

## IBM Accessibility Facebook Expert Hour on Intelligent Transportation & Accessibility Transcript 10/12/2011

[Anand Ranganathan](#) Looking forward to the expert hour today!  
You and [2 others](#) like this.

[Sabine Moebs](#) Yes, so do I, but how does it work?

[IBM Accessibility](#) Hi Sabine. See above for how this works. :-)

[IBM Accessibility](#) Hello everyone. Welcome to the October IBM Accessibility Expert Hour, and thank you for joining us. Our topic today is Intelligent Transportation and Accessibility. There is a lot of activity in the arena of transportation and accessibility taking place right now, and this should be an informative session.

[IBM Accessibility](#) We have five experts joining us today from Carnegie Mellon and IBM to answer your questions.

[IBM Accessibility](#) From Carnegie Mellon, please welcome:

- \* Aaron Steinfeld, PhD, Systems Scientist, Robotics Institute, School of Computer Science, Carnegie Mellon University (will be posting as Tiramasu Transit, a CMU account)
- \* Balajee Kannan, PhD, Research Engineer, Field Robotics Center, Robotics Institute, Carnegie Mellon University

[IBM Accessibility](#) From IBM Research, please welcome:

- \* Anand Ranganathan PhD, Research Staff Member, IBM TJ Watson Research Center
- \* Bill Curtis-Davidson, Accessible Transportation Business Development & Solutions Lead, IBM Research, Human Ability & Accessibility Center
- \* Pawan Khera, Business Development Executive, IBM Research, Human Ability & Accessibility Center

[IBM Accessibility](#) If this is your first Facebook Expert Hour, here is how it works: To participate in the real-time Q&A session, "Like" IBM Accessibility. Then to ask a question, type it into the box on your screen that says, "Write something..." and press Enter. Our experts will answer your question as a Comment, and it will show up underneath your question.

[IBM Accessibility](#) Please remember to refresh occasionally -- sometimes Facebook has trouble keeping up with the pace of our Expert Hours.

[IBM Accessibility](#) Okay, let's open the wall for questions. :-)

[IBM Accessibility](#) Can you tell us exactly what is meant by the term "Intelligent Transportation"?  
[Peter Rubinstein](#) likes this.

[Pawan Khera](#) Intelligent Transport Systems (ITS) refers to information and communication technology (applied to transport infrastructure and vehicles) that improve transport outcomes such as transport safety, transport productivity, travel reliability, informed travel choices, social equity, environmental performance and network operation resilience. See Wikipedia:  
[http://en.wikipedia.org/wiki/Intelligent\\_transportation\\_system](http://en.wikipedia.org/wiki/Intelligent_transportation_system)

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[Ginger Claassen](#) that is basically what I asked about - including public transport and passenger information into accessible navigation systems for the blind and people with other special needs,

[Anand Ranganathan](#) Intelligent Transportation tries to match supply and demand of transportation capacity

[Emanuel Lin](#) How are the accessibility factors taken into consideration?

[Kannan Balajee](#) Accessibility factors act as constraints and data points for the ITS system

[Ginger Claassen](#) Ok, I have no idea if this fits here but what about including public transport into accessible navigation systems for the blind?

[IBM Accessibility](#) Ginger, my apologies. Facebook stuck this post into the spam filter for some unknown reason. I'm forwarding it to our experts for an answer. Thanks. :-)

[IBM Accessibility](#) From Aaron Steinfeld: Ginger, this is one of the desired outcomes of the Geoaccess effort. Some commercial systems are already working towards this, but coverage is spotty. Likewise, there are transit apps on smartphones with varying degrees of screenreader compatibility. Our transit software, Tiramisu, is VoiceOver compatible but currently only works in Pittsburgh.

<http://geoaccess.org/content/report-data-enabled-travel>.

[William Curtis-Davidson](#) The AccessMyNYC mobile web app was designed to conform to WCAG standards, and we tested for compatibility with Apple iPhone and iPad VoiceOver. The app uses ARIA regions as well... and we also designed some HTML 5 features such as an automatic focus movement to top of each view on page load/refresh (this was needed as the HTML 5 mobile toolkit we used did not do this when VoiceOver was activated).

Here are the tips we have provided to users of VoiceOver (provided in the "About" section of the app):

[http://www-949.ibm.com/nyc/home#about\\_accessibility](http://www-949.ibm.com/nyc/home#about_accessibility)

[Christos Kouroupetroglou](#) Do you see any specific technologies that could make a breakthrough in Intelligent Transportation for PWD in the coming years?

[Anand Ranganathan](#) At IBM Dublin, we're doing a bunch of work on multi-modal transportation (e.g. switching from buses to trains, between buses, car/taxi to train, etc.) and making sure you are on time to make connections with high probability based on real-time traffic and bus/train position data. Like · [1 person](#)

[Christos Kouroupetroglou](#) I suppose including accessibility in such a project means including information about which train stations are accessible with wheelchairs etc... right? However, (as I see it) this is a project that is not limited to PwD. So you could say that making transportation Intelligent is a way of improving its accessibility? How important would you rate this factor in making transportation accessible?

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[Sabine Moebs](#) Or: making it accessible is making it intelligent.

[Aaron Steinfeld](#) Hi Christos, one of the big breakthroughs will be open data so developers can create new products that use public data. In March 2011, a group of disability advocates, non-profit orgs, university researchers, government representatives and technology leaders – called the “Geo-Access Challenge Team” released a report called, “Data-Enabled Travel: How Geo-Data Can Support Inclusive Transportation, Tourism, and Navigation through Communities.”

[Sabine Moebs](#) I work in web accessibility; and, after years of trying to convince people that we need to think about inclusion, it turns out, that accessible websites are so much easier to display on different mobile devices - which is the big hype at the moment.

[Aaron Steinfeld](#) This report outlined user needs related to accessible transportation that deserve exploration (e.g. better trip planning, notifications, service integration, social networking), offered some proposed data requirements for accessible transportation (e.g. fixed route / mainstream public transit, paratransit, private transportation, and municipal infrastructure/POIs), and described some application types useful for accessible transportation (transportation planning/execution, POI info foraging, citizen science/services co-design). You can read the report online at: <http://geoaccess.org/content/report-data-enabled-travel>.

[Christos Kouroupetroglou](#) My thought exactly! I work in the same domain and I was wondering how mainstreaming accessibility solutions can be applied in that domain too. Maybe this is the big challenge for the future of accessibility in general.

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[Kannan Balajee](#) @Christos I don't think the two are distinct. The need to capture accessibility information has to be a fundamental part of intelligent transportation.

Like · [1 person](#)

[Bill Curtis-Davidson](#) And just last month, the US DOT FHWA released the “Technological Innovations in Transportation for People With Disabilities Workshop Summary Report” - summarizing outcomes of a Feb 2011 workshop organized by the FHWA's Office of Research, Development, and Technology and, specifically, leaders from the Office of Operations Research and Development and the Exploratory Advanced Research Program. We encourage you to read more at: <http://www.fhwa.dot.gov/advancedresearch/pubs/11041/index.cfm>

Like · [1 person](#)

[Christos Kouroupetroglou](#) Thanks fo the link. I'm currently working in a EC study about the future of eAccessibility (<http://www.e-accessibility2020.eu/>).

We are investigating current technology, societal and economic trends that will affect the future of eAccessibility in order to produce scenarios and recommendations for the EU.

It's easy to see open data, sensor technologies and ubiquitous connectivity as trends that will have an impact on accessibility in various domains but I would like to know if there is anything else that could possibly have a major impact and is still in tis infancy as a technology (a weak signal).

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[Bill Curtis-Davidson](#) Here is another interesting area to explore -- Augmented Reality. Mapability has created the 1st Augmented Reality Layer for Accessibility: <http://www.disabled-world.com/assistivedevices/apps/mapability.php>

[Marc Johlic](#) Very interesting topic today! What are some of the challenges that persons with disabilities (PwDs) face in travel and transportation?

[Bill Curtis-Davidson](#) There is a great 2005 market study by Open Doors Organization and Harris Interactive, that outlined the variety of obstacles that PwDs face when dealing with the various aspects of the travel and restaurant industries (airlines, airports, hotels, restaurants). These include physical obstacles, service-related obstacles, and communication-related obstacles. Lack of information about accessible transportation and accessible points-of-interest (POIs) also reduces the mobility of PwDs, the aging, and people with functional limitations, preventing them from fully utilizing transportation networks. For more information, see: <http://opendoorsnfp.org/market-studies/2005-market-study/>  
Like · [1 person](#) ·

[Kannan Balajee](#) One of the big issues is the last mile problem.

[Kannan Balajee](#) Last mile problem is the issue of trying to get a User from where the transit solution ends to where they want to end up at like their house, hospital, office, etc

[Aaron Steinfeld](#) Another key issue is the ability to travel spontaneously. For example, people who use paratransit typically need to request travel a day in advance. If mainline transit is available and accessible, then more spontaneous travel is a possibility.

[Sabine Moebs](#) How do you approach Intelligent Transportation & Accessibility in your work? I just read about this event 5 mins ago, so didn't have time to look up any of your recent work. Is it connected to the Smarter Cities projects?

[Bill Curtis-Davidson](#) Yes, we are very connected to the IBM Smarter Cities efforts. The IBM Human Ability & Accessibility Center is developing strategies to meet the growing demand for accessible transportation in three key areas: (1) Data & Analytics, (2) Accessible Traveler Applications, and (3) Accessible Transportation Asset Management.

[Arthur Murphy](#) Speaking of "Accessible Traveler Applications," IBM's prototype mobile app "Access My NYC" seems ready to work not just for New York, but for any city (with a proper database). Plans for broad roll-out?

[Sabine Moebs](#) Can you elaborate on the three work areas?

[Anand Ranganathan](#) I'll throw out a couple of video links:  
<http://www.youtube.com/user/IBMStreams> (traffic estimation in Stockholm) and  
<http://www.youtube.com/watch?v=VBv5XRGQ7nA> (bus tracking and arrival prediction in Dublin)

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[Bill Curtis-Davidson](#) @Arthur we are indeed looking at ways to make these types of apps more broadly available. One key dependency is the availability of accessible transportation and POIs data. We aim to look for ways to pilot our technologies with cities who are interested.

[Sabine Moebs](#) alright, whatever you say about the bus arrival prediction in Dublin: it doesn't work... we (the users) still expect communal coffee breaks that lead to clusters of buses and then big gaps. The voice of the user..

[Sabine Moebs](#) thanks for the video links

[Anand Ranganathan](#) @Sabine : actually... that is partly taken into account in the system. The system tracks buses in real time and predicts future arrival times based on current delay, current traffic and historical bus arrival patterns. The city may also take action to prevent bus clustering like signal control and asking early buses to wait. Also, I don't think city buses in Dublin allow communal coffee breaks (maybe Guinness breaks :). Perhaps this is more true for long distance buses. Like · [1 person](#)

[Dan Goessling](#) Simple things make a big difference, a reliable way for a PwD to know if the elevator is working (now) at a particular subway station would change how a trip was planned. [3 people](#) like this.

[Anand Ranganathan](#) True!! Monitoring social media like twitter and facebook and other apps might be a useful way to disseminate such information.

[Aaron Steinfeld](#) If the rider is fortunate to live in a city where elevator/escalator status is online, then they can get the information from the agency website or via email. In other agencies, this data is hidden in legacy software and not easily put on the web. We're working with IBM Research Japan to make software which can read this information and share it with users and apps. An example of a city with online elevator notices is Washington, DC - <http://www.wmata.com/>

[Christos Kouroupetroglou](#) How easy is it to include solutions for accessibility in already existing transportation infrastructures?  
Is it easier to make already existing transportation infrastructure Intelligent or develop new infrastructures that will finally replace the old?  
[2 people](#) like this.

[Bill Curtis-Davidson](#) @Christos in the data area, transportation authorities can offer open data related to accessibility, in addition to data they are already making available. For example, in addition to making a transit feed available, make data about accessibility of rail/bus stations, accessible entrances/exits, elevator status, vehicle accessibility available.

[Anand Ranganathan](#) The nice thing is that we have various "sensors" like GPS-based, social media, cellphone-based, etc. that can work irrespective of existing infrastructures

[Manish Gulati](#) Hi. What are the various forums and events that can give you more information about ITS and Accessibility?

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[Pawan Khera](#) ITS World Congress in Orlando next week: <http://www.itsworldcongress.org/> is one of the forums...IBM will be demonstrating Access My N.Y.C. and presenting its perspective and solutions for accessible transportation at this event

[Bill Curtis-Davidson](#) Also, IBM will also be serving as a session chair on accessible and assistive apps and solutions in travel and tourism at the M-Enabling Summit, December 5-6, 2011 in Washington, D.C. This summit is a joint initiative of the Global Initiative for Inclusive Information and Communication Technologies (G3ict) and E.J. Krause & Associates (EJK), and will convene the first mobile industry event exclusively dedicated to accessibility and assistive applications and services for seniors and persons with disabilities. Learn more at: <http://www.m-enabling.com/>  
Like · [1 person](#) ·

[Manish Gulati](#) Thank you.

[Anil Joshi](#) TRANSED 2012 is scheduled in India, New Delhi.

[Aaron Steinfeld](#) The annual Transportation Research Board conference also has a lot of accessibility research results. They also have a lot of resources on their site. <http://www.trb.org/>

[Aaron Steinfeld](#) The TRB annual meeting is always in Washington, DC in January.

[Marnie Hoover](#) I was wondering, how is the market need for accessible transportation evolving?

[Aaron Steinfeld](#) We view universal design as a key element for market issues. Ideally, systems will be designed to be both accessible and valuable to larger market sectors. Low floor buses are a good example. They are much more accessible than buses with stairs but they are also great for riders without disabilities.

[Sabine Moebs](#) That's what I'm talking about;)

[Aaron Steinfeld](#) In our current work, we're trying to improve the physical accessibility of buses and have released a real-time information app that is both accessible and valued by people without disabilities. The latter is Tiramisu, which is VoiceOver compatible and allows riders to see if there is room on the bus <http://www.tiramisutransit.com/>

[Marnie Hoover](#) ok, like parents using strollers

[Bill Curtis-Davidson](#) Also, developments such as Accessible Tourism ([http://en.wikipedia.org/wiki/Accessible\\_tourism](http://en.wikipedia.org/wiki/Accessible_tourism)) have been spreading across the globe, aiming to ensure destinations and attractions are barrier-free, and that accessible transportation and other services exist to help make sure PwDs can be included in communities.

[Aaron Steinfeld](#) People who use wheelchairs need to know if there is room on a bus, but other riders want to know if they'll get a seat. Everybody gets something of value out of the "accessible" feature.  
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[Marnie Hoover](#) Makes sense

[Aaron Steinfeld](#) Marnie - yes. Luggage, small kids, etc. Also, people board low floor buses faster than buses with stairs.

[Pawan Khera](#) Some examples: of Accessible Travel, Transportation & Tourism efforts in places like Chicago (<http://www.EasyAccessChicago.org/>)

[Pawan Khera](#) more examples: San Diego (<http://www.asd.travel/>)

[Pawan Khera](#) Example in Europe (<http://www.accessibletourism.org/>)

[Pawan Khera](#) good source of info is this blog, Rolling Rains Report (<http://www.rollingrains.com/>)

[Aaron Steinfeld](#) If you want to learn more about universal design, there are lots of good resources on the Wikipedia page [http://en.wikipedia.org/wiki/Universal\\_design](http://en.wikipedia.org/wiki/Universal_design)

[Aaron Steinfeld](#) and the webpage of the IDEA Center (our RERC-APT partners)  
<http://www.ap.buffalo.edu/idea/>

[Bill Curtis-Davidson](#) Also, more and more governments are implementing disability-related civil rights laws, driven by developments such as the UN Convention on the Rights of PwDs (<http://www.un.org/disabilities/default.asp?id=150>), which requires states to implement policies that support personal mobility (including transportation to residencies, community centers, places of employment and more).

[Fran Hayden](#) Hi - this is a great topic with fantastic experts. Thanks! And, my question is...  
What standards apply to accessible transportation applications?

[Bill Curtis-Davidson](#) For web applications, we encourage developers to follow W3C Mobile Web Best Practices and Web Content Accessibility Guidelines: <http://www.w3.org/TR/mwbp-wcag/>  
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[Bill Curtis-Davidson](#) For iPhone apps, follow best practices published by Apple:  
[http://developer.apple.com/library/ios/#documentation/UserExperience/Conceptual/iPhoneAccessibility/Making\\_Application\\_Accessible/Making\\_Application\\_Accessible.html#//apple\\_ref/doc/uid/TP40008785-CH102-SW5](http://developer.apple.com/library/ios/#documentation/UserExperience/Conceptual/iPhoneAccessibility/Making_Application_Accessible/Making_Application_Accessible.html#//apple_ref/doc/uid/TP40008785-CH102-SW5)

<http://developer.apple.com/library/ios/#documentation/UserExperience/Conceptual/iPhoneAccessibility/>

[Kannan Balajee](#) For the Android platform:  
<http://developer.android.com/guide/practices/design/accessibility.html>

[Aaron Steinfeld](#) In the US, transit agencies fall under ADA and Section 508 regulations.  
<http://www.section508.gov/>

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[Aaron Steinfeld](#) As with Android, Apple has similar developer resources for ensuring access to iPhone apps <http://developer.apple.com/search/index.php?q=accessibility>

[Bill Curtis-Davidson](#) Here is another great resource from Paul J Adam - great presentation from 2011 Access-U: [http://pauljadam.com/presentations/accessu2011/iPhone/iPad Web and App Accessibility - AccessU 2011 - PaulJAdam.com](http://pauljadam.com/presentations/accessu2011/iPhone/iPad%20Web%20and%20App%20Accessibility%20-%20AccessU%202011%20-%20PaulJAdam.com)

[Peter Rubinstein](#) Is there any way to measure how accessible transportation is? I see many very valuable suggestions on how to make transport more accessible, but no way to judge whether the barriers to use have been lowered to an acceptable level.

[IBM Accessibility](#) Peter, my apologies. I just found your post in the spam filter. I'll forward it on to our experts for an answer.

[IBM Accessibility](#) From Bill Curtis-Davidson: Peter, here is a resource for measuring progress: [http://globalride-sf.org/pdf/what\\_should\\_we\\_measure.pdf](http://globalride-sf.org/pdf/what_should_we_measure.pdf)

[IBM Accessibility](#) From Aaron Steinfeld: Peter, there has been work on this. For example, Iwarsson, et al developed a measurement process called the Travel Chain Enabler.

<http://iospress.metapress.com/content/ug0vnyffhc4j1566/>

Also, Project ACTION has a number of tools and guides on their site.

[http://projectaction.easterseals.com/site/PageServer?pagename=ESPA\\_technical\\_assistance&esLocation=ta](http://projectaction.easterseals.com/site/PageServer?pagename=ESPA_technical_assistance&esLocation=ta)

[Ashish Paul](#) Hi....how is the market for ITS accessibility evolving in UK...what is IBM doing in UK on this front.

[Bill Curtis-Davidson](#) IBM has not yet completed any projects specifically in the UK. However, the requirement for "Universal Design" is increasing in general in Europe.

[Bill Curtis-Davidson](#) Key Europe accessible tourism resource: <http://www.accessibletourism.org/>

[Bill Curtis-Davidson](#) Key Ireland example: <http://www.accessibleireland.com/>

[Bill Curtis-Davidson](#) Key London example: <http://www.visitlondon.com/maps/accessibility/>

[Shreyans Jain](#) Hi all, My Question is : Is 3D audio or spatialized audio technology being investigated to make more accessible navigation systems at IBM or elsewhere ?

[Aaron Steinfeld](#) Reginald Golledge did some pioneering work in this area. [http://en.wikipedia.org/wiki/Reginald\\_Golledge](http://en.wikipedia.org/wiki/Reginald_Golledge)

[Aaron Steinfeld](#) This page has a lot of examples too: [http://en.wikipedia.org/wiki/GPS\\_for\\_the\\_visually\\_impaired](http://en.wikipedia.org/wiki/GPS_for_the_visually_impaired)

[Shreyans Jain](#) Thanks Aaron.

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[Kannan Balajee](#) There is work on augmented reality for the blind: <http://www.seeingwithsound.com/>

[Shreyans Jain](#) Thanks Kannan. Do you know of any other implementations ?

[Fran Hayden](#) Perfect - thanks for the pointers.

[Bill Curtis-Davidson](#) In the area of Accessible Traveler Applications, IBM recently launched a pilot project as part of its Centennial celebration, called "Access My N.Y.C." (available until October 23, 2011). This mobile web app demonstrates the possibilities of harnessing smarter data for accessible transportation and POIs in NYC... Please take a look: <http://www.ibm.com/AccessMyNYC>

[IBM Accessibility](#) We are now at the end of our time. What a great session -- thanks for joining us today. :-)

[IBM Accessibility](#) The session will remain on the Facebook wall, but if you'd like a transcript, please send an email to [acweb@us.ibm.com](mailto:acweb@us.ibm.com), and we'll send you a copy.

[IBM Accessibility](#) Have a wonderful day/evening! :-)  
[2 people](#) like this.