socially isolated; we know from aging in general that they have very poor information networks, they don't learn about products, they don't have peers who use technologies, and that's the bulk of people with disabilities." He gave an anecdotal example of an older person who reads the newspaper and is losing reading sight, who would likely resist reading the newspaper over the internet using a screen reader.

> "We're asking them to make two technological leaps in one. We're asking them to use a computer and then we're asking them to use a screen reader or a screen magnification program; it's not easy to set up, and it's really too much to ask. So they shed the function, they just slough it off and they say, 'well, I'll get my news from the radio.' From a market perspective that's terrible."

In response, Deborah Stienstra conveyed some findings from the Dis-IT Research Alliance's e-Democracy research on electronic government consultations.

> "Accessibility standards generally are geared to only a certain type of user, and they don't address poverty, they don't address fear of technology—the affective issues around technology. They don't address isolation or some of the mental health issues that come up with public use of technologies. The ways in which people engage with technology don't get addressed at all in how we respond to access more generally. We don't have statistics about how, in the best possible world, you would interact with information technologies."

Michelle Murdoch added that in her research project, Women and Adaptive Technology (WAAT), the women she interviewed were well-educated and who, "by mainstream society

standards are significantly physically impaired." Murdoch described the women's resistance to using technology as a "big disconnect," the reasons for which are complicated and unclear.

Kier Martin offered anecdotal evidence of students with learning disabilities who experience emotional, or affective, barriers to technology. Martin paraphrased the comments of these students, concluding that for this population group, there is a stigma attached to technology.

> "Their answers are so different. 'I feel like a nerd, I feel like an idiot. I'm sitting at the back of the classroom, I'm the only one with a computer, no one else has got one. Everyone knows I'm different, why do I have a computer?' There's a stigma attached to it."

Beachell summarized the discussion from a community advocacy perspective, calling for the need for statistics and data to effect social change and increased access to technology for people with disabilities using the economic argument. "If we think creation of change is based on some of our economic argument and marketing, and we don't have basic data on who our market is, we have a huge challenge in front of us in how we present our argument."

Steve Jacobs (IDEAL Group, Inc.) initiated a discussion about the role of technology in literacy. He cited data from The Hadley School for the Blind which indicates that speech synthesizers and screen readers are eroding the number of students who learn to read Braille. This comment sparked a spirited debate amongst participants and panel members about the relationship between technology, literacy, and education.

Marcia Cummings advocated strongly for the importance of learning Braille, calling it irreplaceable and superior reading literacy. "There's no way that you can compare reading a book in Braille or reading it with your eyes from the printed page to reading it with a screen reader off of a computer screen; there's no substitute…I don't consider someone who's used a computer all their life as being literate." Jim Tobias offered a different perspective. "I'd be perfectly happy if kids learned Braille for labeling purposes only, so they can read the numbers on the elevator or something like that, *if* they always had what they needed to get speech output."

Tobias framed the discussion as "normative versus descriptive," where normative describes how things "should be," and descriptive describes what is actually happening. "I'm reminded of the old days in the Polio epidemic when clinicians forced people to try to walk with braces and crutches, and never allowed them to use wheelchairs, even though those were much better mobility devices. So I can speak heatedly about it, but I don't know which side of the argument I'm on."

Tim Noonan (SoftSpeak Consulting) framed the argument as people who are "pro-Braille" and people who get labeled "anti-Braille" and advocated an approach that is "more middle line." "I am by no means anti-Braille, although it's very hard not to be labeled anti-Braille by some super-emphatic Braille advocates unless you fully endorse it, in every context. I actually am pro-Braille—but when it is right for the person and their situation. I am a very strong advocate of blind and low-vision students being skilled-up in Braille literacy."

Goggin framed and summarized the discussion as a "question about literacies" and cautioned against the use of categories with normative charges that privilege reading Braille as a superior literacy to reading using technology. "The illiteracy charge, I find, is the bit that's not helpful, because that carries such a strong normative charge. …It is about literacies, and the complex changes in those, with respect to technologies."

ROUNDTABLE: Are accessibility standards, regulations, guidelines, etc. the way to achieve a Canadian IT industry that is successful/profitable and inclusive of people with disabilities?

Host: Doug Brolly (RBC Royal Bank bis Group)
Presenters: Helen Maskery (Maskery), Ian Brodie (Canadian Standards Association), Dave Dougall (Research In Motion), Susan Mazrui (Cingular Wireless), Mary Frances Laughton (Industry Canada)

Presenter: Helen Maskery (Maskery)

Helen Maskery addressed the session topic from the private sector perspective. She stated that; on their own, standards, regulations, and guidelines are not sufficient to make the business case for achieving accessible mainstream ICT in the private sector. "Standards and guidelines and regulations definitely have a role to play, but in terms of driving a business case they are not the answer from the private sector." She asserted that although accessibility is the "right thing to do," there is not a big enough market to compel industry to include it in their criteria of adequacy for developing IT, adding that "in business you can't always do the right thing."

In her PowerPoint presentation, Maskery described effective ways of making the business case to the private sector, the definition for accessibility, "anywhere, anytime by anyone," and how standards, regulations, and guidelines are useful once the business case is made. She concluded with the example of Network Equipment Building Systems (NEBS), a model that has been very influential in the telecommunications industry, to illustrate her assertion that standards and regulations must be reinforced or validated by independent, standardized methods.

The business case is the economic argument for making IT's accessible. At the 2004 Dis-IT Institute Laurie Beachell (Council of Canadians with Disabilities) commented that it is important for the disability community to learn to make an effective economic argument for making accessible IT's. This dialogue continued at the 2005 Institute. According to Maskery, the business case comes from the following economic considerations, in order of most effective to least effective:

1. actual lost sales
2. increased sales in current or new markets
3. potential for lost sales
4. higher margins

> "The business case does not include accessibility or usability, and in business, you can't always do the right thing. The thing that really hurts in the private sector is market sales; if you can actually point to something that says, 'you have lost x millions of dollars because of Y', you've got a direct causal relationship that will get people to pay attention to you. Increased sales, either in the current or new markets is another way to get companies to make changes, but may not be enough in and of itself. There will be hesitation unless you can prove absolutely that the result of doing Y will make them X million dollars in return. The potential for lost sales can also be a big motivator, but again, in and of itself it may not be enough because it's in that potential category. Another area of the business case which is an even harder to make is in terms of higher margins. The cost of doing business for a company is affected by how much it costs to develop the technology to get the product out there and support it once it's out there. There are three ways you can maximize profit when looking at margins: (1) You can sell at a higher price, which is not something you to want to hear because the cost of assistive technology is already high. (2) You can reduce the cost of development via guidelines and standards. (3) Finally, if you can show that there is a direct relationship between designing for usability or accessibility and a reduction in the cost of support (call centres, returned products, etc…), then you've got a potential angle."

Maskery also suggested taking consumer demand into consideration when lobbying industry to make accessible technology "because if the consumers don't buy then you don't make money." Ultimately, Maskery concluded, "it all comes down to money."

Software engineering, compared to other types of engineering, is a relatively new science or skill. "Some people in the industry have referred to it as still being a cottage industry." Maskery explained that not many companies are at the highest level of process.

> "The maturity of the software development process is not that established yet, there's a lot of talk about it and there's a lot of driving towards it. However, when you think about taking standards and guidelines and try to insert them into organizations, a lot of times the process isn't there to be able to receive them. That's just part and parcel of understanding who we need to influence with the standards and guidelines in what way."

Maskery discussed what she called "one answer to the business case" in recent research done by her company, Maskery, for Industry Canada. Maskery (the company) investigated what it would take to make a business case in five mid-to-small companies for delivering accessible and usable technology. For the study, deified accessibility as products that are usable "anywhere, anytime by anyone." According to Maskery, all five companies were compelled by this definition of accessibility and were persuaded to design to accessible standards, because it spoke to enterprise-wide solutions and would help with their business case.

> "As soon as we put this definition of accessibility in front of the people we were interviewing, they said, 'that is fundamental to my business.' Because this [definition of accessibility] then talks about the challenges: they've got enterprise-wide solutions, where mobility doesn't necessarily mean it's wireless, it means the individual is moving around and needing to be effective in different places at different times, and it could be at any time of day and night. And so it was unanimous. The five companies that we talked to said, 'this is fundamental to my business, now if you can help me with this problem, now we're talking, because now you're going to help me with my business case.'"

Once the business case is made, Maskery asserted that standards, regulations, and guidelines are useful in order to:

- combat negative myths (e.g., making accessible ICT is too expensive, too much effort)
- develop mainstream ICT that is usable anywhere, anytime by anyone
- prove the product is usable anywhere, anytime by anyone through standardized testing
- enforce procurement of ICT that is usable anywhere, anytime by anyone

Maskery identified the US Telecommunications Act of 1996, particularly section 255, as an example of accessible procurement that is not being enforced effectively, and emphasized the need for the Government of Canada to enforce accessible procurement. She sited Maskery as a prime example of why it is important for the Canadian government to enforce the procurement of accessible ICT.

> "My company does a lot of work for the public sector, and I've seen a lot of the huge multi-million dollar RFP's [requests for proposals] go out for content

> management systems, government-wide systems, this, that and the other. Throughout the 200 to 300 pages of the request for proposal I'm looking for anything that says, 'accessibility or usability,' and it's not there. The government is not including ways in the RFP's that allow me to be able to go to any of the big mainstream vendors and say, 'include me in your proposal because I can give you a winning edge because we can do usable access tools.' That's because any company that includes my services in their bid is at a disadvantage now because I cost money. I'm in the private sector and I charge for my services and the services of my company. Now, because of the way the evaluation process goes with price-for-point. If there are no points for usability or accessibility, then there is no way that any IT vendor can get a benefit from having me or any of us on their team. Therefore having the standards and legislation can help drive appropriate procurement processes of which the Accessible Procurement Toolkit is one of the support mechanisms."

Maskery concluded by discussing Network Equipment Building Systems (NEBS) as an influential model for making accessible ICT in telecommunications. NEBS provides a set of published criteria used to assess whether or not network equipment will plug and play safely in the service provider's network, recognizing three levels of compliance which supports the product development process. Independent certified verification companies perform the assessment, and service providers and governments require that products meet the NEBS criteria. Maskery offered NEBS as "an example of different ways of looking at standards and regulations and some of the things that need to be considered by the private sector."

Discussion:

Following Maskery's presentation, Laurie Beachell (Council of Canadians with Disabilities) initiated a poignant debate about the tension that exists between the business case and human rights arguments for accessible IT. Beachell was concerned about the implication that the responsibility rests on the disability community to make the business argument and that the private sector does not respect the diversity of the disability community nor does it feel any obligation or responsibility to be inclusive.

> "Certainly, the disability rights community has to get better at doing the business case. But if there is not a right here, if there is not also an equality argument to be presented in this, and if there is not some regulation and enforcement at the outset—not after having conducted a business case plan, and presented it and got some buy-in, but a requirement—I get worried. I'm worried that in your presentation the 'you' who must do this, 'you' who must do that, is the disability rights community."

Beachell was critical of the business case because it has "no requirement on business and companies to be respectful of the diversity of our community, to be respectful of the nature of our community and to find ways in their plan that they are inclusive—not that we have to convince them to be." He emphasized his point by bringing up the Council of Canadians with Disabilities' current struggle with VIA Rail's purchase of inaccessible passenger cars which is currently at the Supreme Court of Canada.

> "Our community has to get better at the business case, but if it's not coupled with an obligation, a right and a responsibility to create a more inclusive society, I believe we will be exactly where we are right now in having to fight Via Rail at the Supreme Court of Canada for buying inaccessible passenger rail cars, because we have no regulations, no enforcement, and no mechanism to make them do it."

Maskery agreed with Beachell, but identified the need to make the economic argument to industry to get more immediate results. "I would agree 100 percent with what you're saying. What I'm trying to reflect here is how the mentality is within the private sector and how the decision-making goes on. Until it gets to that point, what other ways have we got to influence?"

In response to Beachell, Jim Tobias (Inclusive Technologies) elaborated on the nature of the phrase "business case," calling it a "subtle political totem" or a "peace pipe." Tobias described how the business case is not necessarily only about the bottom line, but can also include stakeholder, political, regulatory, and human rights issues that are difficult to measure.

> "Many internal organizations give input into the business case or decision being made. I see the same factor used as a negative in one case and a positive in another, because the underlying politics—the stakeholder issues, the regulatory issues, the sense of justice and equality and what have you—were being played on a level that corporations find hard to measure. Just because we use the phrase "business case," doesn't mean that it's only about dollars."

Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland) explained that in Australia, consumers with disabilities have found it useful to draw on the economic argument (or business case) in tandem with a human rights argument to persuade industry to make technology accessible. "One of the ways in Australia that the disability consumers have consciously tried to deal with this is to always run a twin argument, a twin discourse. You run the arguments about the businesses, about the markets, and that they're incredibly important, then you run them in tandem with the argument about rights and about democratization."

Tobias pointed out that corporations will "spend money to stand in a place that's safe". "Corporations, large organizations in general, are *uncertainty reducing mechanisms*; they're driven to clarify the environment in which they work because they can't make decisions with all of the raw information around them, so they'll spend good money just to reduce uncertainty. This is where those [regulatory] issues come into play." Beachell added that "regulation reduces uncertainty" because "you know what you are required to do." Regulation, then, can be a way to achieve an IT industry that is successful and inclusive of people with disabilities.

Mary Frances Laughton (Industry Canada) agreed with Beachell that the private sector should be compelled by an obligation and responsibility to make inclusive products. "We need to have the kinds of mechanisms whereby the industry meets the needs [of the disability community], that's the legislation side of it." She also identified a tension between the two ways in which the roundtable question could be answered:

1. "Are people with disabilities involved in the successful/profitable IT industry?" or
2. "Is the successful/profitable IT industry producing goods and services that can be used by people with disabilities?"

As a federal government employee, Laughton positions herself in the role of one who influences industry to incorporate accessibility into their companies. "I sit in the Information and Communications Technology branch of Industry Canada and my job is to push those [industry] folks to be considerate of the accessibility issues."

Presenter: Ian Brodie (Canadian Standards Association)

Ian Brodie's presentation described the Canadian Standards Association (CSA), the definition, limitations, and role of standards in Canada, and the CSA standard on barrier-free design for automated banking machines (ABM) and its impact on industry.

Founded in 1919, the CSA is the oldest standards organization in Canada. It is non-profit and member-based, which, Brodie explained, means that standards development activity is run by volunteers. "The committee members that develop our standards are volunteer members and they really make up the core of what CSA does, certainly in the standards area." CSA has published approximately 1700 consensus standards and is involved in 37 areas of technology. Brodie described accessibility as "a relatively new area of standards development work."

Brodie described standards as "living documents" that evolve over time, especially in the area of technology. They are developed through a consensus process that involves various stakeholder groups, including government, industry, and user groups. "What we call a catch-

all for any other stakeholder that's interested is 'general interest' and that certainly can include academia that is doing work in that area." Standards outline industry guidelines and best practices and stipulate requirements for the safety, performance, and operation of products, processes, services, and systems. Brodie noted, however, that "really, standards set the minimum level" of requirements. Unless standards are referenced in legislation, they are voluntary in Canada. The responsibility to use standards lies within organizations, industry, associations, and other groups. These groups can and often do voluntarily implement standards into their corporate policy.

Standards can be precursors to laws (e.g., CSA Privacy Code), be referenced in laws, and can supplement laws. Standards can be reinforced by laws and go beyond laws, as in the case of forestry management standards which go beyond provincial requirements to allow forestry companies to sell globally. They can also address legal weaknesses (e.g., cross-border weaknesses). Organizations can implement international standards within their organizations in various divisions around the world. "Implementing standards at a global level certainly can help transcend borders."

According to Brodie, standardization is integral to the changing global marketplace and promotes economic growth and trade. "Within the global marketplace today there is more of a trend towards having global standards so that organizations that are in many markets can basically try to design their product to meet one type of standard. We're certainly not there but we're moving towards that." Brodie explained that standards can influence the research and development of new technologies, build competitive advantages, increase public confidence in products and services, provide compatibility with foreign markets, and solidify market leadership.

He focused on CSA B651.1 Barrier-free design for Automated Banking Machines (ABM)s, published in 2001, as a case study for exploring the impact that accessibility standards can have on industry. During the 1990s a number of human rights complaints by people with disabilities about the inaccessibility of ABMs prompted the Canadian Human Rights Commission (CHRC) to conduct a study on the accessibility of ABMs, the results of which "indicated a low level of accessibility." The Canadian Bankers Association (CBA) conducted subsequent research on existing standards and consulted with the disability community in order to address the issue of accessible ABMs, which culminated in a report.

In 1997 the CBA approached the CSA in order to develop a standard. This work fell under the jurisdiction of CSA's technical committee on barrier free design. A subcommittee was then formed which included

- manufacturers
- financial service groups

- users
- regulators
- Industry Canada
- Canadian Transportation Agency (CTA)
- other organizations

The first edition of the CSA B651.1 was published in 2001 and in 2005 the review process for the development of the second edition of B651.1 will begin because, as living documents, standards "change to reflect what industry or technology changes are occurring or what is happening within that sector of industry to make sure that they're current." Brodie described the impact of this standard to be significant in increasing the accessibility of ABMs. "Basically all the banks now are requiring manufacturers to meet B651.1." Of the 32,000 ABMs in Canada, half are bank-owned and half are what are called "white label machines," which are ABMs often found in convenience stores and gas stations that have no affiliation to any financial institution. White label ABMs are not required to meet the CSA B651.1 but Brodie said that the 2005 Accessibility for Ontarians with Disabilities Act "might have an impact on the uptake and implementation of standards." Brodie concluded his review of the impact of CSA B651.1 on industry by relating a manufacturer's perspective, who commented that the publication of CSA B651.1 "spawned a whole new generation of banking machines."

The development of the second edition of B651.1 will address issues of keeping the standard current with respect to software, security, and wireless technology. "Some of the issues which we found were a bit either ambiguous or certainly need clarification or was more of an oversight with the current edition is knee space, allowing front on access, and graphic symbols." The CSA will also be considering product certification for accessibility in the form of a label or sticker that manufacturers can place on ABMs "to indicate that that product is accessible or meeting a certain standard."

CSA is also looking at developing a standard for self-service interactive devices (e.g., kiosks, ticket machines). Internationally, Canada is involved in ICT1, a joint technical committee that recently established a Special Working Group on Accessibility and IT for the International Organization for Standardization (ISO), which is concerned with user requirements and an inventory of accessibility standards and gap analysis.

Discussion:

James Watzke (British Columbia Institute of Technology) brought attention to the political climate in which standards are created. He pointed out that the Canadian Bankers Association (CBA), invested money in the research and production of the CSA bank machine standard. Watzke raised this issue in response to Brodie's presentation but also in response to Laurie

Beachell's (Council of Canadians with Disabilities) earlier commented that rights, obligations, and regulation need to be a part of the industry decision-making process. Watzke gave another example in which the Canadian Bankers Association invested money in research at the British Columbia Institute of Technology with the intention of creating a standard.

> "I can tell you that they gave my R & D [Research and Development] group quite a bit of money to do the research with the understanding that this was 'going to lead to a standard.' Well, we delivered, but that initiative evolved differently. Mostly because at about the time we completed the research, *component standards*—as opposed to a single standard for an entire ICT—which are becoming more and more necessary and common in the CSA and ISO due to the rapidly changing nature of technology, came on the radar screen. What we're going to have are component standards—and then you can, in your mind, figure out how much more complicated that makes the world. We may lose in the end because that's also a reason for an industry to say, 'That's too much trouble. Instead of one standard, we now have to participate on six standards committees, because our product has six of the components that CSA or ISO might be working on.'"

Gary Birch (Neil Squire Society) asked Brodie to elaborate on what motivated the financial institutions to require their manufacturers to adhere to the standard. Brodie responded that the catalyst for this decision was the human rights complaints made to the Canadian Human Rights Commission regarding inaccessible banking machines. He added, "I think the banks are realizing that with the demographics and older population, there's certainly the aspect of wealth management...and certainly the next generation of people are users of technology."

Tim Noonan (SoftSpeak Consulting) described the political climate in Australia that compelled the Australian Bankers' Association (ABA) to create standards for accessible banking to be similar to the situation in Canada—the ABA was also motivated by human rights complaints to the Australian Human Rights and Equal Opportunity Commission (HREOC). The ABA gave a commitment to HREOC to develop four industry standards to do with telephone banking, web banking, ABMs, and electronic funds transfer point of sale. These standards were not developed through Standards Australia because "the process was perceived to be very slow." He fears that security and authentication issues in web banking will impede the progress that accessibility standards have made. "All of a sudden security has taken precedence over any accessibility issues, and the fight's going to be have to be commenced again from square one, I suspect."

Jim Tobias (Inclusive Technologies) pointed out the social environment in which banks and manufacturers operate. "The bank is the customer of the manufacturer, so it's really no skin off

the bank's nose if the manufacturer has to make an ABM the way that the standard is going to dictate." He outlined how the banks and manufacturers would likely interact in the process the leads to the decision to create standards.

> "It's very likely that before they decided to come together and work on a standard, each individual bank approached one or more of its manufacturers and said, 'would you do this for us?' The manufacturer then had to quote them a price for the entire R & D effort, which was probably too expensive and the banks quickly realized, as has happened many times in their business before, that if they all get together and work on it, then all the manufacturers will have to respond."

Tobias also noted that, in the international context, there is a "globalization of accessibility" that has a "tremendous potential power" to motivate industry to understand accessibility issues and to develop accessible technology.

Laurie Beachell (Council of Canadians with Disabilities) identified banking machines as a case study that is useful for understanding the politics of standards and how the disability community can use standards to achieve accessible mainstream technology.

> "I think banking machines are a wonderful case study, in looking at where it began, the players, the time frame, what we need at this point is – so after all of that, how greatly improved is access? And for certain populations in the disability community, the access has not improved significantly … It has is in some instances improved in certain locales where you have a very active outspoken individual who has taken their local bank to the media and said 'I can't do business there.' So what are the changes that occurred? ... I think we have to look at what was the factor that created change here and how significant was the change over a period of fifteen years."

Kier Martin (Council of Canadians with Disabilities) raised the issues of the inaccessible independently-owned white label banking machines which are not obliged to follow accessible banking standards. He pointed out that in rural communities in particular, "banks are closing up shop" and accessible bank-owned ABMs are being replaced by inaccessible white label machines.

Martin described attending a conference on technology and accessibility at which he encountered a "super machine" ABM that had speech output, Braille keys, and a brightly lit LCD pad. When he went to use the machine the day after the conference, however, it was no longer there. When Martin asked why the ABM had been removed, he was told, "'people with

disabilities are gone, the conference is over…'" Martin concluded with a persuasive argument for why accessibility standards should apply to white label ABMs. "The banks allow these third party machines to access their company. Shouldn't there be standards tied on to that?"

Jim Tobias expressed his concern regarding the results of follow-up studies on talking ATM's now in the US.

> "In tracking the utilization of the speech capability in the ATM's, banks have discovered it is insignificant. Now they look at this, and they have learned exactly the wrong lesson. You could blame its under-utilization on the fact that it was brought into existence via litigation, it was adversarial from the very beginning, and they wound up doing something they didn't really want to do. They developed a one size fits all solution [that turned out to be only useful for a limited number of people]".

Tobias argued that US banks now believe that accessible technology costs them lots of time and money and ultimately is not utilized by many people. Tobias's concern lays in future adaptations and litigation.

> "We know that the technologies are going to evolve and how are they [banks] going to respond the next time we come at them with a request for another kind of accommodation? We really have to think about this because it's their business, and they're going to have to live with the decisions that we force on them."

Presenter: Dave Dougall (Research in Motion)

Dave Dougall, the Accessibility Program Manager at Research in Motion Limited (RIM), offered a case study of the impact of accessibility standards and regulations on RIM as a Canadian manufacturer of wireless telecommunications technologies. RIM has experienced dramatic growth since the launch of the BlackBerry in 1999. In 2004, RIM introduced an Accessibility Program to ensure the proper focus was being placed on the accessibility of BlackBerry devices.

Dougall explained that RIM developed the BlackBerry "to provide a premier mobile email solution," but coincidentally, it also "became the device of choice for a large segment of the deaf and hard of hearing community." He pointed out that the accessibility of the BlackBerry was not a result of regulation.

> "It's interesting to note in the context of our discussion today, that the initial success of the BlackBerry within of the deaf and hard of hearing market was not

> directly a function of regulation, but rather through the fulfillment of a mobile communication need that that particular user community required not unlike the general population that uses BlackBerry. Certainly it has helped that the BlackBerry is a device that people want to be seen with it and it's grown into a mainstream high status product, used by investment bankers, lawyers, celebrities, people on the go, including people that are deaf and hard of hearing."

Dougall pointed out that accessibility regulations add "another dimension" to the already highly regulated marketplace of telecommunications (e.g. FCC in US, Industry Canada in Canada). He commented that the smaller market size of countries like Canada and Australia require information technology companies from those countries to develop products that are targeted for larger markets, including the US, Europe, and the newer emerging markets in Asia and Latin America. He emphasized the importance of harmonizing global standards.

> "Canadian companies are very cognizant of world-wide regulatory and compliance requirements that must be met in terms of selling into those countries. As a manufacturer developing a mass market product, regulations adopted on a country-specific basis that are unique to that country and not consistent with the regulations in place in other markets can in fact create barriers to market entry or barriers to a product remaining in market."

To make their products accessible according to the US requirements for hearing aid compatibility, RIM's Certification and Compliance Department tracked the Federal Communications Commission's (FCC) 2003 modification of the Hearing Aid Compatibility (HAC) Act of 1998, which now requires wireless phone manufacturers and wireless phone service providers to make digital wireless phones effectively usable with hearing aids. RIM joined the Alliance for Telecommunications Industry Solutions (ATIS), which had initiated the HAC Incubator Group. This group is comprised of cell phone manufacturers and carriers, whose purpose was "to work closely together to develop solutions for industry-wide technical challenges such as hearing aid compatibility with digital cellular phones." Dougall also mentioned the ATIS Product Labeling and Outreach Efforts working group which ensures that standards and legislation are implemented through user guides and product packaging. "There are many steps in the chain, not just the engineering aspect but that important communication aspect of what the legislation actually means and how it's being brought to market."

Since the success of the BlackBerry, RIM has received an "increase in the number of accessibility inquiries over the past two years which has led to the formal implementation of an Accessibility Program." That same year, RIM hired an Accessibility Consultant in order to

familiarize the company with US legislation in particular, focusing on Section 255 of the US Telecommunications Act, and Section 508 of the *Rehabilitation Act*.

The RIM Accessibility Program includes Dougall as Accessibility Manager and an Accessibility Coordinator, who is formerly of the Canadian National Institute for the Blind (CNIB), and has a background in ergonomics, human factors, and assistive technology. Dougall emphasized that raising awareness of accessibility issues within and outside of the company is an ongoing priority of the RIM Accessibility Program.

> "It is an ongoing challenge within our organization and with our carrier partners as well as our end customers, to raise the awareness level of accessibility requirements, and how that relates to the features of the product, as well as the service infrastructure that needs to be in place to support them."

Dougall reviewed the core areas on which the RIM Accessibility Program focuses:

- Training and Awareness
- Inquiries Management
- Product Development Process (PDP)
- Outreach Program

He explained that training and awareness is "critical both internally within our organization as well as externally with our carrier partners and our customers. We have conducted accessibility awareness training sessions with our contact centre managers and team leads to start to socialize them to the types of inquiries that we're getting and how our product features relate to those inquiries." Inquiries Management, it follows, is concerned with the development of processes and procedures with RIM's Contact Centre. Dougall noted that there are often "subtle nuances" to accessibility inquiries which requires a more "holistic understanding" from the company.

> "You seldom get two inquiries about accessibility that are worded the same way or that you could use an FAQ standard response for that particular individual. There are often many subtle nuances, users looking at the challenge or the question that they have from a slightly different perspective. It requires individuals within the organization that have a more holistic understanding of the product features and accessibility features and how the two are coupled so that you can properly inform the customer, the carrier or the sales rep what the options are in order to assist that end user."

The Product Development Process, Dougall explained, requires involvement at all of the appropriate phases in the "product life cycle." For example, RIM includes accessibility

requirements and features in the market requirement documents, which "feed into engineering." Accessibility requirements are also included at the design and implementation stage, "providing feedback to the engineers in terms of translating the market requirements into product features that will meet the expectations of the various disability communities and treating those elements as an inherent aspect of universal design." Dougall also mentioned that involving the disability community in beta testing products is something RIM recognizes "as an important element moving forward." He mentioned the challenges of the "Commercialization Phase," which includes accessible documentation formats, training material formats, and information for RIM Contact Centre and sales representatives, as well as to RIM's extended carrier partner organization around the world in multiple languages.

As part of its Outreach Program, RIM has participated in many accessibility events in 2005 including the Section 508 IDEAS Conference in Washington, the Wireless Centre of Excellence at the SHHH Conference in Washington DC, the Assistive Technology Industry Association (ATIA) 2005 Conference, the California State University Northridge (CSUN) Conference, the CTIA Accessibility Workshop which was a new initiative that was held at the CTIA Wireless Show in New Orleans, and the TDI Conference in July. Dougall emphasized the importance of outreach and communication about accessibility when he said "We certainly recognize the importance in establishing ongoing dialogue with the consumer groups representing the various disability communities since there is so much to be gained in terms of increased dialogue and information sharing."

Dougall stated that there are "inherent tradeoffs" in making accessible products. For example, sacrificing battery life for an additional accessibility feature is a difficult decision. The overall cost of a device is another important tradeoff to consider when adding accessibility features to products, which is easier to do with software than with hardware. "The beauty of software is such that it doesn't become an incremental cost to the device, whereas there are other features that do directly impact upon the hardware cost of the device, and it becomes a different conscious tradeoff that needs to be made."

Dougall stressed how "it's important to continue to foster an atmosphere in which universal design inherently takes into consideration all potential user communities including those with disabilities." He suggested making features that are perceived to be accessibility features available as part of the standard product, which presents these features as beneficial "to the masses" and will likely not increase the cost of a product.

> "In this case, regulation is not required, and the free market forces will bring forth these features. The key is to have a better understanding in terms of usage case scenarios, for the particular user communities and disability groups. Relaying that information to manufacturers such as ourselves helps us

> understand how we can modify a particular feature that's already in a product, tweak it to make it more accessible, or whether there are new emerging features of products that could be added."

Dougall concluded that "promoting harmonization of the different standards and policies and guidelines from a global perspective is a very important element to consider." He referred to the speed of technology development as holding "exciting promise" for accessibility issues as well as an "ongoing challenge to ensure that any policies and regulations that are in place are kept up to speed with the change in the technology landscape, and to ensure that the legislation has the ability to be modified accordingly as different technology elements are introduced."

Presenter: Susan Mazrui (Cingular Wireless)

In a presentation delivered via the web, Susan Mazrui defined and discussed the pros and cons of accessibility standards, regulations, and guidelines, and concluded with recommendations for how to encourage industry to make accessible IT.

According to Mazrui, accessibility standards cannot eliminate all barriers in all situations.

> "The tough thing about accessibility standards is the fact that, given the wide range of tools and practices people use to address disability, individual preferences cannot always be addressed. Sadly, some people will be left behind. When you're developing standards, something that's consensus-based, you get to a point and say that is the best we can do."

She recommended, therefore, technical standards as an achievable goal. "Technical standards are absolutely essential when interoperability is required." She added that if technical accessibility standards are uniformly adopted proactively, they can bypass the need for regulation.

Regulation is, however, closely linked to accessibility standards. A positive aspect of regulation is that participation becomes mandatory for businesses, which produces consistent solutions for accessibility. Less positive aspects of regulation occur in the language used, which, Mazrui explained, can be "somewhat vague," "open for interpretation," and "can include loopholes." "A company can feel" she said "that they're doing the right thing and by following regulations yet these may not provide enough specificity or may be too specific and limit the creation of innovative accessibility solutions.

Regulation can be effective in situations where a market incentive is missing to make technology accessible. "If there's interoperability, if there's a standard interface that's needed, sometimes you need rules and regulations to get companies to agree to develop a technical solution." She added that industry technology specialists must be an integral part of the regulation development process and that effective regulations must be "technically feasible," should point to "known solutions or well-tested standards," and "provide corrective measure rather than punitive enforcement." They should also be developed with input from people with disabilities, make clear the role, if any, of assistive technology, and should directly impact all parties responsible or involved in ensuring the accessibility of products.

> "A variety of different perspectives needs to be addressed for solutions to be effective. Only by working cooperatively with manufacturers (mainstream and AT), service providers, and consumers can we address the access needs of people and prevent or preclude access are being inadvertently eliminated."

Mazrui outlined the important role of guidelines, which can "provide 'tools' that help in building in solutions." She commented that "sometimes people will attempt to do the right thing, but if they don't understand the underlying reason, they may have serious problems." She gave the example of an OCR (optional character recognition) handheld device, introduced more than twenty years ago, that was flawed in a manner that might have been prevented if proper guidance had existed.

> "It was introduced for the blind community. But the problem with the handheld device, however, was the fact that it had no method of determining you were on the line that needed to be scanned, except through sight. And so you actually had to be able to see the line to scan it effectively. That was an obvious fatal flaw to people who are blind -- but they had not been invited to the design table."

Guidelines that provide the explanations behind the accessibility requirements, can be updated, can help designers determine success, and can "help clarify requirements for products and services which have not been developed in the initial release of an order."

Mazrui gave recommendations of initiatives to encourage industry to provide innovative and accessible products and services, including:

- purchasing power of federal government
- tax and sales incentives
- good publicity, awards or other public recognition, which adds value to a company's brand
- awards of recognition
- requirements that are technically feasible and unambiguous
- opportunities for industry to establish relationship with disability community

Mazrui offered a closing anecdote about the way in which accessibility issues are communicated and integrated into development of products at Cingular Wireless.

> "The work that we have in Cingular Wireless includes a Wireless Access Task Force. These happen to be individuals who represent major disability organizations who are very knowledgeable on disability access issues. But the reality is, the interaction that we have from product managers to senior executives, to engineers, seems to be a major influence on the decision making process. …There's so many competing interests in businesses today, that having that personal commitment, as well as leadership support, is essential."

Presenter: Mary Frances Laughton (Industry Canada)

Mary Frances Laughton described the Government of Canada as both a regulator and an organization subject to regulation. She provided a series of examples of the way in which the Government of Canada is a regulator and its impact on industry. She began with what she considers to be the Government of Canada's most successful policy, the Common Look and Feel guidelines for Government of Canada websites.

> "Canada was the first federal government to adopt the Web Content Accessibility guidelines from the World Wide [Web] Consortium as its national standard, and we did it slightly differently from the. The Americans decided to set a date at which everything would be accessible. Canada decided that everything would be accessible back to the year dot."

Laughton reported that since the December 31, 2002 deadline, 97 percent of the government web pages surveyed meet the Common Look and Feel guidelines. This move on the part of the Government of Canada has stimulated growth in the accessible design industry.

> "A whole slew of new accessible web design companies developed in Canada. It has created an industry sector; there are at least 35 companies which truly can claim to be accessible web design companies, right across the country from Newfoundland to Vancouver Island. Have accessibility standards achieved a Canadian IT industry that is inclusive of people with disabilities? The answer to that question is absolutely, they are helping."

Laughton offered another example of the Government of Canada as a regulator regarding captioning on television.

> "Canada was also the first country to mandate, through its regulatory agency, a 100 percent captioned day. In 1998, CTV [Canadian Television] started to launch 100 percent of its prime time captioning, and we were the first country to achieve that. That was a regulation. The problem with that regulation is that there were no standards that went with it."

Laughton discovered the impact of regulation without standards while experimenting with closed captioning by watching TV for a week without audio. She knew the regulation was fine, but it soon became obvious that without the support of a standard, the captioning was incomplete and hard to follow.

> "That was the week that my brother was being held in Bosnia, I would be watching the CBC news, I'd hear the story, and then I'd hear, 'and now we'll hear from Anna Marie Tremonti on location' … silence … total silence. My mother would inform me about what was going on, so I was better off than most people who are deaf, but I gained a true understanding of the importance of standards because we didn't have standards for captioning. We had the regulation, and it was a fine regulation, but there were no standards to support it."

Laughton next discussed the *Telecommunications Act*, managed by Industry Canada, as a positive example in which "regulation and the standard were done in conjunction with each other and with the [disability] community." She explained how the "terminal attachment regulations" of the *Telecommunications Act* have positively affected both the disability community and industry.

> "That has a very profound impact on the disability community. It means that large button telephones can be attached to the telephone line provided they meet the Industry Canada spec. Before that, the only thing that could be attached to the telephone line was the ordinary black Northern Telecom telephone. That regulation has allowed entrepreneurial spirit to develop things that as long as they meet the standard, which is defined for terminal attachment, people with disabilities can be fully included in the telephony role of Canada."

Descriptive video, on the other hand, is regulated by the Canadian Radio-television and Telecommunications Commission (CRTC), but standards are missing.

> "Described video is captioning for the blind; it's where, in a television broadcast, when there is no dialogue, what is happening on the screen is described, so somebody knows what's going on. There are no standards for described video,

> and therefore, while we have a regulation that it must happen, there are no standards for how it must happen."

The Communications Policy of the Government of Canada, states that all federal government material must be available in multiple formats but this policy is not supported by guidelines. Laughton explained that the guidelines exist, but have not yet been adopted.

> "The problem is the guidelines, which are very necessary to be able to support that policy, have not yet been adopted. So what is 'multiple formats?' What does it mean? How does it get done? Those guidelines exist; they were created by my office [Assistive Devices Industry Office] in full consultation with the disability community. We had multi-meetings with the disability community. The government has set the policy but has not adopted the guidelines."

She invited the disability community to provide input to the Government of Canada, "to tell us what's missing. We need to know what's wrong." She gave the example of the problem of inaccessible white label banking machines as "a place where regulations and standards are going to be necessary, and we're going to take that on as an issue to try to see how we can solve it." She added that the role of the federal government is "to try and take the issues that are presented to us and do whatever is necessary, be it policy, standards, guidelines, regulations, and make it happen, so that we can be an inclusive society, at the same time as generating an extremely vibrant industry."

She called the banking industry in Canada "a watchtower of accessibility" and attributed this success to standards, regulations, and policies. She concluded by calling for collaboration between various sectors, including government, industry, academic, and the disability community and acknowledged that the Dis-IT Research Alliance continues to facilitate this kind of fruitful collaboration.

> "It's a matter of a collaborative work; where we have the government, the not-for-profits and the industry working together. Dis-IT is doing just that; it's bringing those partners together to move forward in a very positive way, so that we will have the most vibrant and inclusive IT industry possible."

Discussion:

Marcia Cummings (Rogers Communications Inc., Alliance for Equality of Blind Canadians) said that the BlackBerry is inaccessible to blind and visually impaired users, and commented. "I still want a talking BlackBerry. Right now I have a talking Nokia phone, which has software that makes it speak and I can do text messaging and email on it, but I'd still like a talking

Blackberry." Dougall responded that "making BlackBerry usable for the visually impaired is a key part of my mandate." At this point, however, the difficulty for RIM is in finding a third party screen reader package that is compatible with the J2ME (Java 2 Micro Edition) platform on which the Blackberry runs. He added that "there are constraints in terms of what RIM can do as a company from a hardware perspective."

Kier Martin (Council of Canadians with Disabilities) pointed out that another user group that gets excluded from IT products that are marketed specifically to blind users, are people with learning disabilities. He gave an example of a company that developed a handheld device that had a built-in speech synthesis engine that was avoidably inaccessible to people with learning disabilities.

> "The company didn't think of it at the time; they said 'oh we're going to build a handheld device specifically for people who are blind or visually impaired,' and forgot there was a whole other section of the community that could take advantage of the speech synthesis engine. What they had done was built the product so that the screen is turned off when the voice output system is working. So just a word of advice if you're going to build a speech synthesis engine into your product, let the screen work and there's going to be a lot more people that are going to be able to use your device and a lot of people are going to pick it up."

Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland) pointed out that the BlackBerry is not the only mobile data device that has been inaccessible to people with visual impairments. "I haven't quite understood the analysis of why, not just Blackberry, but other mobile data providers and text providers didn't think about blind users when they conceived their systems, but I think it's a complicated thing."

In response to Goggin's comment, James Watzke (British Columbia Institute of Technology) identified the "corporate culture" of RIM as a potential source for understanding how to appeal to industry to create accessible technology. He asked if there was "something special" to learn from RIM about how to achieve inclusive IT. Dougall responded that, ultimately, it comes down to open-mindedness in the people make up the corporate culture.

> "RIM has a very unique culture and structure unto itself, and is a very fast-paced and dynamic environment that way. But at the end of the day the people are very open to ideas and they are very responsive to understanding the requirements of the user community, and the specific use cases for the product."

Wednesday, May 11, 2005

PANEL DISCUSSION: Partnership Regulation Models

Host: Doug Brolly (RBC Royal Bank bis Group)
Presenters: Ian Brodie (Canadian Standards Association, Canada), Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland, Australia), Tim Noonan (SoftSpeak Consulting, Australia)

Presenter: Ian Brodie (Canadian Standards Association, Canada)

Ian Brodie's presentation explored how standards are developed, where ideas for new standards come from and who writes them. The Canadian Standards Association (CSA) uses a consensus model in which it tries to get a broad base of stakeholders with diverse viewpoints on a particular subject area. Within this model, people with disabilities have a voice in developing standards relating to disability issues; they can submit requests for new standards, sit on committees, participate in the public review of drafts standards and have the opportunity to propose modifications to existing standards.

Brodie began by stating that there are four levels of standard development bodies; these bodies are distinguished by how the standards are created, who is involved in the development process and who respects the resulting standards:

1. Standards Development Organizations (SDO) - The Canadian Standards Association is one of four accredited SDO's in Canada. It is a not-for-profit membership-based association serving business, industry, government and consumers in Canada and the global marketplace.
2. The Standards Council of Canada (SCC) - This body is responsible for the accreditation of standards development organization's (SDO's) in Canada. They formally recognize SDO's competence to develop standards, and comply with specific accreditation criteria.
3. Bi/Tri-nation standards – These are standards that are created, agreed upon and respected by 2 or 3 countries. An example of Bi-nation standard is found in the electrical area between the US and Canada. NAFTA is an example of a Tri-nation body between Canada, the US and Mexico.
4. International standards - At this level, countries like Canada, the US, Europe, Asia, and Australia each have one voice in the development of standards. One benefit of international standards is that they make it easier for companies to develop products for the global market.

Brodie described CSA's model for standards development as a *balance matrix* where each committee consists of a chair, a project manager, associate members and corresponding members. When forming a committee, CSA looks for a balanced representation of people with interests in the ramifications of a specific standard. Brodie described the four categories of members who make up a committee:

- General Interests – These people have a keen interest in the area that the committee is involved with. "They could be researchers or from other areas that have potential over-lap."
- Producer Interests – These people are interested in specific standards that will change the way they are currently manufacturing a product. They are also interested in the potential to develop new products that may be possible through the development of a new standard.
- User Interests – These are the people who are interested in the end products that standards lead to. They are seen as important to the process because they often provide valuable insight that may be overlooked by producers.
- Regulators – These people make sure legal restrictions are obeyed when new standards are developed.

Developing standards can be lengthy and expensive. Brodie explained how CSA's development process is funded.

> "There are annual dues associated with corporate sustaining memberships. Money also comes from selling copies of the standards themselves but this is very minimal and doesn't offset development costs. They aren't a mass market item but we have some where we might be lucky to sell 50. On the other hand, some regarding electrical codes will sell hundreds of thousands of copies. Finally, it may be the case that industry associations or government departments feel that there's a need or that they would benefit from a standard in an area. In this case they would assist in the development cost in the form of a grant."

CSA standards development process:

1. Preliminary stage

When CSA receives a request for the development of a standard, it conducts an evaluation and the project is submitted for authorization. Requests are evaluated for costs/ benefits/ advantages to stakeholders and society. Requests can come from any interested person, organization, or committee. Brodie gave an example of a request that came from an individual.

> "The way standards originate certainly can be from an individual to a big industry association. About 35 years ago, there was an ophthalmologist in Toronto whose son was playing hockey and sustained a head injury. He started to look at what types of helmets were on the market and saw a very divergent spectrum in the quality of helmets. He approached CSA with a request and from there we started to develop safe hockey helmets and face protectors."

2. Proposal stage

If the new project is authorized, it is assigned to a steering committee which approves its scope and establishes a technical committee. From here a notice of intent to develop a standard is posted on the CSA website where interested parties can also keep up to date on the project.

3. Preparatory stage

A working draft of the standard is prepared and a project schedule is established. Brodie explained "The committee will go through a process of developing a draft. Depending on the area and depending on the stakeholders at the table, it could be a very harmonious process or it could be very adversarial."

4. Committee stage

The technical committee, facilitated by CSA staff, develops the technical content and reaches all its decisions by consensus.

5. Enquiry stage

The draft standard is offered to the public for review and comment for at least 60 days. Then the technical committee looks at the feed-back from the public, revises the standard and reaches an informal consensus on the technical content of the draft. Finally an internal quality audit ensures that the document complies with Canadian Standards Association policies and guidelines on drafting and presentation.

6. Approval stage

The technical committee approves the technical content of the standard.

7. Publication stage

CSA staff conducts a final edit to verify conformity with CSA's editorial and procedural requirements and then publishes and disseminates the standard. CSA's standards are translated and published in both official languages. Some standards related to disability issues have recently been made available in multiple formats.

8. Maintenance stage

The standard is maintained with the objective of keeping it up to date and technically valid. This may include the publication of amendments, the interpretation of a standard or clause, and a systematic review every five-years.

> "The committee will meet, or certainly monitor what's happening within the industry. They also consider what's happening around the world, just to keep current on the issue. If a particular standard is not being utilized very well and there's no stakeholder interest, we consider withdrawing it."

Brodie discussed what happens in the case of revisions.

> "Within that five year time period we will produce an amendment if revisions are needed. In the case of the banking machine standard, an amendment was published to make some clarifications. If the standard really hasn't changed we'll reaffirm it, but if changes are needed, we'll produce a new edition."

Brodie explained that standards offer a variety of benefits, from facilitating innovation and the transfer of technologies, to improved product quality, consistency, and compatibility. Standards also provide industry with an effective marketing tool (e.g., "CSA certified") when consumers have a choice between similar products. He also noted that complying with standards has the potential to reduce a company's liability and that international standards help to reduce trade barriers between countries.

Discussion:

Deborah Stienstra (University of Manitoba) stated that she had done research regarding the trade of assistive devices between Canada and the US. Her research showed a lack of consistency between devices in the two countries. She told of a Canadian woman with a disability who had to purchase a visual doorbell in the United States because it wasn't available in Canada. "One of the things that came up often was the lack of consistency between devices in Canada and United States. Because of the open trading boundaries, the women thought they could just go over to the United States and buy the appropriate technology. When they brought it back, they discovered it wouldn't work with the electrical

standards here." Stienstra questioned Brodie's earlier statement that international standards reduce trade barriers. "That wasn't at all the experience, rather there were no international standards that coordinated accessibility and therefore there were increased trade barriers for women getting access to these devices."

Brodie wasn't aware of that specific example, but said that each province implements its own electrical code and suggested that the product may have met CSA standards for accessibility but not necessarily from an electrical point of view. Another reason for this discrepancy may be found in the history of standards. Before the goal of international harmonization, national standards were sometimes used as technical barriers to trade and to a certain degree that is still happening. Finally, CSA standards are driven by the interest of specific communities, producers and consumers. Brodie said that general interest in assistive devices has waned and it is difficult to get stakeholders to the table in order to create new standards.

Steve Jacobs (IDEAL Group, Inc.) noted that different companies may not implement a standard in the same way, which results in a worldwide problem related to interoperability and compatibility between AT and mainstream products. He asked "what can be done to help ensure that companies follow the standard when it comes to designing the points of interconnection between AT and regular ICT." Brodie responded that these types of interoperability problems may not be recognized by the CSA committee members. "Getting that feedback back to the committee members is important and will reduce these types of problems. The people that are using the standard need to feed-back in and tell them the issues so they can do something about it."

Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland) reiterated the importance of the committee structure in producing a successful standard and raised a concern that is being addressed in Australia. "How do groups that don't have many resources, let's say representative organizations of people with disabilities, get the resources to participate in the standards process?" Brodie explained that participation from people on committees is strictly on a volunteer basis. However CSA can provide some funding on an individual case basis "for example, if there was a person representing the disability community that was really keen, willing to participate and make a contribution, we'll certainly look at funding their traveling expenses."

James Watzke (British Columbia Institute of Technology) commended CSA for their involvement in the creation of standards that affect persons with disabilities. Watzke said "It's not just persons with disabilities. If I'm a person with a disability and I have a child who plays in playgrounds, they have standards for that, so it ends up being quite a landscape. CSA is working very hard to include concepts like accessibility, inclusivity and usability into the

standards development process." That being said, Watzke commented that at some point a standards committee has to draw the line when considering accessibility.

> "I've been on committees for CSA where, whether it's banking or something else, where you start to look at interface issues, and the next thing you know we've gone from figuring out a banking machine standard to what would a headset standard look like and the next thing you know you're into Wi-Fi and Blackberry. There has to be a limiting scope or the committee would never get their hands around their charged task. That's just a reality of standards development."

Watzke mentioned that when developing a standard the end users are only one stakeholder and the business reality can not be ignored.

> "CSA actually commissioned our group the British Columbia Institute of Technology (BCIT) to look into the question of whether more standards for assistive technology are needed. We surveyed all the regulators, the vendors, and all the big assistive technology providers in Canada and they said 'no, we're not sure we want to be regulated', and CSA had to respect that input. Ultimately there is a business case that has to be built for a standard. Ian doesn't like it when they go to all the trouble of dealing with accessibility, inclusivity and usability issues, then no one adopts or takes up the standard, it's not good for anyone."

Watzke stated that the voice of the end user is important and valued in the standards development process.

> "Persons with disabilities can go to CSA's website and learn about new standards coming out that potentially involve accessibility issues. People like Laurie, need to say 'hey, what about interoperability?' because then the committee will get that feedback and at least it will be put on their radar screen. There is a role for advocacy. It's not chaos, its not free floating, there is a process in place to take that feedback and I can promise you, I've been on those committees, we will pay attention to it, because we're mandated by our project manager and CSA to do that."

Referring to Watzke's earlier comment that standards committees need to draw the line when dealing with accessibility issues, Steve Jacobs agreed that an AT design company would not like to be confined by a tight standard that may restrict design process. However in his experience the Assistive Technology Industry Association (ATIA) wants standards relating to interoperability.

> "I refer to a simple 'handshake' as the point at which an AT product, designed with the creative genius of a company, interfaces with a computer. I'm not talking ABM's, I'm talking standard computer interfaces and standard AT device interfaces. That is the point at which you find a lot of compatibility issues. My experience has been that, ATIA lists this interoperability problem as one of the top issues to address. It's just the opposite of having no interest in being regulated. They want to have everyone adhere to the way that the 'handshake' is implemented or designed, doing so would solve a lot of problems."

Jacobs asked if it is possible to have an individual who is very knowledgeable about this handshake sit on every committee regarding the development of AT standards. Watzke stated that a committee member may have some knowledge in this interface area but there is not usually a person with that specific role. He also pointed out that the way an AT device communicates with a computer gets very close to being a proprietary issue.

> "Standards committees are very careful about removing competitive advantage, and in fact they are often the minimum standard. For example, if a company feels their handset is one of their strong points and better than the rest, they don't want to be restricted by a standard. A standards committee would have to be very careful about trying to put some structure to that. A company's interface is proprietary and can become a barrier for people that are creating AT that interfaces with other technology in very special ways."

Mary Frances Laughton (Industry Canada) said it is important to note that CSA is just one of several standard setting bodies involved with information and communications technologies in Canada.

> "I think we tend to hear the word 'Canadian Standards Association' and think that they do it all. The Treasury Board Secretariat of the Government of Canada sets a bunch of information technology standards. There's the International Telecommunications Union, there's a whole body of standard setting organizations, and the Standards Council of Canada is the over-arching body. They look at standard setting in Canada and try to collaborate and coordinate these kinds of activities."

She informed everyone that "The joint technical committee of the International Organization for Standardization is in the process of looking at the whole gamut of accessibility standards, from stem to stern, and they're going to be looking at gap analyses at needs studies and requirements documents. I encourage all of you to participate in this, because we need end

user involvement. This is where the rubber is going to hit the road, and this is where people will be able to participate."

Presenter: Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland, Australia)

Gerard Goggin discussed the government-industry-consumer body that regulates the Australian telecommunications and networked digital technologies industry as well as collaborative partnerships in the development of standards for online banking and e-commerce accessibility. Goggin reviewed the self-regulatory institutions in the Australian telecommunications environment, the chronology and details of which are discussed in the article, "Fostering Universal Access: Lessons from Telecommunications and Disability," by Christopher Newell, Gerard Goggin, Gunela Astbrink, and Holly Raiche. Goggin offered an intellectual framework for understanding the session topic, drawing on his experience as a Policy Advisor during the 1990s for the Consumers' Telecommunications Network and as an Australian Research Fellow at the University of Queensland.

Goggin referred to *Digital Disability*, a book he co-authored with Christopher Newell, in which they suggest that the Australian context of disability studies and technology differs from the US and UK contexts, as it is "located in a particular national formation with disability with its own characteristics and has historical and political specificity and an intellectual tradition as well." Goggin and Newell's work draw on the social study of science and technology, including the work of Bruno Latour, who explores how technology is socially constructed or shaped. "In Bruno Latour's work, he talks about the sense in which both society and technology are produced together; they're not necessarily pre-existing things. And I think there's a deep insight there."

In Australia during the 1980s and 1990s, there was a shift in Australia from government-owned agencies delivering telecommunications to the privatization of Telstra, its national carrier. With the telecommunications reforms in the late 1980s, Goggin explained, "a whole kind of dispensation was being dismantled around the world." Information and communications technologies became important to consumer organizations and disability organizations, and in 1989, the consumer movement set up the Consumers' Telecommunications Network. It focused on telecommunications issues, and disability organizations "had a very critical role." He pointed out that a difficulty for the disability community was finding available resources to become involved in accessible technology issues.

> "One of the issues that emerged for a number of the groups was, when you're a disability organization and you're thinking about health, housing, welfare,

> transport, a whole range of other issues, how do you actually make the time, with your scarce resources to deal with an issue that needs quite a degree of specialized skills, and requires people to be involved in processes for quite a while."

In 1996-7, at the time that Telstra was being privatized, "a compromise was crafted" in the Australia parliament for legislating funding for research in the consumer aspect of telecommunications and to support advocacy and representation groups. Goggin asserted that this national funding was a pivotal moment that provided "enough resources to keep a core set of people in these processes over a decade" in the areas of accessibility and disability in telecommunications in Australia.

In July 2005, the Australian Broadcasters Authority and the Australian Communications Authority converged to form the Australian Communications and Media Authority (ACMA). The ACMA regulates telecommunications and broadcasting, however, there is still a separate *Telecommunications Act* and *Broadcasting Act*, and Goggin pointed out, a whole set of services (e.g., mobile services, mobile SMS and multimedia messaging (MMS)) are on "the interface between telecommunications and broadcasting." He identified "mobile space" as one for which there are no traditions for thinking about or for regulating.

> "We've got these traditions of thinking about telecommunications, IT and about computers, these traditions of thinking about broadcasting, about television and radio, and now the internet as well. …What's happening in that scene between telecommunications and the broadcasting, for instance, in mobile space?"

Goggin then shifted to focus on the Australian Communications Industry Forum (ACIF), formed by the telecommunications industry in 1997, and the ACIF Disability Advisory Body (DAB), formed in 1998, as a case study of international interest in the area of disability, accessibility, and inclusive technology. ACIF is an industry-owned, operated, and resourced company that "sits alongside" the ACMA, the Department of Communications, Information Technology and the Arts, and Standards Australia. Goggin defined ACIF as "industry's institutionalization of self regulation" whose role is to implement and manage the communications self-regulation in Australia and "to develop and administer technical and operating arrangements that promote both the long-term interests of end users and the efficiency of international competitiveness in the Australian communications industry."

The DAB meets quarterly and reviews the whole program of ACIF and "provides advice to that body [ACIF] regarding the implications for people with disabilities of its proposed codes, standards and other publications. So it's providing a kind of watchdog or monitoring role across the whole set of codes and guidelines that ACIF does." DAB is chaired by Christopher

Newell (Australian Federation of Disability Organizations), and is comprised of representatives from the following organizations:

- Communications Aid Users Society
- TEDICORE (Telecommunications Disability and Consumer Representation)
- Women with Disabilities Australia
- Australian Rehabilitation and Assistive Technology Association
- Australian Association of the Deaf
- Physical Disability Council of Australia
- Blind Citizens Australia
- Deafness Forum of Australia
- ACIF project management

Goggin then discussed four achievements of DAB, including

- ACIF G586: 2001 *Access to Telecommunications for People with Disabilities Industry Guidelines*
- ACIF Any-To-Any Text Connectivity Project
- ACIF Next Generations Network Project
- Fostering Professional Development

DAB authored the ACIF G586: 2001 *Access to Telecommunications for People with Disabilities Industry Guidelines* in order to "materialize and concretize" what ACIF needs to do to meet its responsibilities under the *Telecommunications Act* and the *Disability Discrimination Act* and "to assist the industry forum and its reference groups and working committees to provide equity in access to telecommunications for people with disabilities." These guidelines were informed by international legislation and research and are applied in the development of all ACIF codes and standards.

> "In developing this approach with the guidelines, the Disability Advisory Body endorsed a telecommunications charter of the European Union's COST 219 bis, and they'd endorsed this telecommunications charter as a statement of principles for the guidelines and as a means of improving access and equity in Australian telecommunications for people with disabilities."

The Any-To-Any Text Connectivity Project began in 2003 when members of DAB helped to establish the Any-To-Any Text Connectivity Options Working Group. Its purpose is to look at both short-term and long-term real-time text communication issues with a focus on the support of Text Telephony for people who are deaf, people who have hearing impairment, and people who have speech impairment. They also recognize the communications needs of people with intellectual impairment and people with physical impairments.

> "Initially the activity is concentrating on the short-term, but the longer-term aim is merely to try and move towards and embody that vision of Any-To-Any Text Connectivity for all those using text or video available at home, at the workplace and on the move."

In 2002 ACIF launched The Next Generations Network Project which was an initiative of DAB. This project involved switched telecommunications networks which are for the most part packet based. DAB's presence in ACIF will ensure that accessibility issues are considered in the upcoming Next Generation Network environment. The ACIF DAB also provided professional development to ACIF staff and key industry participants about telecommunications needs, providing "a mechanism that tried to embed accessibility into all the various aspects of the telecommunications industry."

Goggin concluded that one of the disappointments experienced by the ACIF DAB is that Voice over Internet Protocol (VoIP) "has largely escaped these kinds of processes." He mentioned that ACIF is "still quite an industry-dominated body" and that there is a fragility that results from the tensions in the structure of the organization itself, such as a change in CEO.

> "There are certain fragilities in this particular kind of initiative [DAB]—that on the one hand is a cooperative issue between industry and consumers, on the other hand has the dynamics that can change very quickly."

Presenter: Tim Noonan (SoftSpeak Consulting, Australia)

Tim Noonan discussed collaborative partnerships in the development of standards and how to engage industry to make accessible information technology through the use of standards in the Australian context. He described his involvement on various standards committees and in various accessibility research for organizations such as Standards Australia, Australian Bankers' Association (ABA), the Australian Government's AccessAbility program, and the Smart Internet Technology Cooperative Research Centre (CRC). Noonan has represented various technical and disability organizations on these committees and in his research, including the Australian Telecommunications Users Group (ATUG) and Blind Citizens Australia. He spoke as an expert in technology and disability issues who "is bringing across the wealth of experience and wisdom of the disability community" in order to "bring those types of learning's across to mainstream non-visual user interface design." Noonan began his discussion about the service that allows people to access e-mails via telephone.

> "They force the listener to listen to all of the header items in an email that the designer considered worth including, even though everyone often wishes to jump over much of the repetitive, detailed sequentially presented header

> information. Then its necessary to listen "read" through the entire body of the email with no ability to pause, adjust the speed while you're listening, rewind and rehear something you missed, or check the spelling of something that you might need to know, or to skip forward by paragraphs, in order to skip unimportant content. So in the work that I've been developing at Vision Australia, we're trying to bring a lot of the screen reading functionality, but in a much more user-centered approach."

In the early 1990s, Noonan sat on a Standards Australia committee that was looking at accessible TTY (text telephones), ensuring that the needs of people who are deaf and blind were accommodated. This was difficult because there was no existing standardization for input/output ports on TTY devices, and there had been strict electrical isolation requirements in Australia which impact import options. Tim also represented ATUG (the Australian Telecommunications Users Group) on the Australian standard for the user interface implementations on automated telephone services (IVRs) which published AS/NZS 4263. Although he was not representing a disability organization, Noonan made sure to get "disabilities and the needs of people with disabilities embodied in the standard." The committee excluded voicemail from the scope of the standard due to the existing "heterogeneous range of voicemail systems," however, they succeeded in creating a standard that reflected the experience of the user, followed conventions, and was centered around human factors and cognitive psychology principles of human information processing. "The Australian context has demonstrated that a reasonably well-centered collaborative standard can result in much more consistent user experiences such as consistency, in our context—zero for telephone operator, nine to initiate a hang-up, one for yes and two for no."

Noonan pointed out that by contrast, in the US, most products have randomly chosen any assignment of keys. The success of embedding accessibility and disability issues in standards development, Noonan stated, ultimately depends on who the chairperson of the committee is "what makes or breaks participation on a national standards board in my experience, is the chairperson of the committee, which is usually from the industry." He added, "if you don't have a good secretary who works for the standards body, is disability aware and interested, then it's a really hard and arduous process."

From 1998-2002 the Australian Government AccessAbility program funded projects to assist people with disabilities to gain improved access to online information and communications services. Through this funding, Blind Citizens Australia engaged Noonan to research aspects of online accessibility which resulted in the report, "Accessible E-Commerce in Australia: A Discussion Paper about the Effects of Electronic Commerce Developments on People with Disabilities." The purpose of this report was "to research, assimilate, synthesize and draw together research going on in different parts of the world—possible barriers, but also to

identify and highlight opportunities of emerging technologies – such as the move away from paper as the sole medium for financial transactions."

During the 1990s the Australian Bankers' Association (ABA) developed four industry standards that addressed accessibility issues in response to human rights complaints lodged with the Australian Human Rights and Equal Opportunity Commission. The four standards were for telephone banking, electronic funds transfer point of sale (EFTPOS), internet banking, and automatic telemachines. In the research they conducted on banking standards around the world, according to Noonan "the Canadian standard was certainly written in plainer English than anything else." Noonan's role was to consult the disability community and report to the ABA project manager. The most recent challenge, Noonan reported, has to do with advertising in ABMs that have switched to built-in speech; listening to advertisements, he argues, should be optional for people with disabilities.

Noonan moved on to discuss Smart Internet CRC (Cooperative Research Centre), the most recent example of collaborative partnerships in Australia he was involved in, which is "a joint venture with the main objective of commercializing innovative technology. The CRC is made up of universities, manufacturers & industry, and government." In addition to profitable commercialization, this CRC was also very interested in raising awareness of inclusive design—not assistive technology, but for mainstream technology that includes having good design allowing it to be used by a wider range of people including people with disabilities. CRC has strengths in both the area of technical engineering as well as user experience and input, due to various ethnographic and usability studies, and engagement with focus groups. For example, in an ethnographic study on speech recognition software, Noonan related the comments of a focus group participant who said she felt "stupid" talking to a computer in front of her husband. He emphasized that "ultimately the choice has to come down to the consumer. And if you don't do the research of what the consumer or end user is going to want, and you make any assumptions, the probability for a product failing is multiplied over and over again." He added that the speed of technology progress compared to the somewhat protracted bureaucratic process of funding allotment, and the relatively modest budgets available, has been a disadvantage for this project in the CRC in its recent attempt to develop a particular telecommunications prototype device. "it took ages to get the funding request to come through, so by the time it was approved, technology had sort of marched on outside of this entity."

Noonan concluded that companies that develop and manufacture mainstream products often don't understand disability and accessibility issues, and associate these considerations with "higher risks of failure." He called for disability expertise to be integral in the design process, the importance of which Research In Motion (RIM) has recently recognized through their Accessibility Program, as well as larger companies like Microsoft. Otherwise, he cautioned, a

range of products, including digital radio receivers and handheld digital voice recorders, are unusable – just as an example – by people who are blind, or people who don't have their vision available at the time.

> "There's a whole range of devices that use audio for 99% of their operations and then require a visual interface for that one percent, but that one percent might be just the process of knowing if the machine is on or off, if it is a mini disc recorder, whether it's in pause mode or actually recording, etc."

Discussion:

Steve Jacobs (IDEAL Group, Inc.) raised the issue of Voice over Internet Protocol (VoIP), calling it an "important problem" in the US and internationally due to the lack of regulatory processes for ensuring accessibility. He explained that the US Federal Communications Commission (FCC) considers VoIP to be an information service as opposed to a telecommunications service.

> "What this means to the disability community, at least in the US, if Voice over IP becomes what it is fast becoming, none of the protections afforded by the Telecommunication Act [of 1996] will cover it. The FCC is not in the business of covering information services. If you look at television over the internet, video over the internet, all of the e-services, e-learning, any kind of e-commerce at all, e-health, telemedicine—none of that is going to fall within the jurisdiction of the FCC. There are no teeth to go after a company that designs something that's not accessible. This is something we're up in arms about and we are preparing ourselves to work with Congress this year, during this session, to try and correct or minimize the impact of this."

Goggin acknowledged that in Australia, VoIP "hasn't been clearly recognized and thematized by the disability community or to some extent by the consumer movement." Nor has the Australian government put the issue of VoIP and accessibility to the regulating body, the Australian Communications and Media Authority (ACMA), or to the Australian Communications Industry Forum (ACIF). Goggin described VoIP to be at the "interface between protocols, codes and the networks," which raises questions about the politics of networks. He commented that "certain sets of expectations about accessibility were embedded into [telecommunications] regimes around the world." In the US, the concept of "universal service" was developed with respect to telecommunications, whereas "public service" has been more of a concept in European jurisdictions. He concluded that a key issue has to do with the difficulty of addressing accessibility and rights issues within the current and fast-paced world of technology. "How do we translate some of our concepts about fairness, obligations

relating to access and equity, across the different things that now make up our ICT's environment and our digital environment?"

Laurie Beachell (Council of Canadians with Disabilities) addressed the difficulty for cross-disability organizations to find a useful way to address the complex issues of access and technology. "We have challenges enough in resourcing the existing structures, but when you get into this complexity, there has to be a body of knowledge and expertise that comes together."

Noonan commented that the complexity of the issue of technology and access has increased in recent years. "As we get to multi-media and all this layering that occurs, the challenges got harder on some levels and easier on others." He listed the Australian Rehabilitation and Assistive Technology Association (ARATA), an organization similar to the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA), as one that addresses access and technology issues, however, its greater focus is on physical disability, rehabilitation, and often comes from the medical model of disability. There is cross-disability representation in telecommunications and banking committees, however, in Noonan's personal opinion, the cross-disability perspective is not always optimally represented in Australia. "I'd say in Australia we could have more good thinkers who are cross-disability focused as well as being technically strong."

Goggin described a number of ways in which the cross-disability perspective has been maintained throughout the telecommunications experience, despite "a weakened coordination structure nationally in Australia in the latter part of the 1990's." Key people (e.g., Christopher Newell) have "embodied" and "been very insistent" about the cross-disability perspective. Goggin also listed the Australian Communications and Industry Forum (ACIF), ACIF Disability Advisory Body, and the Australian Federation of Disability Organizations (AFDO) as organizations that integrate the cross-disability experience to address access and technology issues. The AFDO, similarly to the Council of Canadians with Disabilities (CCD), Goggin explained, "have many other things on their plate and it's very hard to carve out the time for access and technology issues, but there's a strategic opportunity to paint a big picture that's a way to say 'look, this area is so pervasive in everyone's lives—it's just so extraordinarily pervasive. Citizenship is such a key dimension."

Deborah Stienstra (University of Manitoba) directed participants to *Digital Disability: The Social Construction of Disability in New Media* by Gerard Goggin and Christopher Newell for a detailed documentation of key test cases with the Australian Human Rights and Equal Opportunity Commission (HREOC) on access to technology issues and people with disabilities that involved litigation by disability organizations such as Disabled Peoples' International (DPI).

ROUNDTABLE: From Technical Innovation to Innovative Thinking

Presenters: Steve Jacobs (IDEAL Group, Inc.), Umang Dua (Issist), Jeff Pledger (AbleTV.net)

Presenter: Steve Jacobs (IDEAL Group, Inc.)

In his presentation Steve Jacobs examined the competitive advantages available to businesses that recognize the broader global market implications of technologies designed to accommodate people with disabilities. Using an online conference system, Jacobs was able to broadcast his presentation to several people in Canada and the United States. He stressed that this technology has many benefits as an educational tool; it creates a fully accessible environment and long distance charges don't apply.

Jacobs explained that "The purpose of this session is to talk about emerging technology and its impact on the relationship between people with disabilities and Information and Communications Technology (ITC) manufacturers. We'll talk about policy issues and opportunities." Giving a brief background, Jacobs explained that there is a paradigm shift occurring which is "redefining, and in some instances complicating the relationship between people with disabilities and ICT manufacturers."

Jacobs said that the disability community often asks; "What compels ICT manufacturers to design for access, other than money?" He used the acronym "compels" to list the major factors:
C – Cultural
O – Organizational
M – Moral
P – Political
E – Ethical
L – Legal
S – Social

> "All of these influencers are very important, and without them, I don't think we would have accessible design. I can only speak with reference to the US, but I can tell you without laws, standards and guidelines, the state of accessible ICT would not be where it is today. And that has nothing to do with money; it mostly has to do with the law and political pressure."

Using the same acronym, but with different words, Jacobs described the *most* powerful market force that compels ICT manufacturers to design for access – money.
C – Canadian dollar
O – Ouguiya (Mauritanian Currency)

M – Markkaa (Finland)
P – Pesos
E – Euro
L – Lira
S – Schilling

> "Now somewhere between the two different types of forces, there has to be a happy medium. Industry needs to make money, but yet they may need to do things that they can't cost justify, and that's where the laws come into play."

Jacobs turned the discussion to examples of the potential business benefits of accessible design in the mainstream, noting that "in and of itself the business case may not be all that you want to focus on when you work with industry, but there are some quite appealing business cases for accessible design."

Jacobs described five technologies that are now in mainstream use which originated as assistive technologies:

1. word prediction technology
2. text-to-speech technology
3. plain language
4. captioning technologies
5. accessible webpage design

Word prediction software saves keystrokes by predicting words as you type. As characters are typed, word prediction software revises a "pick list." When the desired word or phrase appears, it can be selected and will automatically update what is being typed.

> "Word prediction technology was originally designed to help people with mobility and cognitive disabilities to type more easily. This technology is now enabling PDA and cell phone manufacturers to design mainstream products with easier to enter text."

To illustrate, Jacobs showed examples of a cell phone and personal digital assistant (PDA) that use word prediction technology, the later in Chinese.

> "Word prediction cuts down the number of button presses. The user first sees the words being predicted displayed across the bottom of the screen. The user then arrows to select the word and presses a key. With a little practice one can get pretty proficient at doing this…It is an unbelievable time saver. You cannot have a complex enough keyboard on a small PDA to enter Chinese text, but thanks to

> pioneering work that was done in the disability community, mainstream companies are able to capitalize on this technology."

Text-to-speech technology allows an alternate spoken method for conveying textual information. As the name implies, text-to-speech convert's electronic text into the spoken word, and was originally designed in support of people who are blind. Instead of pre-recording and playing back digitized human speech, synthesized speech is computer-based and is used to speak-out words and phrases. In the past the biggest complaint of consumers was that computer speech sounded too much like a computer. Now, the technology has evolved to a point where you can even choose dialects of a language. In some cases it's difficult to tell the difference between a synthesized piece of speech and somebody actually speaking it.

> "Text-to-speech technologies that accommodate people who are blind, hold potential to assist people who never learned to read. In just the top 20 developing countries there are 740 million consumers who never learned to read. If you're developing e-commerce or e-learning applications or manufacturing PDA's that require the user be able to read, you are limiting your market. If you implement text-to-speech technology in the correct way, it is possible to accommodate people who never learned or can't read."

Originally used as a way to support children who are deaf and people with cognitive reading disabilities, **plain language** is clear, straightforward written expression, using only as many words as necessary. Recognized for its usefulness, Jacobs explained that plain language has been adopted by governments and businesses.

> "Plain language is a practice that is used by the Canadian, US, Australian and UK government, to craft content for laws, standards, guidelines, and medical documents that are more understandable to an average reader. The business benefit of using plain language is that it translates less expensively into other languages. For companies designing content for translation, writing in plain language can save them up to 30 percent of the cost normally associated with translation. The reason it's less expensive is because you use a less words, machine translation is more accurate and therefore less human intervention is needed."

Captioning technology was developed to accommodate people who are deaf by allowing them to read a transcript or dialogue of the audio portion of a video, film, or other presentation in real-time. The resulting transcripts can now be used to do precise word searches of television and videos. Finding specific footage was a time-consuming process, now

it is possible to quickly search through video by looking at the captioning for key-words or names. As a demonstration, Jacobs conducted a search for video footage containing Paul Martin, by clicking on that video footage he was able to play that clip. This type of service has proven profitable to the companies offer it.

Originally intended to increase access for people with disabilities, **accessible web design** is also useful when transcoding pages into wireless formats for PDA's (Blackberries or cell phones). In order to display a webpage on a PDA, the site must be converted into a different format (transcoding). These transcoded pages also allow users to successfully display websites in areas of the world where high-bandwidth in not available..

> "The same techniques used to make e-commerce websites accessible to people with disabilities, makes it easier and less expensive to transcode web content into wireless formats used on devices such as PDA's or a cell phones. If you consider that worldwide, there are 3.6 billion consumers living in low-bandwidth environments that have less than one percent of the bandwidth per person than we do in the US, and less than half a percent of the available bandwidth that you have in Canada, it really makes sense to design WebPages to be accessible. For companies wanting to establish an international presence, especially in low bandwidth infrastructures, designing their websites to be accessible will allow them to transcode the pages automatically and then use it cross-platform very effectively."

Jacobs explained that "In order to facilitate change within a company that encourages them to embrace accessible design methodologies, one needs to gain a more in depth understanding of how companies operate. We have heard presentations over the past day-and-a-half that have stressed that point. You really need to understand how businesses operate, talk their language, know what their hot buttons are, and know what is technically feasible and economically possible in the area of accessible design."

When speaking about integrating accessible design practices into the core of a company's business practices, Jacobs described a continuum of five major steps:

1. latent stage
2. emerging stage
3. consolidation stage
4. institutionalization stage
5. proactive embracement stage

In the *latent stage* the company has totally ignored or dismissed designing for access. The *emerging stage* is where most major companies are at, beginning to experiment with approaches

dealing with accessibility. At the *consolidation stage* there is litigation and an expanding view of the need for legislation. Jacobs described legislation as very important because "it's a catalyst for driving people to this stage and beyond it. You can't really do without it." In the *institutionalization stage* legislation and business norms are established. Jacobs stated that there are fewer companies at this stage. Companies in the *proactive embracement stage*, the highest level, "realize that accessible ICT design practices are integral to the realities of globalization, having nothing to do with disabilities, are a major source of learning for their employees, are relevant to core business objectives and strategies, drive cost efficiencies through economies of scale and drive mainstream competitive advantage."

In order to assess whether or not attitudes might be a root cause for ignoring the business opportunities surrounding accessible ICT design, one must understand and be able to quantify access-focused attitudes in the corporate environment. Jacobs described five levels related to the evolution of accessible design attitudes:

1. Negative and defensive
2. Negative but compliant
3. Management neutral
4. Positive and strategic
5. Positive, proactive, mainstream integration

Jacobs stated "*Negative and defensive* is the lowest stage and a company in this state denies accessible ICT design practices and outcomes. They just think it has nothing to do with anything; they're not in that business." *Negative but compliant* describes a company that adopts a policy based IT access compliance approach as a cost of doing business. Jacobs described their attitude. "You know doggone it, we have to do this, I don't want to get sued, we're just going to do it, but we're not going to do any more than what we have to." At the *management neutral stage*, Jacobs explains that "Companies have embedded accessible ICT design and information in their core business management practices. They have policies, practices, procedures that profess to include instructions on what to do to design more accessible products." Companies at the *positive and strategic stage* integrate accessible ICT design practices into their core business strategies. Jacobs stated "The *fifth level* is described as promoting broad based industry participation in accessible IC design practices. Not only does the company design for access, but they encourage other companies to do the same."

Discussion:

An audience member asked Steve Jacobs if he observed companies at all the different levels of attitude with respect to accessible design practices. Jacobs responded by saying that he doesn't know of any companies at the top level and only knows of a very few at the fourth. He added

that it takes people, like the ones attending and presenting at this institute, to facilitate this change.

Gerard Goggin commented that the examples Jacobs gave of companies profiting or saving money from accessible design seemed compelling. He then asked how companies are embracing these market driving forces that stimulate the design of more accessible technology.

Jacobs explained companies have not yet fully embraced these forces.

> "I wish I could say that everybody is just jumping over each other to design for access. When we approach companies, we simply describe some of the market forces previously mentioned and then suggest that company management consider them when building their company's strategic long range business plan. There are risks and opportunities, and it should go in that section of their plan. We don't try to tell a company that they could make more money designing for access; they have to come to that conclusion themselves."

Jacobs explained some of the reason why some companies have incorporated accessible design.

> "Cell phone manufacturers and broadcasting companies do not follow accessible design principles because people in the disability community threatened to sue them… they do it because they identified it as a mainstream opportunity for an existing technology."

Marie-Lynn Hamilton (Independent Living Resource Centre Winnipeg) noted that Jacobs' presentation dealt with technologies developed for people with disabilities that were subsequently adopted in mainstream products. She asked him if assistive technology companies ever get ideas or use technology from mainstream companies. Jacobs recalled Dr. Andrew Junker, founder of Brain Actuated Technologies, who worked for the US Air force for 20 years as a research scientist. He worked on a band that goes around a jetfighter pilot's head that detects brain and muscle signals. With this band on a fighter pilot is able to control the temperature of his cockpit simply by thinking a certain way. Jacobs explained the application of this technology in the disability community.

> "Andrew Junker commercialized this into the disability community [as a product called brain fingers] to enable people with ALS, who have no real control over many muscles in their body, to use a computer. I've demonstrated this product on television; using a computer, I controlled a mouse through a maze without touching a keyboard or a mouse, just through movements of my eyes. It's not an

> eye gaze system, it's the current generated by the muscles contracting in your eyes and relaxing."

Presenter: Umang Dua (Issist)

Umang Dua is a principal at Issist, a Canadian based company dedicated to providing affordable accessibility solutions for people with disabilities. Dua's presentation dealt with Issist's business model of giving its iZoom screen magnification software to individuals with disabilities for free, but charging companies/organizations to install the software on their websites. "One of the goals that we had when we started Issist was that we've got to bring down the cost of assistive technology, because it's really ridiculously expensive if you try to buy it yourself. Even with a full-time job I can't afford assistive software."

Dua sited examples of assistive technology (AT) that are very expensive and raised the point that people with disabilities are associated with low employment rate and therefore can't afford such software and devices. "The last statistic I read was 70 percent of those with disabilities, or at least with visual impairments or who are blind are unemployed."

Dua argued that assistive technology is expensive for two main reasons. First, there is a small market for such technology.

> "If you have a mainstream application like Microsoft Office, there are so many more consumers, which makes it relatively cheap. It is because of economies of scale that assistive technology vendors have to mark up the prices for their software. They have to maintain their infrastructure, develop new software, do upgrades, etc… that's why it's really expensive."

Secondly Dua explained that another reason assistive technology is so expensive is because much of it is purchased by organizations rather than individual users.

> "A lot of the purchases are made by rehabilitation centres, high schools, universities, hospitals, etc… and not by end users. These organizations have to buy it for legal reasons and of course they also have to buy it for their customers, or students etc. [If I'm a developer] and I know that a grant is going to pay for my software, I'll mark it up as high as possible, because it's not coming out of the end user's pocket, or only a small percentage is."

Dua described how the high unemployment rate of people with disabilities is related to and perpetuated by limited access to technology, increasing the divide between people with disabilities and those without disabilities.

> "Let's say I'm visually impaired, I want to go to monster.com to look for a job. I don't have a screen magnifier so I can't go to that website, and I don't have a screen magnifier because I can't afford it unless I have a job. You see the vicious circle that goes on from there."

Shifting his focus to mainstream software and website design, Dua stated that most mainstream software and websites are not designed with accessibility in mind.

> "The statistic that I read was that 98% of websites are not compliant with accessibility guidelines. If accessibility helps so many people, and in some cases help businesses, why don't companies make their software or their websites accessible?"

To support his claim that accessibility is often ignored, Dua referred to a 2001 survey of 25 companies that develop educational software for children. "Sixty five percent of those companies were not aware of accessibility as an issue. They didn't even know anything about it. None of them are currently addressing accessibility, and 88 percent had no plans to do it in the future." Upon further investigation it was discovered that there were two main reasons these companies had not produced accessible software.

> "They assumed that the assistive technology industry was responsible for making their software compatible with the mainstream software vendors. They also stated that their quality assurance department just didn't have time to broaden its testing reach. This was primarily because they didn't factor accessibility in from day one; a lot of people will try to add patches later on, and that tends to be much more expensive"

Dua suggested that one solution to the problem of accessible software being so expensive is for assistive technology vendors to partner with mainstream software vendors. This partnership can make these products free to end users. Dua provided examples to support his claim.

> "Let's take the example of Issist. We develop a piece of software (iZoom) which is a screen magnifier. We can go to a website owner and say 'we can improve the accessibility at your website if you partner with us.' We work with businesses in order to generate revenue. We don't charge end users for our software and I think that's a better business model in the long run. The end result of using this business model is that it will drive the prices for AT software down because it will bring in natural competitive market forces.

> When there are no grants and companies are able to sustain themselves without any grants being put in from end users for their software because they're working with businesses, it will bring more natural market forces, and more competitive market forces (inaudible) competition. And that will drive prices down for end users." [Umang, can you help clarify this]

Dua explained that this business model is not unique to Issist, and described three other companies that generate revenue this way.

> "Texthelp is a company that has a product called Browsealoud that will read out anything that you place your mouse over. So if you visit a webpage that has been speech enabled by Texthelp, it will read it out to you. Readspeaker is another software that does something similar. It reads out an entire webpage in real time, but it's not just whatever you put your mouse over, it will read out the webpage in a linear fashion. UsableNet is a company that has a product called LIFT Text Transcoder, which can convert any webpage into text. They have a modified version of that that they market for websites."

Dua said that each of these companies could have sold their software directly to end users, but have chosen to sell to websites. "That is how," he explained, "the end user gets to use a piece of software for free."

Although Issist launched iZoom only two months before his presentation, Dua said that feedback from end users has been very positive.

> "Similar software costs three or four digits easily if you buy it from other vendors. We've really received positive feedback because of this, and it really gives us a positive image. People really like our software, because it's free."

Dua concluded by emphasizing the benefits of partnerships between mainstream and assistive technology vendors. "AT vendors like to partner with other businesses to make their software more accessible instead of charging end users an exorbitant price for the software. This partnership with mainstream companies generates additional revenues for the AT vendors, so they can bring their prices down for end users."

Discussion:

An audience member questioned the proposed business model and wondered how it can actually work.

> "The model requires that the developers make a financial investment in accessibility and yet you presented research that shows that 98 percent of websites are not in compliance with accessibility guidelines. If people aren't following accessible design principals in the initial phase of development, how are you going to convince them to pay for something like this?"

Dua responded by giving an example of a company that Issist increased their potential customers and therefore revenue by incorporating a product from.

> "Netgrocer is an on-line business that sells and ships food. You can imagine it's more convenient for somebody who's visually impaired to simply go to a website and order something instead of going to a physical store. So if Netgrocer purchases a subscription to iZoom, the user with a visual impairment will now have access to their site and will potentially buy items which will increase their revenues. That makes a business case for the business to purchase our subscription."

Moderator Steve Jacobs (IDEAL Group, Inc.) suggested that even though the prices of some categories of AT can be lowered using Dua's business model, inevitably there will be some AT products that will continue to be very expensive simply because of the very low number of end users.

> "I'm sure that there are categories of AT, maybe screen magnification programs, maybe some programs that use voice recognition and text-to-speech, that can be sold at a lesser cost than they're currently being sold for. But commercially developed AT is still very important. Many of the higher-end pieces of AT can never be replaced by mainstream manufacturers, especially orphan AT products. Those will continue to be expensive due to the fact that only a few people will ever use them."

Presenter: Jeff Pledger (AbleTV.net)

Jeff Pledger is the CEO and founder of AbleTV.net, the first global multimedia network for people with disabilities. Through AbleTV he has pioneered new technology that integrates website accessibility with video streaming techniques and offers video with audio descriptions and captioning. AbleTV's mission is to encourage the dissemination of information using advanced emerging technology that is accessible and usable to a broad spectrum of users.

Pledger opened his presentation by stating "The subject of my talk is going to be about emerging technology; simply I'm going to talk about Voice Over IP, could it be a blessing or curse?"

Pledger discussed how TTY's have worked in such environments as landlines, DSL and cell phone environments. TTY was developed as an analog technology and therefore works well in the realm of landlines and DSL. Digital cell phones were initially inaccessible to TTY, but through a few modifications, cell phones are now able to send and receive TTY signals.

Voice over Internet Protocol (VOIP) is the routing of voice conversations over the Internet or through any other IP-based network. When discussing VOIP there are three scenarios related to how it can be used:

- VOIP phone stays resident at one location.
- VOIP used from a calling area is not tied to its physical location.
- A VOIP phone is registered in one location and is taken with the user to another location.

Pledger explained that VOIP is still in its infancy and although the service has seen much improvement within the past few years, it is still not at the level needed to transmit and receive TTY signals. "VOIP uses a public switch network, this causes a major problem by the fact that packets of information are being sent in an uncontrollable fashion." Pledger stated that "if you make a call from Montreal to Toronto using VOIP, your call could easily be routed through Anchorage Alaska to Moscow to Beijing, back to Paris, and then somehow connect all the way over to Toronto."

Currently, many of the major telecommunication service providers are looking at new ways to transmit TTY signals. In order to motivate this process and produce the necessary technology, Pledger said that we need to examine market forces. He suggested that communication between governments, industry and communities of people who use TTY will result in the necessary standards and guidelines needed to produce this technology.

> "What we really have to look at is some of the motivating factors that are going to help TTY regarding market forces, not only in industry, but the market forces of the end user community. What would really help out is if governments, industry and communities began cooperating and in engaging in open communication in such a way that standards and guidelines can be made available to produce this new technology."

To show how guidelines and standards change with technology, Pledger used the parallel example of the television. It has had three major technological advance since its conception in the 1940's; black and white, colour and more recently High Definition (HD). With each

technological level the development of new standards and guidelines was necessary. In response to HDTV technology, broadcasters have agreed that HDTV will become the standard television format by 2010.

Pledger concluded that VOIP is an example of ever-changing mainstream telecommunication technology. TTY must be modified in order to work on these new networks.

> "At some point, industry, governments, and the community are going to have to sit down and acknowledge that older or integrated technologies that won't be able to keep up with new and emerging ones and are going to have to go by the wayside. We need to create new standards and guidelines, draw a line in the sand and set a date to incorporate new technology. We need to look to see what's new and coming up and available."

Discussion:

An audience member asked what will happen with TTY. "How are people who are hard of hearing and also the deaf community going to be able to keep up with the mainstream and be able to communicate and have access?" Pledger responded by saying "In order for TTY to work in this VOIP scenario, there is need for modifications from industry to be able to allow for those devices to be able to communicate on those networks." Pledger re-iterated his idea that there need to be cooperative efforts between governments, industry and community to find a solution. Adding strength to this argument, Pledger sited his work on Section 255 from the US Telecommunications Act of 1996 as a successful example of this type of cooperation resulting in change. "That was probably one of the first times that I had seen different communities of people with disabilities, advocates, academia and industry work in a cooperative environment to actually accomplish the goal that was set forth by them within the law."

Pledger ended on a hopeful note "What you're going to find is that younger and younger individuals who are going to be growing up with new and emerging technology will move to the forefront and embrace new technology."

Thursday, May 12, 2005

PANEL DISCUSSION: Challenges of Engaging Industry in Research on Accessibility

Host: Doug Brolly (RBC)
Presenters: Gary Birch (Neil Squire Society), James Watzke (British Columbia Institute of Technology), Aldred Neufeldt (University of Calgary), Denise Buchner (University of Calgary)

Introduction

In this session, four presenters from the Dis-IT Research Alliance gave overviews of two Dis-IT research projects; each with a focus on the challenges of engaging industry in their first year and a half of research on accessibility. Presenters gave suggestions regarding why industry responded both positively and negatively, and suggested ways to better engage industry in research on accessibility.

The Dis-IT Employment research theme is examining best practices of the use of technology to make accessible workplaces. Aldred Neufeldt (University of Calgary) explained their use of the "snowball technique," whereby interviews with key informants were expected to identify best practice workplaces.

> "The intent was to find key informants who are in some way engaged in the new economy that lead us to employers that were open to hiring employees with disabilities. The next step was to contact those employers and arrange for interviews on approaches, accommodations, motivations, and discern whether what was happening in their place of employment were exemplars of good practice."

Neufeldt said the research had revealed "some interesting exemplars," but no "really scintillating innovations." Information sources included governments, non-government organizations, and private sector employers such as the banking, telecommunications, oil, and trucking industries.

Denise Buchner described a positive experience interviewing in the financial service sector. She made an initial contact with the company in fall 2004 which led to an in-person interview that identified several good practice sites. The interviewee then passed researchers on to headquarters personnel in Toronto. Buchner explained that despite some complications in organizing the meeting, the interview was successful.

> "Once we got there to conduct our interview, we actually found ourselves talking to this person who was incredibly compassionate in her work and committed to making the workplace accessible. Her office was full of books and materials on disability and accessible workplace, so she definitely had some sort of interest. From the interview we learned that the company had recently established new policies to make the workplace accessible and had conducted several workshops. All of the upper management had attended a workshop on disability. We also learned that the CEO of this company held issues of disability close to his heart. This particular interview was successful, even though it was a little tricky to get there. But it was successful because it gave us entrance to a company – and a private industry company – that was an interesting place to learn about, and it also led us to a few other possible exemplars of best practice to follow up on."

Buchner next described a less successful attempt at surveying a large funding organization. In this situation, the initial contact went smoothly, but the interviewee cancelled one hour beforehand because she wished to be more prepared and to include other people. Buchner rescheduled for a telephone interview, for a later date, but the interviewee again cancelled. The interviewee finally sent a questionnaire that had been filled out by cutting and pasting text from company documents. Buchner wondered if she should have pursued the telephone interview further, or if she had interpreted the interviewee's reluctance to participate correctly. "There's a fine line between when you stop chasing something because you're harassing the person, and when you keep pursuing. I think for us we felt like it was the end."

Gary Birch, leader of the Dis-IT Retail and Public Sciences research theme, described some of his research team's experiences surveying industry. Birch related the following success story of surveying a telecommunications product manufacturer.

> "We were able to make a contact at a conference at a senior level. That contact person directly set up a meeting with an even more senior person that was appropriate for the interview. We sent them the survey, we followed up by phone to go over the questions to make sure they fully understood the questions, had a chance to elaborate on their answers. It was done, and that was one of our earlier experiences."

However, Birch said that the Retail and Public Services research team's experiences surveying industry has been for the most part, filled with difficulties and frustrations. "Most of our experience had been very, very difficult." James Watzke then related a difficult experience of attempting to survey an elevator manufacturing company on their feedback related to accessibility for persons with disabilities.

> "Four or five months later and [the completed survey] had not happened. This is interesting because we had an agreement to complete the survey, and three separate staff, including myself, followed up with five to seven more contacts. After the third time it's called a 'nag,' it's not really an 'ask' anymore. Denise [Buchner's] point is well taken. You get to a point where you say, 'okay, what's going on here.' That survey is still not received from them. I'm deciding right now whether to give up on this. There aren't that many big elevator manufacturers; it's not like I can go to seventeen other companies and try to figure it out. So that's our less successful story and that scenario is not uncommon for both themes."

The presenters suggested a number of reasons for their positive experiences with engaging industry. Watzke identified the difference between applied research versus academic research, pointing out that applied research was advantageous for attracting industry participation in the Retail and Public Services theme.

> "Done well, applied research leads to significant marketing and PR benefits. This is one of the angles that we take with our private industry clients; we try to convince them that doing this isn't just research to help them develop a better product, it also has a lot to do with marketing."

Companies with existing disability policies were more open to participating in the research process (e.g., being interviewed, filling out a survey), as were those who were new to accommodations for workers with disabilities. Companies committed to organizational culture change and inclusive practices were also more willing to engage in research on accessibility. Lastly, the presenters agreed that internal champions (e.g., employees with disabilities or high-profile executives) make a big difference in how willing or committed a company is to engaging in the research process.

The presenters also listed internal champions as a reason for a *negative* experience of engaging industry in research on accessibility. According to Birch, finding internal champions within a company can become a source of vulnerability for researchers. "We also found that we were very vulnerable to these internal champions, because you would find a company that's got an internal champion and they're all gung ho, and then you'd phone next week to see what happened to the survey and they'd been moved to a different department." The presenters also mentioned that contacts within the companies, including internal champions, often felt disempowered by the complexity of the issue of accommodation. Recognition of the complexity of accommodation can generally cause companies to pull back from participating in research.

Neufeldt identified industry's concerns with privacy, propriety knowledge, and bad PR as reasons for their resistance to engage in research. "Some of the other kinds of responses we'd get indicating reluctance to this [research] had to do with privacy and proprietary knowledge. Some organizations, particularly in the private sector, you'd phone and say 'well, we're concerned about privacy issues,' and if we interviewed, this might lead to a public relations disaster of some kind." In addition to concerns about bad PR and privacy, Neufeldt explained that some organizations were concerned about proprietary knowledge, particularly when interview questions had to do with technological innovations. He described how researchers have reassured companies so far regarding this concern: "Of course we'd say our interest wasn't to describe the technical specifications of what they are doing, that it was simply to describe what was happening (i.e. how the technology assisted the disabled employee with her/his work) and the nature of the document, (i.e. to describe examples of good employment practice to them and other employees), and of course this was confidential unless release was authorized."

Neufeldt commented that some companies' concerns about privacy and proprietary knowledge, once addressed by the researchers, did not necessarily remain a barrier to engaging industry. In other circumstances, however, these concerns seemed to be a way of refusing to engage at all in the research. "For some it was just a way of diverting us."

Birch noted what he called a cultural difference between industry and researchers. Industry is motivated by the bottom line whereas research can be motivated by a number of different factors. The other presenters identified this difference as the main source for the barriers to involving industry in their research. Researchers must find a way to address the "what is in it for us to participate?" perspective from industry. Securing the engagement of industry is especially difficult if companies have no existing disability policies. Birch emphasized this point when he described the "gut feel" that his research team had for industry's resistance to participating in the research. "The other response that we got, or observation or gut feel, was just that disability issues and research were simply not a priority."

Neufeldt commented on the importance of timing and context for successfully engaging industry in research. If there is internal corporate stress, for example, companies simply may not have the time to respond to surveys. Neufeldt called successful engagement with industry a "coincidental good fit" that depends on an organization's particular and unpredictable "cycle of interest" in disability issues, accommodation, and capacity to engage in research.

Discussion:

Watzke, Birch, Buchner, and Neufeldt concluded their presentation with a call for help. They asked specific industry respondents, including Helen Maskery (Maskery), Jim Tobias (Inclusive Technologies), Ian Brodie (Canadian Standards Association), and Steve Jacobs (IDEAL Group, Inc.), to address the question. "How can we better engage industry in research on accessibility?" The question was then opened up for contributions from other institute participants, many of whom added to, reinforced, or expanded on the initial contributions of industry respondents.

Most of the suggestions from industry and other participants had to do with reciprocity which addressed industry's "bottom line" or "what's in it for me" perspective. Helen Maskery summed up the industry perspective to the researchers succinctly.

> "It all comes down to how much are you asking for? What might be the perceived risks from the company's perspective? And who can make the decision. I hate to say to this group, your request could be, or will be, one of many going into that company. The good news is you're not selling anything and you're in a feel-good domain."

Many responses included ways of addressing and framing the research process to provide a mutually beneficial process and outcomes for both researchers and industry. Jim Tobias suggested hiring call centres to prescreen companies. Tobias also suggested going to trade shows in order to reach out to industry. "At the very least you'll see, in their environments, what are the issues that they are listening to and how we can build a bridge between the accessibility issues and the issues that they're already paying attention to."

Kier Martin echoed Tobias's suggestion of meeting industry in their environment. In his experience, Martin has found trade shows to be more effective than talking and surveys. Martin related the story of how the St John's Independent Living Resource Centre (ILRC) rented a booth at a Canada Mortgage and Housing Corporation tradeshow on universally designed homes. Martin explained that the audience was open to disability issues because the ILRC was meeting them in their own environment and because the person presenting about universal design was from the business world. "Instead of myself or someone else doing the presentation, it was very important for us to get one of them to do the presentation. So we trained that person on universal design, got them up on stage and he did the presentation, so it was coming from him as opposed to someone from community."

Ian Brodie (Canadian Standards Association) suggested targeting companies who acknowledge Corporate Social Responsibility (CSR) and/or accessibility as a priority in their annual reports. He also suggested contacting industry associations and regulatory bodies, including the government, because they have influence over companies.

Maureen Hewlett (University of Northern British Columbia) suggested contacting post-secondary disability service providers who are often connected to students who have employers who are sensitive to disability issues. She also suggested contacting cooperative education program coordinators, as they "may be placing people with disabilities in a position with a company who is sensitive to disability issues."

Marie-Lynn Hamilton suggested a "slightly manipulative" strategy whereby researchers could target companies who have recently received bad PR regarding accessibility issues and approach them in their "small moment of vulnerability". "I think that a bottom line minded company would see the opportunity to, for free, have their image repaired, if not completely then at least moderately." James Watzke commented that "that's a very interesting idea, assuming the grand framework allows us enough time because we have no control over those incidents."

Many respondents recommended targeting decision-makers and senior management. According to Helen Maskery, "If you can get the CEO or President, to agree to the research, that's a really good start. However, make it clear exactly what help you'll need for him to make the research happen. It's okay to ask the champion to call the kick off meeting." Ian Brodie added that copying letters to senior management is an effective strategy. "If you cc the minister, you're always going to get a response." Jim Tobias agreed with Maskery and Brodie, adding that it is useful to get senior management to associate accessibility with a sales and marketing issue. "If you can get anyone at a relatively high level within a purchasing organization to stand with you and say 'we're in the process of acquiring accessible products that the federal government or the provincial government purchases, and we're trying to do this in a way that's friendly to business, can we work with you on how to achieve that?'"

Helen Maskery suggested that anonymous surveys have the benefit of allowing companies to participate in interviews "without connecting the company's name to the research." Tim Noonan (SoftSpeak Consulting) echoed this suggestion, recommending that researchers offer companies a non-disclosure agreement. "Offer up front to sign a generic non-disclosure agreement that really clarifies that you're going to generalize the results." On the other hand, Maskery also pointed out that a disadvantage of anonymous surveys is that companies do not receive public acknowledgement of their participation in the research.

> "The company needs to know exactly what is being asked for in terms of participation so that the company can assess the potential cost against value. The easier it is to participate, the higher the likelihood that companies will participate. And what may be perceived as easier by some, may not be perceived the same way by others."

Maskery emphasized the importance of timing. Knowing when to approach a company is important.

> "If a company has just gone through downsizing or mergers, their heads will not be in any place where you can get answers. They will be so busy trying to manage and understand the turmoil that's going on around them; there's not much room for anything else. Good times include getting another round of funding, or a start-up signing a huge, contract or winning a prestigious award."

Tim Noonan argued that face-to-face interviews are more effective than written surveys. "I really think there are lots of people that don't like completing paper surveys and questions—it's like an exam." Helen Maskery recounted contrary example where industry representatives were more comfortable with an on-line survey than face-to-face interviews.

> "I asked the researcher what kind of response rate they had with contacting companies to participate. Although she didn't have the exact number of calls made, she indicated that they had to make a lot of calls to get the 16 companies to participate. She did comment that several companies had been willing to participate in the online survey but not in the face-to-face interviews. The feeling was that they didn't want to talk about the research topic with a stranger, but they were willing to write about it."

Much of the remaining discussion had to do with reciprocity in research. Several participants argued that the research methodology must take into account the perspectives and wants and needs of both the researcher and the researched. Maskery framed the perspective of industry as the WIFM factor—'what's in for me?'—is unfortunately very predominant. However, the good news for disability research is that it is the right thing to do, and it doesn't usually cost the company to participate, other than freeing up time for individuals. This works in your favour." In her experience of surveying software companies in Ottawa, Mary Frances Laughton (Industry Canada) added to Maskery's list of how researchers can address the "WIFM" factor.

> "It doesn't necessarily need to be money. It can be kudos, it can be a shining star, but there has to be some rationale for these businesses, who are clearly in the world of the bottom line, either for themselves if they're privately owned or for their shareholders if they're not. There has to be some reason why they give that particular part of their time, because by and large businesses tend not to be altruistic."

Jim Tobias framed the issue of reciprocity in research as a discussion of the psychology of research that can work at an individual level as well as at an organizational level. "Building a relationship and crafting a message that makes sense not only to the companies but again to the individual that you happen to be talking to and understanding that person's role within the internal organization and then that organization's role within the company." At an organizational level, Tobias suggested approaching industry with what he called "the implementation and advocacy function" whereby researchers come to industry with the message that "'we're trying to find out how we can make it easier for you to accommodate employees, and customers. One of our goals is to collect data from our experiences with you so that we can spread the word about what works well for companies trying to do better in a company.'"

Tim Noonan suggested researchers make sure companies benefit from the research process and the expertise of the researchers. "If you actually share some of your expertise back to the company, not as a report, but as the second half of the conversation, say 'Look, we want to hear your perspective, and…because we've been working in this industry for a while, we want to give back.'" For example, Noonan suggested conducting disability awareness raising within the company which would "present in an educative way the sort of work that you're doing." He also recommended framing the research as an exploration rather than an interrogation to emphasize this intended reciprocity.

Gerard Goggin, like Noonan, recommended educating industry in disability issues as part of the research process. He referred to some difficulties he and his colleagues at the Disability Studies and Research Institute have experienced when surveying industry in their research on media and disability. He suggested that the difficulty has to do with industry's lack of awareness of disability. "Perhaps what we need to do is think of a longer process where we hold some seminars with the organizations to talk around various [disability] issues."

Goggin also pointed out that recent feminist, indigenous, and disability studies research methods address the importance of building relationships with the communities who are being surveyed and researched. This emphasis on reciprocity and community contradicts more traditional understandings of and approaches to research, which assumes that research can be conducted objectively rather than in context, and that there is no relationship between the researcher and the researched.

> "Maybe it's about saying 'researchers are in a larger economy.' I think part of the baggage of research is it comes from the kind of epistemic tradition is about say, 'we're external to this, we're observing, and so on. Those are incredibly important, but there's new literature that's about 'we're in relationships, we're in context, there's a gift economy here.' You know, there's reciprocity."

Gerard Goggin also raised "guerilla research" as a controversial strategy in which academic researchers use various experiences as research material and report their experiences in stories they tell outside of academic circles. It emerged in the 1990s in Australia amongst academics in the policy processes and is beginning to emerge in the humanities and social sciences literature.

> "It's a little bit tricky and very problematic because one of our tactics has been to tell stories *out of school*, so that in academic papers to report things we've heard the bureaucrats say or the industry persons say or the NGO's say, because we think it's important and we think we can take a kind of risk in doing that."

Deborah Stienstra (University of Manitoba) questioned the ethics of guerilla research, in particular the difficulty of conducting this form of research within the current research ethics climate in Canada. "It's a great idea, but ethically I don't know how it could be sustained. It wouldn't pass an ethics committee." James Watzke added that this research strategy would be equally problematic from his vantage point as an applied researcher who is associated more with industry than academia. "I wouldn't be allowed to do it regardless. I'm in management and I represent my institute even when I'm off work. But it's a very interesting idea."

PANEL DISCUSSION: Conclusion

Moderator: Deborah Stienstra (University of Manitoba)
Panelists: Marcia Cummings (Rogers Communications Inc., Alliance for Equality of Blind Canadians), Anthony Guirgis (University of Manitoba), Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland), Deborah Stienstra (University of Manitoba)

Panelist: Marcia Cummings (Rogers Communications Inc., Alliance for Equality of Blind Canadians)

Marcia Cummings commented on the 2005 institute from her dual vantage point as someone who works within industry (Rogers Communications Inc.) and the disability advocacy movement (Alliance for Equality of Blind Canadians). She recounted how older computer technology (mid to late 1980s), including mainframe systems, DOS, terminal emulation, speech output, and the existence of very few graphics created more of an "equal playing field" for people with disabilities. With increased graphics in computer technology, however, has come increased inaccessibility for users with disabilities.

> "[Technology companies] have taken the attitude that 'okay, we know that we have to make speech work with it, but we'll do it after everything is already

> created.' And that's unfortunately what they did. At the end of the whole development process, when you've used your nonstandard tools to develop in the first place, we, the user community, know that it wasn't going to work and it didn't. Now we're in the situation where we have very little access to the systems we used to have full access to."

Cummings was pleased that one consistent message coming from all presentations at the institute was to address accessibility at the outset of the design and development stages of technology, rather than as an add-on or an afterthought. "You've got to have accessibility on the plate with everything else—security system, the way you want it to work, functionality, usability, accessibility. It's got to be all there at the beginning and thank you for everybody who has repeated that over and over again."

Cummings was pleased to be able to return to Rogers with the message that accessibility is an important issue for industry to consider "Everything that has been said here is what I've experienced and everything that myself and the rest of blind employees at Rogers have been saying for 18 years or thereabouts. I thank you for showing me that the page I'm on is the right one."

Panelist: Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland)

Goggin commented that the institute encompassed the "breadth of the spheres of our lives" which are affected by technology. He found the detail of the work of Dis-IT in Canada to be impressive and also noted the strength of connectedness of the research across themes and concentrated settings (e.g., workplace, standards). He considered the commitment of Dis-IT over three years to be a strength of the research and suggested "being inventive about who currently pays the paycheck" as one of a number of ways of sustaining Dis-IT beyond the allotted funding timeframe.

He identified some of the tensions and contradictions that arose during the institute between human rights/citizenships arguments and economic/marketplace arguments, and noted that these were a useful set of conflicting approaches to return to in the research process. "Part of the answer lies in the complexity and the layering of the approaches." He framed these seemingly contradictory arguments as "some of the imponderables that we're trying to ponder," adding that there is potential for these perspectives to be used together. "I do think that in some sense we have a shared set of understandings."

Panelist: Anthony Guirgis (University of Manitoba)

Anthony Guirguis attended the 2005 Dis-IT institute as a part of a graduate course in Disability Studies. He spoke as a mechanical engineering student familiar with technology, but for whom the institute provided his first introduction to disability issues. Guirguis was inspired by his exposure to the disability movement and Disability Studies, and called for awareness-raising amongst mainstream society.

> "I think that information dissemination should be an important part of our strategy to reach more of the mainstream society, to reach the average person. And I think we can use media for that—radio and television—and use that as an external driving force to persuade industries to start generating products that are accessible."

Guirguis also recommended disability awareness-raising amongst the mechanical engineering community and suggested that provincial and national engineering associations in Canada could invite speakers to educate mechanical engineers about the importance of accessible technology.

> "I believe that engineers would be an excellent internal source of pressure. I know for myself, my process of thinking will never be the same again."

Panelist: Deborah Stienstra (University of Manitoba)

Stienstra provided closing comments from her multiple roles as a professor and director of Disability Studies program, the principal investigator, research co-director, and e-Democracy theme leader of the Dis-IT Research Alliance and as a scholar trained in Marxist and feminist critical perspectives. After spending time with the students at the institute, she noted that for many there was "that sense of feeling out of their depth" because the discussion during the institute "felt like a different language, a more technical language, a more applied language, perhaps a *sell out* language for those who were from a more critical perspective." Stienstra identified this "unsettling sense of discomfort among the students" to be a response to a paradox that participants experienced throughout the institute, the paradox between industry needs (e.g., problem-solving and applied research) and critical thinking needs (e.g., questioning power relations and academic research).

> "I think we've been experiencing a paradox between problem solving around the issue of access inclusion in IT, and critical thinking around the issues. And what I'm learning is that paradoxes first are really creative spaces. If we can live in the tension of being drawn towards solving the problems and thinking more critically about power structures within society and the ways that we image people with disabilities and create discourses, I think we can come to new

> places—to creative spaces. And by having all of the voices here that are here, we are creating those new spaces. So the spaces that I think we're trying to create in this Institute and beyond in the [Dis-IT] Research Alliance are spaces that none of us will own independently. They won't be industry spaces, they won't be academic spaces, they won't be consumer spaces, but they'll be spaces that we together will feel some comfort with."

Stienstra then gave an example of how to combine critical thinking to accessibility standards using the Canadian Standards Association (CSA) as a case study.

> "The CSA is an important tool in Canada, but I don't think we should use it uncritically. I think we need to reflect on where it gets it power, where it gets its legitimation. Who benefits? And who gets framed as needing accessibility standards? I think we frame people who have vision impairments—people who use screen readers – as the problem that needs fixing. What would happen if we looked from a different perspective around accessibility and standards? Who doesn't get included in those sorts of frames? Well, people with intellectual disabilities aren't at all part of our discourses."

Stienstra then reviewed some of the early findings from the Dis-IT e-democracy research regarding accessibility standards. She commented that the barriers experienced by people with disabilities have less to do with technical issues and more to do with emotional issues—what Jacquie Ripat referred to in the 2004 institute as affective responses to technology—as well as issues of poverty and isolation.

> "At last years institute, we talked about the affective, the feeling, the emotional pieces of our relationships to technology. When we're talking about accessibility standards I think we have to move one step back. What is the context within which people face technology? What is the role of poverty and exclusion in our looking at accessibility standards? We need to look at what I would call the structural or the more systemic features, the key features, of why certain populations of our society are marginalized or isolated in the knowledge-based economy. How does poverty, isolation, lack of disability supports, contribute to and sustain those exclusions in information technology? We have to ask; who are people with disabilities? And who are we creating as people with disabilities? If we understand that disability is created, not embodied in people as a result of their impairment, how do we—in the development, in the marketing, in the use of information technologies—create disability? And who gets created as disabled? I don't think we can assume that anybody with a visual impairment is disabled in an IT environment. I think that's a faulty assumption, and I think our

> accessibility standards are premised on the notion that 'you're disabled because you have an impairment,' not 'you're disabled because the technology disables you.' And that's the piece we need to think about."

Stienstra encouraged participants not to think in "either/or" polarities regarding research. For example, "either" applied technical research "or" critical academic research; "either" the economic argument "or" the human rights argument. Rather, she called for participants to "hear both" perspectives and to "be respectful" of both perspectives in order to "move this common agenda forward." Finally, she challenged participants to think of ways to sustain the Dis-IT Research Alliance beyond its three year project cycle.

> "I think we need to live in this paradox, in this space between, and critically engage ourselves and each other, to think about how to think differently. I'm really looking forward to keeping in touch with all of you, to engage in getting the results of this disseminated more broadly, and in developing a capacity to think about this differently."

Appendix 1: Participants

- Monica Ackermann (Assistive Vocational Technology Associates, York University)
- Gary Annable (Dis-IT Research Alliance)
- Claire Atherton (Dis-IT Research Alliance)
- Maria Barile (Dis-IT Research Alliance)
- Laurie Beachell (Council of Canadians with Disabilities)
- Gary Birch (Neil Squire Society)
- Doug Brolly (RBC Royal Bank bis Group)
- Ian Brodie (Canadian Standards Association)
- Denise Buchner (Dis-IT Research Alliance)
- Francis Charrier (Dis-IT Research Alliance)
- Marcia Cummings (Rogers Communications Inc., Alliance for Equality of Blind Canadians)
- April D'Aubin (Council of Canadians with Disabilities)
- Dave Dougall (Research In Motion)
- Umang Dua (Issist)
- Catherine Fichten (Dawson College)
- Gerard Goggin (Disability Studies & Research Institute (DSaRI), University of Queensland)
- Anthony Guirgis (University of Manitoba)
- Marie-Lynn Hamilton (Independent Living Resource Centre)
- Sara Harms (Dis-IT Research Alliance)
- Maureen Hewlett (University of Northern British Columbia)
- Steve Jacobs (IDEAL Group, Inc.)
- Taras Kowaliw (Dis-IT Research Alliance)
- Marie-Eve Landry (Dis-IT Research Alliance)
- Mary Frances Laughton (Industry Canada)
- Doug Lockhart (Independent Living Resource Centre)
- Kier Martin (Council of Canadians with Disabilities)
- Helen Maskery (Maskery)
- Susan Mazrui (Cingular Wireless)
- Rick McAteer (Office for Disability Issues/SDC)
- Michelle Murdoch (Council of Canadians with Disabilities)
- Shane McKenzie (Independent Living Resource Centre)
- Aldred Neufeldt (University of Calgary)
- Tim Noonan (SoftSpeak Consulting)
- Julie Platt (Government of Manitoba)
- Jeff Pledger (AbleTV.net)
- Jarrett Rempel (Independent Living Resource Centre)
- Jacquie Ripat (University of Manitoba)
- Deborah Stienstra (University of Manitoba)

- Jim Tobias (Inclusive Technologies)
- Lindsey Troschuk (Dis-IT Research Alliance)
- James Watzke (British Columbia Institute of Technology)
- Joan Wolforth (McGill University)