





# About the Speakers

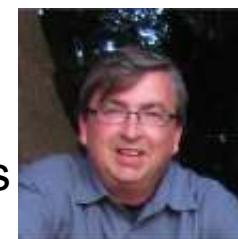
## CHRISTINE BANKE

- Chris is an accessibility strategy expert in IBM Research, currently responsible for integrating IBM's innovative accessibility expertise, services, technologies and initiatives into mainstream markets.



## DAN SHIRE

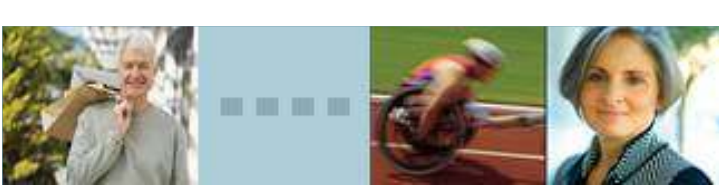
- Dan is a user experience and accessibility specialist in IBM Canada's Global Services team. He works with Canadian customers to design, develop and test business solutions that meet customer needs for ease of use and accessibility compliance. Dan also served as a member of the Ontario government standards development committee for accessible information and communication



## PHILL JENKINS

- Phill is a Senior Software Engineer in the Human Ability and Accessibility Center of IBM Research. Phill has been leading accessibility efforts in IBM for over a decade and was appointed by the President effective January 2009 to a four year term on the U.S. Access Board, a federal agency ([www.access-board.gov/](http://www.access-board.gov/)) dedicated to accessible design for the Americans with Disabilities Act (ADA), Section 508 of the Rehabilitation Act, and represents the Access Board on the Election Assistance Commission Board of Advisors.

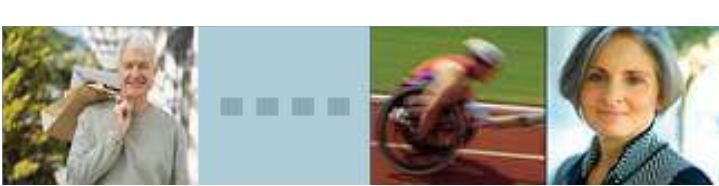




# Topics

- **Introduction**
- **Sustainable Measures**
- **Usability and Testing**
- **Heuristic Analysis**
- **Future of Television**



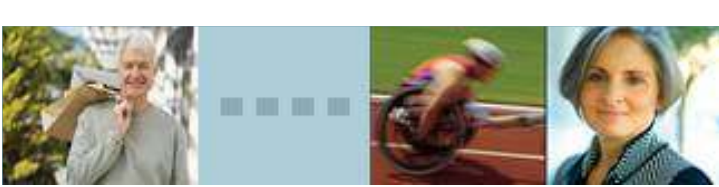


# What you will Learn

## ■ Together we'll explore:

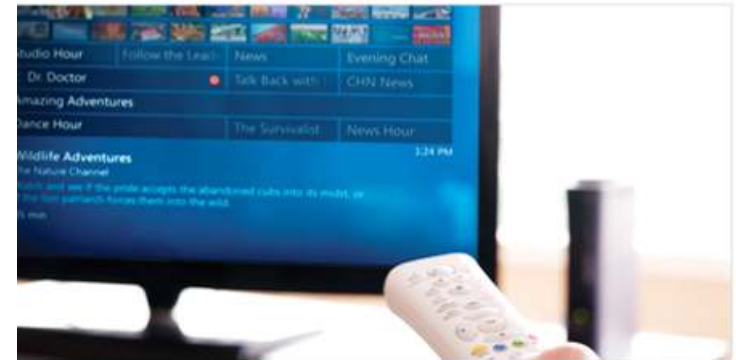
- what IP TV is
- the latest trends in IP TV
- an accessibility assessment process
- recent findings on the accessibility of the latest TV technologies, controls, and programming media content
- technical assessments that includes testing with persons with disabilities
- the issues and promises of this emerging technology
- how people/organizations/companies sustain it





# What is IP (Internet Protocol) TV?

- From a consumer view:
  - Similarities with Cable TV
  - Similarities with Satellite TV
  - Still have a remote, TV, set-top box, programming guide
- Broadcast programming
  - On-demand, pay-for-view, etc.
- **Not** – IP video on laptop or mobile
  - **Not** Netflix, YouTube, or ... on a mobile, tablet, or laptop
  - We're talking about living room large HD TV monitors
- Bundled with other services:
  - VOIP Home Phone
  - Internet service, Hotspot services, . . .
  - Web access to voice mail, video recording, TV guides, etc.
  - Wireless services and apps





# IP TV available in many countries

## The Americas

|                        |            |
|------------------------|------------|
| USA<br>                | USA<br>    |
| USA<br>                | USA<br>    |
| USA<br>                | Canada<br> |
| Canada<br>             | Mexico<br> |
| Dominican Republic<br> |            |

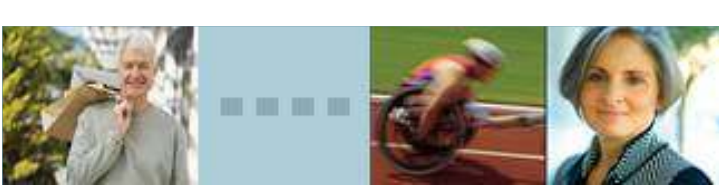
## Europe, Middle East and Africa

|              |               |                 |
|--------------|---------------|-----------------|
| UK<br>       | Germany<br>   | Switzerland<br> |
| Portugal<br> | Portugal<br>  | Denmark<br>     |
| Italy<br>    | Hungary<br>   | Montenegro<br>  |
| Slovakia<br> | Macedonia<br> | Greece<br>      |
| Russia<br>   | UAE<br>       | France<br>      |

## China and Asia Pacific

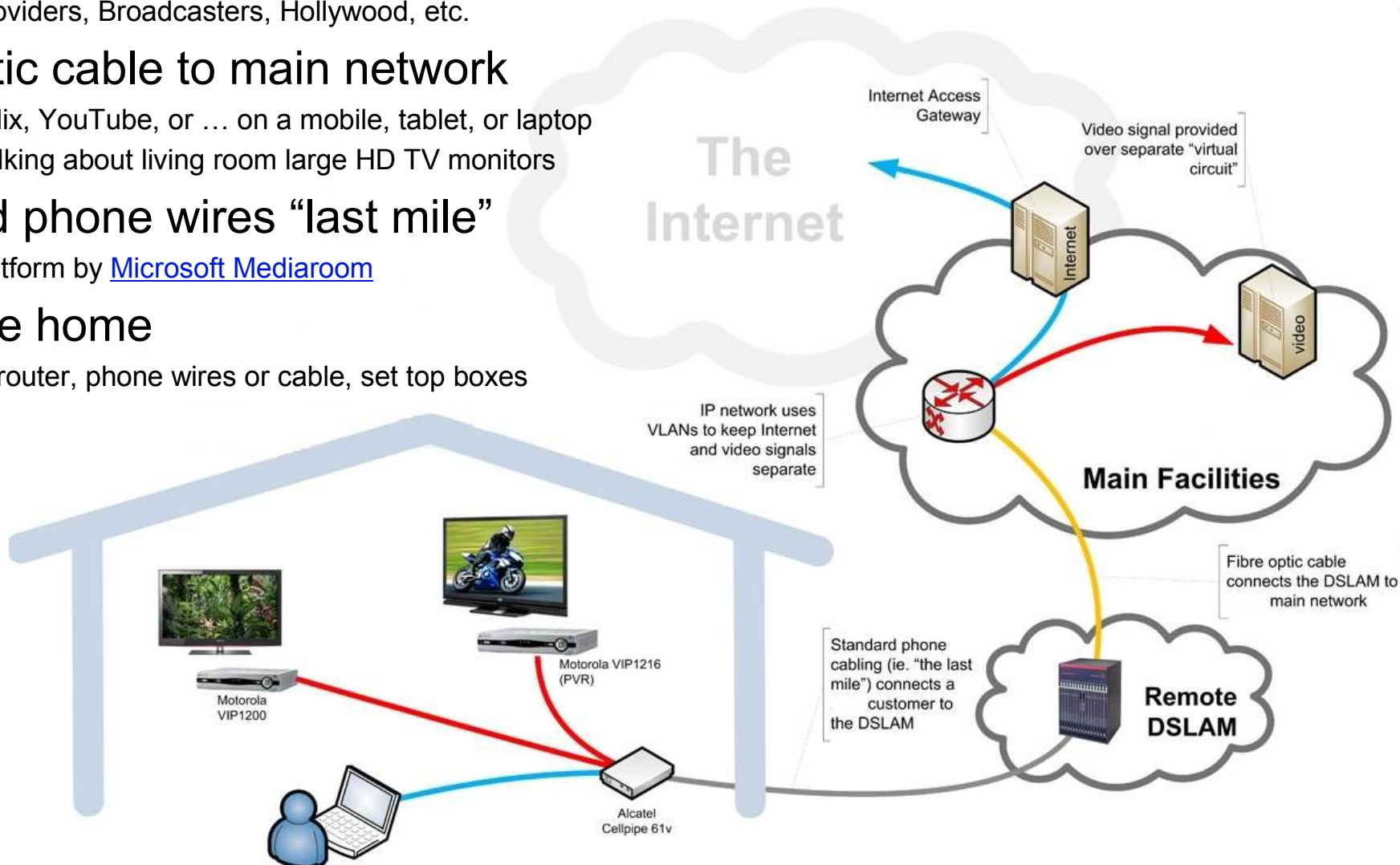
|               |
|---------------|
| Singapore<br> |
| China<br>     |

IPTV platform by [Microsoft Mediaroom](#)



# How IP TV works?

- Programming content
  - From providers, Broadcasters, Hollywood, etc.
- Fiber optic cable to main network
  - **Not** Netflix, YouTube, or ... on a mobile, tablet, or laptop
  - We're talking about living room large HD TV monitors
- Standard phone wires "last mile"
  - IPTV platform by [Microsoft Mediaroom](#)
- Inside the home
  - Internet router, phone wires or cable, set top boxes





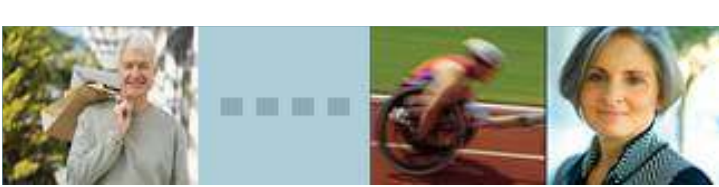
# Project Overview

## IP TV is an emerging accessibility challenge

- Goes beyond captioning, DV, and accessible remotes
- Strategic Business – who dominates TV/web/mobile?
- Competition is Everywhere
- New standards & regulatory requirements

## Our projects revolve around both a tactical accessibility assessment and a strategic company initiative

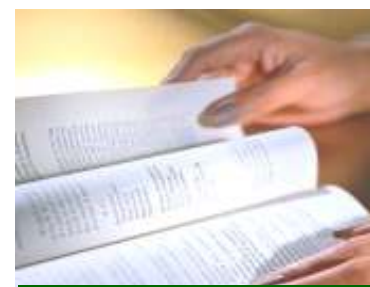
- **Non-Traditional Accessibility Assessment**
  - IP TV vs Web applications
  - Set-top box & Remote Control Devices
  - Apps & Programming Guide
- **New Governance & Process Transformation Project**
  - New business concerns relative to accessibility
  - How do companies/organizations address integrate & sustain accessibility



# Part 1: Sustainable Measures

## Examine your Organizations Accessibility “As-Is State”

- Identify gaps against accessibility best practices across the following dimensions:
  - **Organization - Roles & Responsibilities**
  - **Standards and Guidelines**
  - **Products & Offerings Development, Test & Project Management Processes**
  - **Procurement**
  - **Development and Testing Tools**
  - **Customer Support Practices**
  - **Training & Skills Development**
  
- Prioritizing the findings into strategic recommendations
- Build a roadmap to methodically integrate accessibility best practices across these dimensions



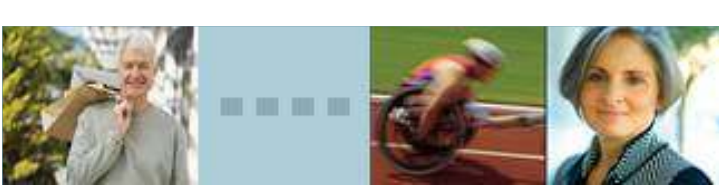
Process



Technology



People



# Sustainable Measures

## Identify Key Stakeholders & Map to the Dimensions

| Key Stakeholders  | Definition   | Example Organizations  |
|-------------------|--|--|
| <b>Owning</b>     | <ul style="list-style-type: none"> <li>• Overarching accountability are responsible for maintaining the policies</li> <li>• Ensure that the policies are available throughout the corporation and remains current with regulatory requirements , legislation as well as any other relevant company policies</li> </ul> | Line of Business (LoB), Corporate Affairs, Public Relations, HR, or CIO's Office, etc.                                   |
| <b>Governing</b>  | Responsible for determining that the policy is followed and providing guidance for complying with the policy   | Legal, Project Management Office, I/T Program Office, Architecture and Standards, Testing Center of Excellence, etc.     |
| <b>Delivering</b> | Responsible for ensuring that products, whether developed or procured are designed for accessibility and supporting process and resources to do so are available, respectively   | Procurement, Product Development and Test Teams, Project Management Teams, Customer Service, Call Center, eLearning, etc |



# Sustainable Measures: Project Outcomes

**Execute the accessibility roadmap resulting in a deep penetration of accessibility policy, employee responsibility and process integration across the organization**

- Cross-Organization Roles & Responsibilities Identified and Measured
- “Corporate” Accessibility Policy & Governance Published & Communicated
- Employees trained on Policy, Process and Developer/Test Techniques
- Accessibility Requirements built into the fabric of your organizations processes
  - Project Management & Project Charters
  - Concept & Design, Development & Test
  - I/T Architectural Guiding Principles
  - Procurement
- Accessibility Standards Documented and Published

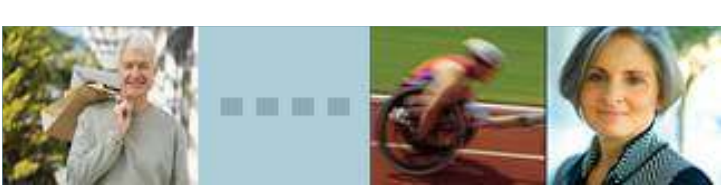




## Part 2: Usability and Persons with Disabilities

### Effective usability & accessibility assessments require:

- **Good planning**
  - Engagement of interested parties
  - Commitment to the process – time, people, agreement to take real action
  - Following the principles of good usability: effective, efficient and satisfying
- **Good delivery**
  - Careful setup
    - Environment
    - Structured test scripts
    - An objective and repeatable process
- **Good analysis** and reporting of the results
  - Looking for patterns, and also for informative “wild cards”
  - Specific and actionable recommendations
  - A follow-up plan to monitor progress



# Usability & Testing with Persons with Disabilities

## Good planning:

- Interviews conducted with 12 representatives:
  - Low vision and blindness (3), dexterity and mobility (5), hearing loss and deafness (4)
  - Participants were leaders in their fields of knowledge – specialists, Dr., MBA

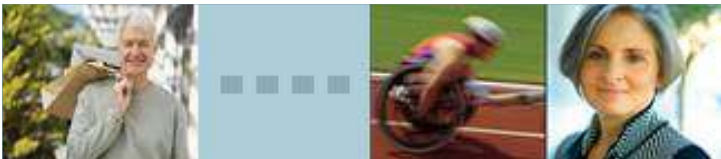
People with disabilities frequently embrace technology – early adopters, flexible, enthusiastic.

Networking to share information and issues – extremely effective and well organized

In Canada, there are stable government programs in place to assist with periodic technology acquisition – especially when the technology can help enable employment

Technology is moving so quickly:

- Hard to keep pace
- Amazing innovations – e.g. iPhone and iPad provide accessibility features for many individuals. These ‘commodity’ items are complementing traditional assistive technology that costs \$ thousands.



# Usability & Testing with Persons with Disabilities

## Good delivery:

- Tested with 12 participants:
  - Blind (3), Vision loss (3), Deaf (2), Hard of hearing (2), Dexterity & mobility (2)
- Pre-defined Test scripts
  - 10 typical scenarios – check schedule, search for a movie, order a movie, program the PVR, turn on CC, read the user's manual, etc.
  - Pre and post questionnaires –
    - Special requirements, familiarity with technology, background
    - Which features the participants liked and disliked best.
- Environment
  - Simulated living room – big-screen TV, typical lighting and ambient noise levels
- Objective and repeatable process
  - Minimal coaching during the scenarios – let the participant work it out
- Important – we test the technology, not the person – supportive/positive approach



# Usability & Testing with Persons with Disabilities

## Good analysis and reporting of results:

Critical to prioritizing the findings

### Sample Usability & Accessibility Findings

- Blind
  - I can't do anything except turn it on and off, channel surf and adjust the volume using the remote.
- Low Vision
  - It's difficult to use the program guide or the menus – the font is very small and the words are hard to see on the busy background.
- Hearing Loss & Deaf
  - Are these programs closed captioned?
  - How do I turn on closed captions?
  - I'd like to rent this video on demand, but it doesn't tell me if it's closed captioned or not. I won't rent unless I'm sure.
- Dexterity and Mobility
  - If I drop the remote, it may be 5 hours before my home-assistant comes back in to pick it up for me.





# Usability & Testing with Persons with Disabilities

## Good analysis and reporting of results:

| Disability Group   | Issues   | Recommendation  |
|--------------------|--|---|
| <b>Blind</b>       | <p>Most 'core' IPTV features and benefits are not available to blind customers because the menu and program guide content is not read aloud.</p> <p>Most programming is not Described Video (DV)</p> <p>Remote is complex with limited tactile feedback, no key announcement.</p>  | <p>Engage technology suppliers to address foundational accessibility gaps. Can they share their development plan?</p> <p>Work with content suppliers.</p> <p>Support user's choice of remote (selected remotes only) - requires some testing and documentation.</p>   |
| <b>Vision loss</b> | <p>Fonts are fixed size, making it harder to read content and navigate the functionality (menus and program guides).</p> <p>Contrast an issue for some conditions.</p> <p>Live program in background makes it hard to see the foreground content (guide, menus).</p> <p>Remote – as above.</p>   | <p>Design and implement user selectable choices:</p> <ul style="list-style-type: none"> <li>font size</li> <li>2 or 3 high contrast colour schemes</li> <li>turn on/off the background program image</li> </ul> <p>These choices would be persistent for the household (ideally at set-top box level).</p> <p>Tactical timeframe with significant benefits for many users (common frustration).</p> |
| <b>Deaf</b>        | <p>Inconsistent indication of Closed Captioned content (CC) – may not always be passed over from the guide supplier. Deaf and hard of hearing customers cannot search on CC programs.</p> <p>Video on Demand – there is no indication whether the movie has CC. Customers will not rent a movie to discover they cannot watch it without CC.</p> | <p>Ensure that CC information is provided by the program guide supplier and that it is displayed on the IPTV guide, program summary and program details screens.</p> <p>Extend search function to allow choice of CC.</p> <p>Video on Demand – clearly indicate CC movies.</p> <p>Remote control – dedicated CC button</p>  |



# Usability & Testing w/ PwD

## Good analysis and reporting of results:

| Disability Group                 | Issues   | Recommendation  |
|----------------------------------|--|---|
| <b>Hard of Hearing</b>           | As above for deaf  | As above  |
| <b>Mobility and Dexterity</b>    | Remote – <ol style="list-style-type: none"> <li>1.Close buttons</li> <li>2.Small buttons</li> <li>3.Rolls on flat surface</li> </ol><br>For users with dexterity issues (e.g. cerebral palsy, arthritis) the remote is very hard to use. | Minimum – test a number of popular ‘universal remotes’ commonly used by PwD so we can answer customer questions.<br><br>Better – test and provide customer with a choice of a large button remote (including CC and SAP buttons to benefit deaf and blind). We were told by a subscriber of a competitive product (cable TV) that they provide this as a free option. |
| <b>Common to multiple groups</b> | Background programming content (behind the menu and schedule) is not always the user’s preference.<br><br>Product documentation – challenges with current printed format. Could be improved with guidance to user groups.                | Enable user choice of this feature: on or off.<br><br>Provide accessible documentation (web) – compliant HTML and PDF.<br>Include ‘hints’ to help users get a quick start (e.g. how to turn on CC, how to select bigger menu fonts, turn off background images, etc.)   |

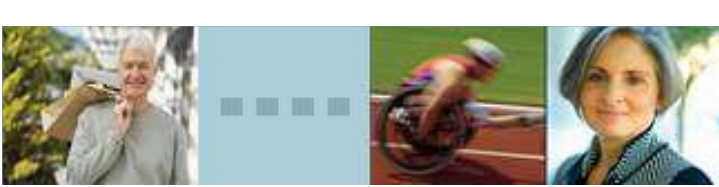


## Part 3: Heuristic Analysis

### Information and Communication Technology (ICT) Standards and Guidelines

(Draft published in U.S. Federal Register 22 March 2010):  
[www.access-board.gov/sec508/refresh/draft-rule.htm](http://www.access-board.gov/sec508/refresh/draft-rule.htm)

|  | <b>Policy application</b>  |
|--|--|
| U.S. Section 508 of Rehabilitation Act                               | Applies to ICT that is procured, developed, maintained, or used. |
| U.S. Section 255 of Telecommunications Act                           | Applies to manufacturers of telecommunications products.         |
| U.S. American with Disabilities Act Accessibility Guidelines (ADAAG) | Applies to buildings and facilities covered in the ADA           |
| W3C Web Content Accessibility Guidelines (WCAG) 2.0                  | Applies level A and AA provisions to web content.                |



# Heuristic Analysis – ICT functional performance

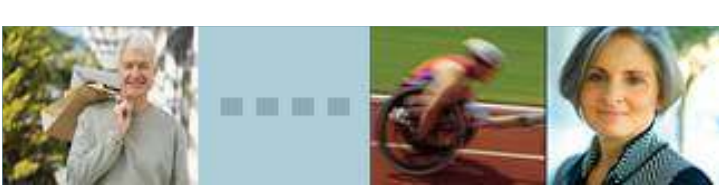
## Criteria 202\*

ICT shall provide access to all functionality for users

|  | Pass  | Fail   | Notes  |
|--|---|--|--|
| <b>Without vision blind</b>                      |   | IPTV Menus, Remote, Programming, Set-top box | Limited support in platform, Programming fails if not described (DV), content supplier responsibility. |
| <b>With limited vision</b>                       | Platform includes some support for alternative fonts and colors (skins) | IPTV Menus, Remote, Programming, Set-top box | Size and contrast of menus, size of buttons/text on remote, size of light indicators on Set-top box    |
| <b>Without perception of colour</b>              | IPTV menus (mostly), remote, set-top box (mostly)                       | Color light indicators on Set-top box        |  |
| <b>Without hearing</b>                           | IPTV menus, remote (note CC button), set-top box                        | Programming                                  | Programming fails if not CC, content supplier responsibility.  |
| <b>With limited hearing</b>                      | IPTV menus, remote (note CC button), set-top box                        |  | CC programming is very helpful<br>User control of volume is provided.                                  |
| <b>Without speech</b>                            |   | Not applicable                               | No speech (voice input) required.  |
| <b>With limited manipulation</b>                 | Set-top box   |  | Stability of remote – rocking  |
| <b>Without physical contact</b>                  | Set-top box   | Remote                                       | Information on compatible infra-red remotes is not provided  |
| <b>Minimize photosensitive seizure triggers.</b> | IPTV Menus, remote, Set-top box   |  | Programming content n/a  |

- \*U.S. Information and Communication Technology (ICT 508/255 Refresh) Accessibility Standards and Guidelines (draft 2010)
- Country policies are closely following the U.S. Accessibility Standards and Guidelines
- Possible ‘one-stop shopping’ for technical accessibility standards – benefits industry and government and users  
[Sample analysis, not attributable to any single provider]



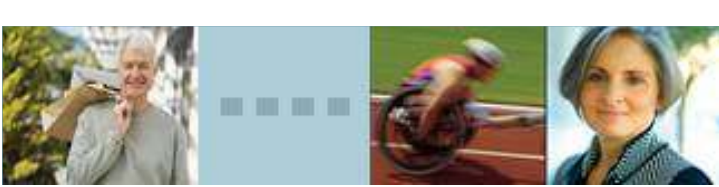


# Heuristic Analysis – ICT platforms, apps, interactive content

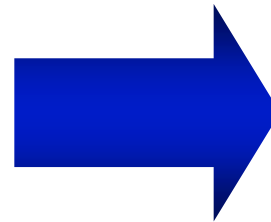
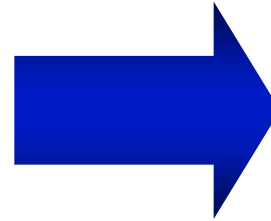
| Criteria 400*<br>Platforms, applications, &<br>interactive content | Applicable | Guide  | Remote | Media<br>Content | Set top<br>box | Notes   |
|--|------------|--------|--------|------------------|----------------|---|
| 403.2.1 Pause or stop audio  | Yes        | Pass   | Pass   | NA               | NA             |   |
| 403.2.2 Volume Control   | Yes        | Fail   | ?      | NA               | NA             | Volume control independent from overall system volume   |
| 403.3 Resizable Text   | Yes        | Fail   | NA     | NA               | NA             | 2X enlargement needed                                   |
| 404.2 Keyboard Interface   | Yes        | Mostly | Pass   | NA               | Mostly         | All functionality operable through a keyboard interface |
| 404.3 No keyboard traps  | Yes        | Pass   | NA     | NA               | NA             |   |
| 404.3.1 Keyboard exit  | Yes        | Pass   | NA     | NA               | NA             |   |
| 404.3.1.1 Standard exit  | Yes        | Pass   | NA     | NA               | NA             |   |
| 404.3.1.2 Non standard exit  | Yes        | NA     | NA     | NA               | NA             | None available  |
| 404.4 keyboard shortcuts   | Yes        | Fail   | NA     | NA               | NA             | No presentation in one mode                             |
| 404.5 Visible focus  | Yes        | Pass   | NA     | NA               | NA             | Yellow border easier to see                             |
| 405.2 Control of time limits                                       | Yes        | Fail   | NA     | NA               | NA             | No user control   |
| Etc. . .   | Yes        |        |        |                  |                |   |
| 413 Authoring tools  | No         |        |        |                  |                |   |

\*U.S. Information and Communication Technology (ICT 508/255 Refresh) Accessibility Standards and Guidelines (draft 2010)  
 • Possible ‘one-stop shopping’ for technical accessibility standards – benefits industry and government and users  
 [Sample analysis, not attributable to any single provider]





# Challenges and paradigms shifts



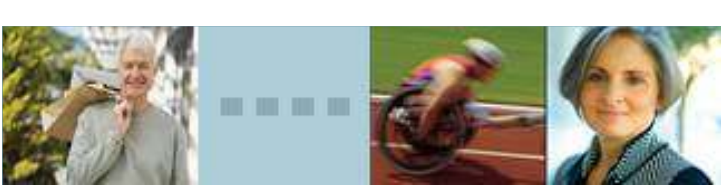


# The future of Television is here

- Motion controls
  - Nintendo's Wii
  - Microsoft's Kinect
- Downloadable apps
  - Netflix, Flickr, Vudu, etc.
- Internet access
  - Google TV, Yahoo TV, Apple TV, . . .
  - AT&T U-verse, Bell Fibe, . . .
- Streaming media
  - D-Link's Boxee Box, etc,
  - YouTube, Pandora, Facebook, etc.
- Videoconferencing
  - Skype, UMI, TV-CC10W, . . .



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# Summing it Up!

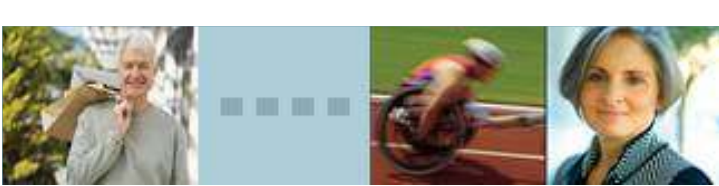
- **Sustainable approach**
  - Integrate accessibility into the organization & product life cycle
- **Usability and Design analysis required**
  - Including community and persons with disabilities
- **Comprehensive technical standards and guidelines**
  - Adaptable to physical constraints and non-traditional uses?



## Listed below are more IBM sessions of interest:

### Wednesday, March 16

- ✓ **WEB-2045** 8:00 - 8:30 (Gibbons)  
How IBM is Making its Web Applications (WAI/ARIA) More Accessible
- ✓ **OTH-1034** 9:20 - 10:20 (Cunningham)  
IPTV, Remote Control, Set Top Box, Apps & TV Guide Accessibility
- ☐ **WEB-2040** 10:40 - 11:40 (Windsor C)  
Advancing Mobile Usability and Web Access for Everyone, IBM
- ☐ **DHH-2003** 10:40 - 11:40 (America's Cup C)  
IBM AbilityLab Digital Media Captioner and Editor
- ☐ **OTH-2001** 10:40 - 11:40 (Windsor C)  
Need for and Benefits of a Global Public Inclusive Infrastructure Panel
- ☐ **OTH-1012** 3:10 - 4:10 (Emma A)  
Accessible Travel: Evolving the Practice of Providing Geo-Data Services to Improve Mobility Panel



## Listed below are more IBM sessions of interest:

### Thursday, March 17

- ❑ **WEB-3049** 10:40 - 11:40 (America's Cup D)  
HTML 5 Accessibility Panel
- ❑ **WEB-2040** 10:40 - 11:40 (Windsor C)  
Advancing Mobile Usability and Web Access for Everyone
- ❑ **WEB-1012** 12:00 - 12:30 (Emma B)  
Effective Video Captioning Using Collaborative Editing, IBM
  
- ❑ 4:00 - 5:30 Lifetime Achievement Award Celebration for Jim Thatcher,  
retired IBM



## Listed below are more IBM sessions of interest: Friday, March 18

- ❑ **WEB-2032** 8:00 - 9:00 (Cunningham)  
Accessible Analytics: Complex Charts, Large Datasets, Node Diagrams
  
- ❑ **WEB-1038** 12:00 - 12:30 (Gibbons)  
Unifying Video Captions and Text-Based Audio Descriptions
  
- ❑ **WEB-2037** 12:00 - 12:30 (America's Cup)  
Collaborative Web Accessibility Improvement System:  
A Real-World Deployment