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Accessibility:
Building Products Everyone Can Use

Brad Green & Erin Rosenthal
May 10, 2011

Twitter hash tags: `#io2011, #TechTalk`
Feedback: goo.gl/n9BBr

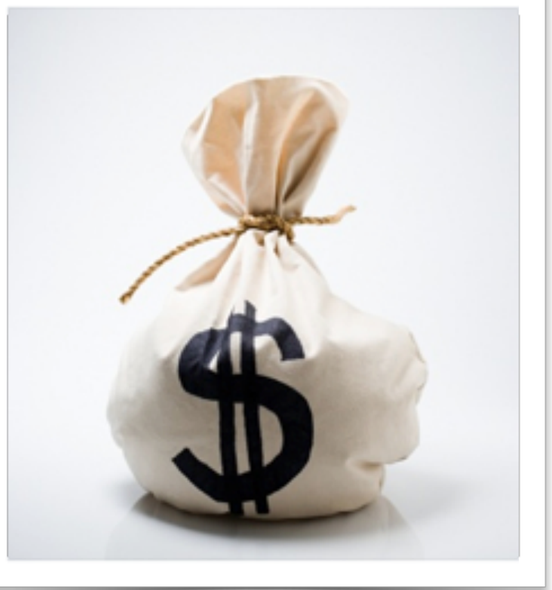
How many of you…

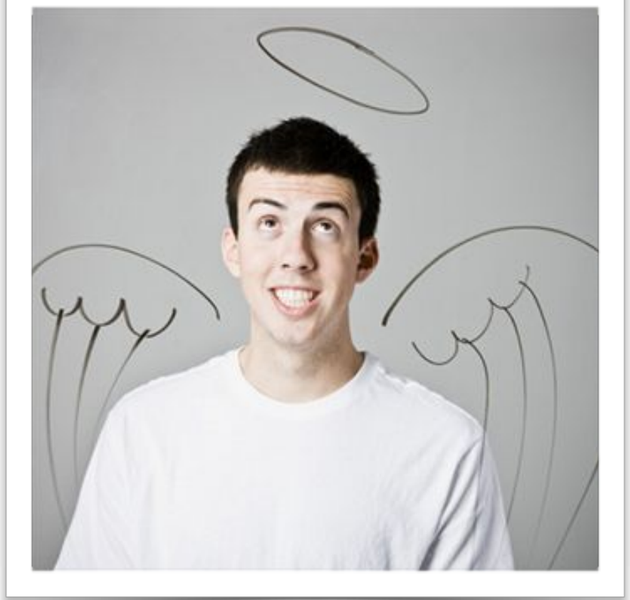
- Accessibility awareness?
- Responsible for accessibility in your products?
- Know your gaps and how to make products accessible?

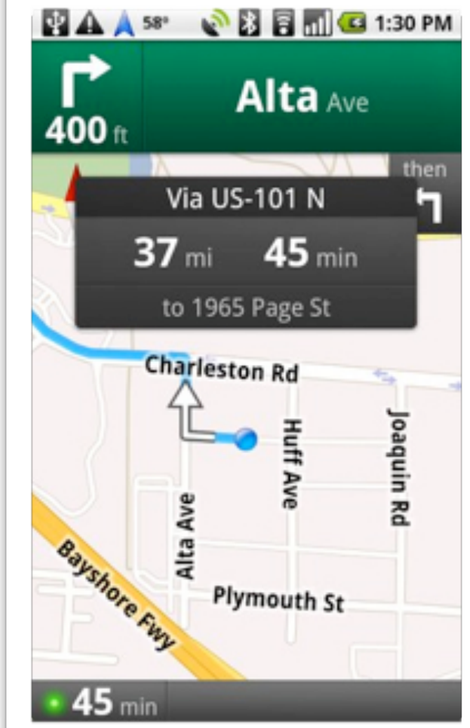
What we'll talk about today

- Users of accessible products
- Overview of accessibility for the web and Android
- Introduce tools that will help you build and test your apps
- Cool demos!

Why should I care?







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Accessible technologies help everyone

- Keyboard access
- Text to speech
- Speech recognition
- Haptics
- Captioning
- Customizable UIs
- Testability

Accessible Interfaces

- Understand your users and use cases
- Support multiple modes of interaction
  - Keyboard
  - Voice
  - Touch
  - Special purpose
- Provide good feedback
  - Speech
  - Audio
  - Vibration
  - Special purpose

Keys to making your applications work

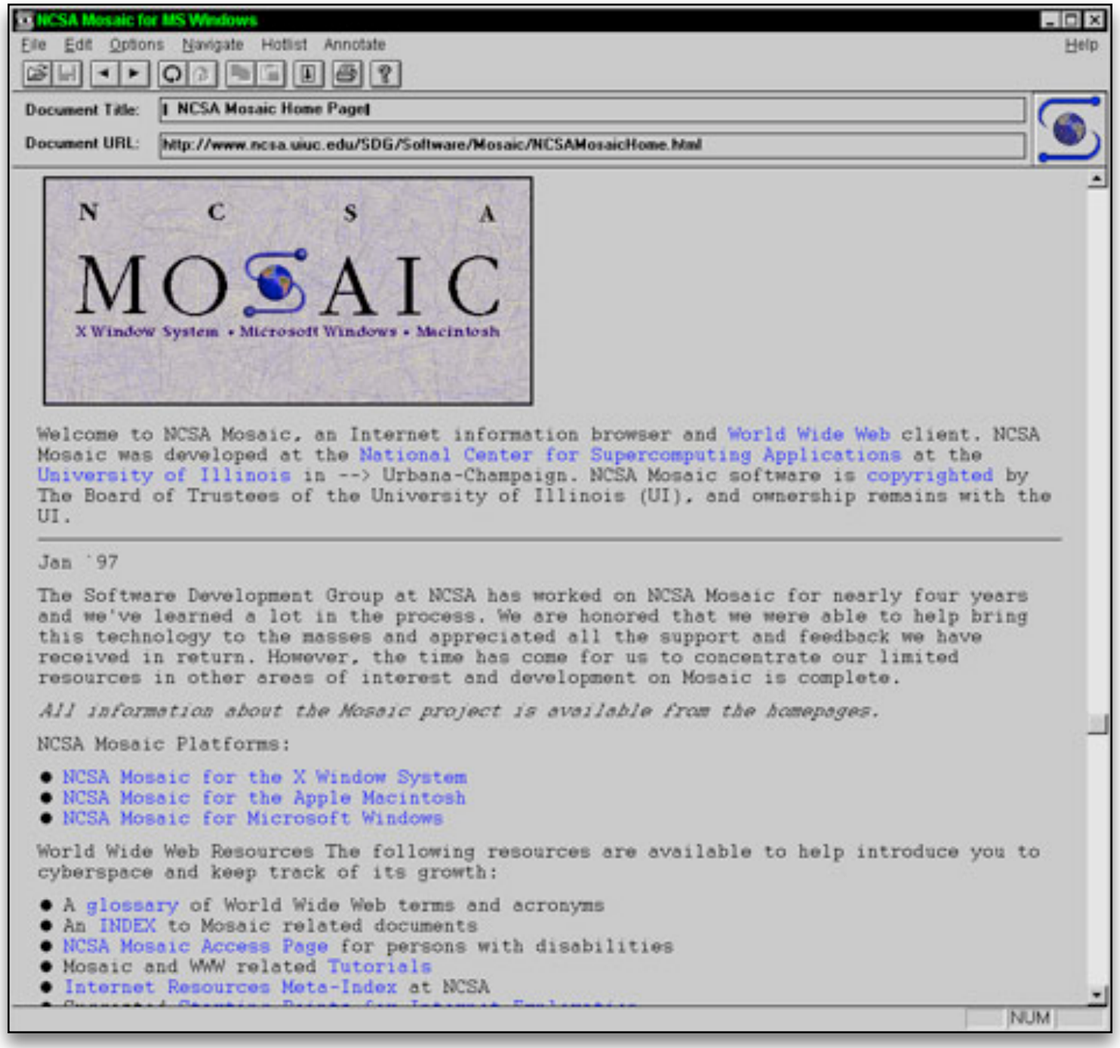
- Make sure all tasks can be completed through keyboard
- Manage the focus well within your application
- Add platform appropriate accessibility tags
- Add accessible support to custom controls
- Test it!!

Creating empowering products

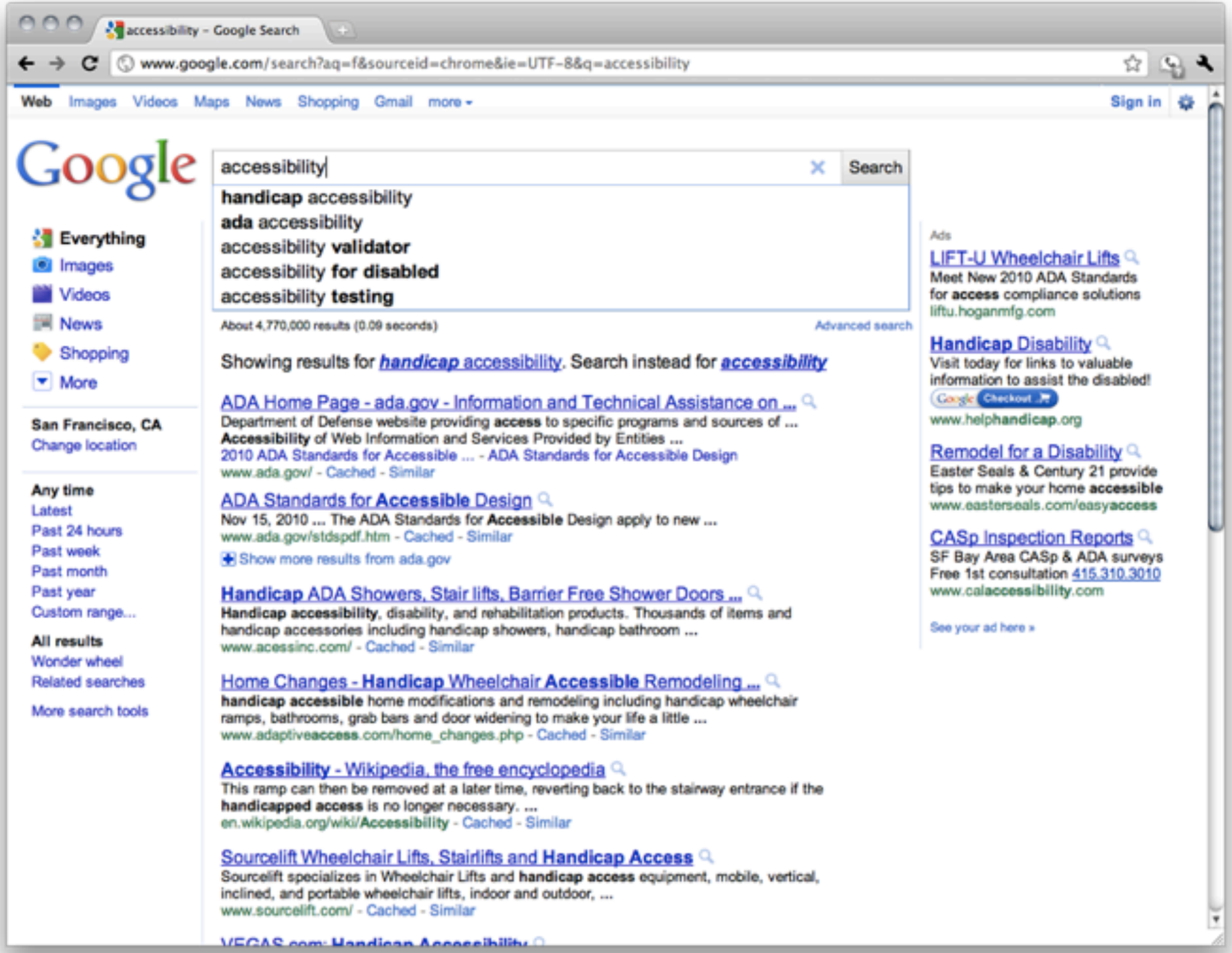
- Working out of the box
- Easy to set up
- No assistance needed
- Easy to learn
- Enabling independence

Accessible Web Applications

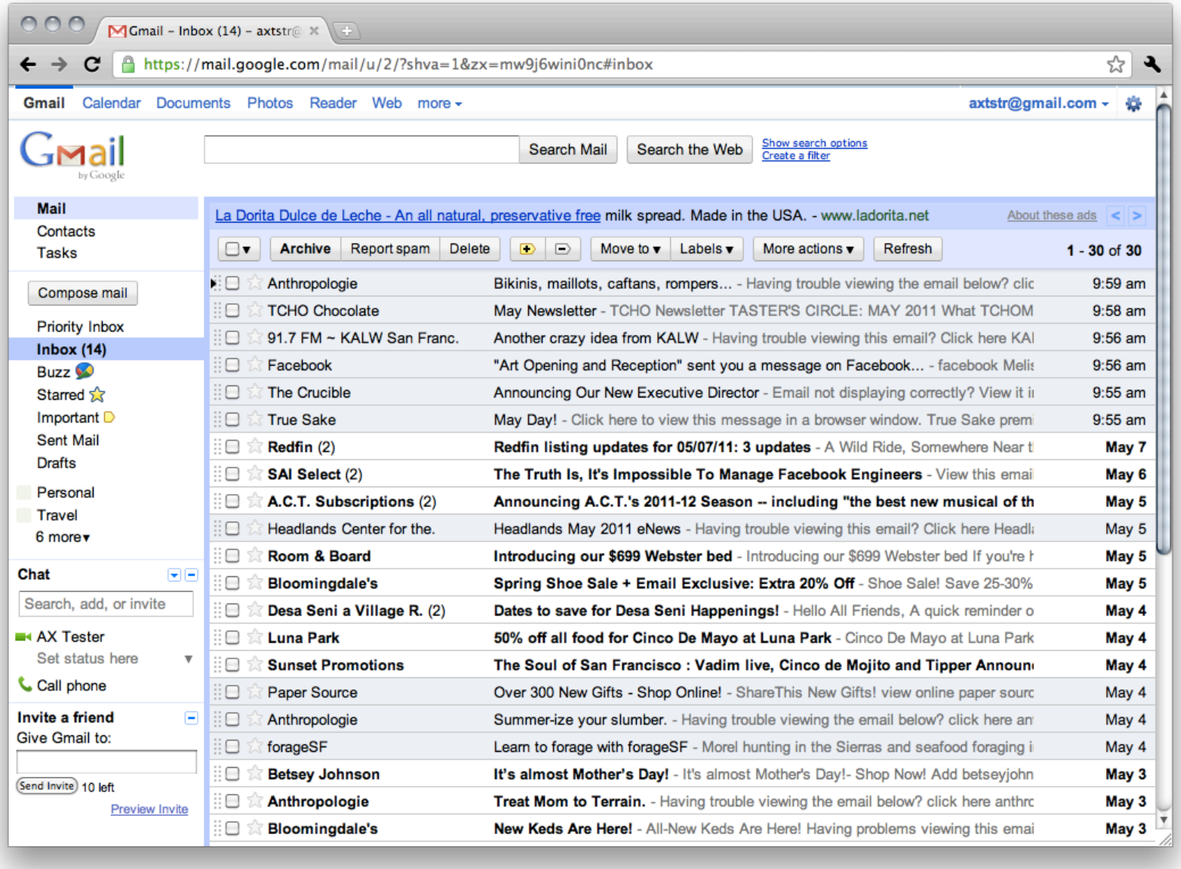
The Web started off simple

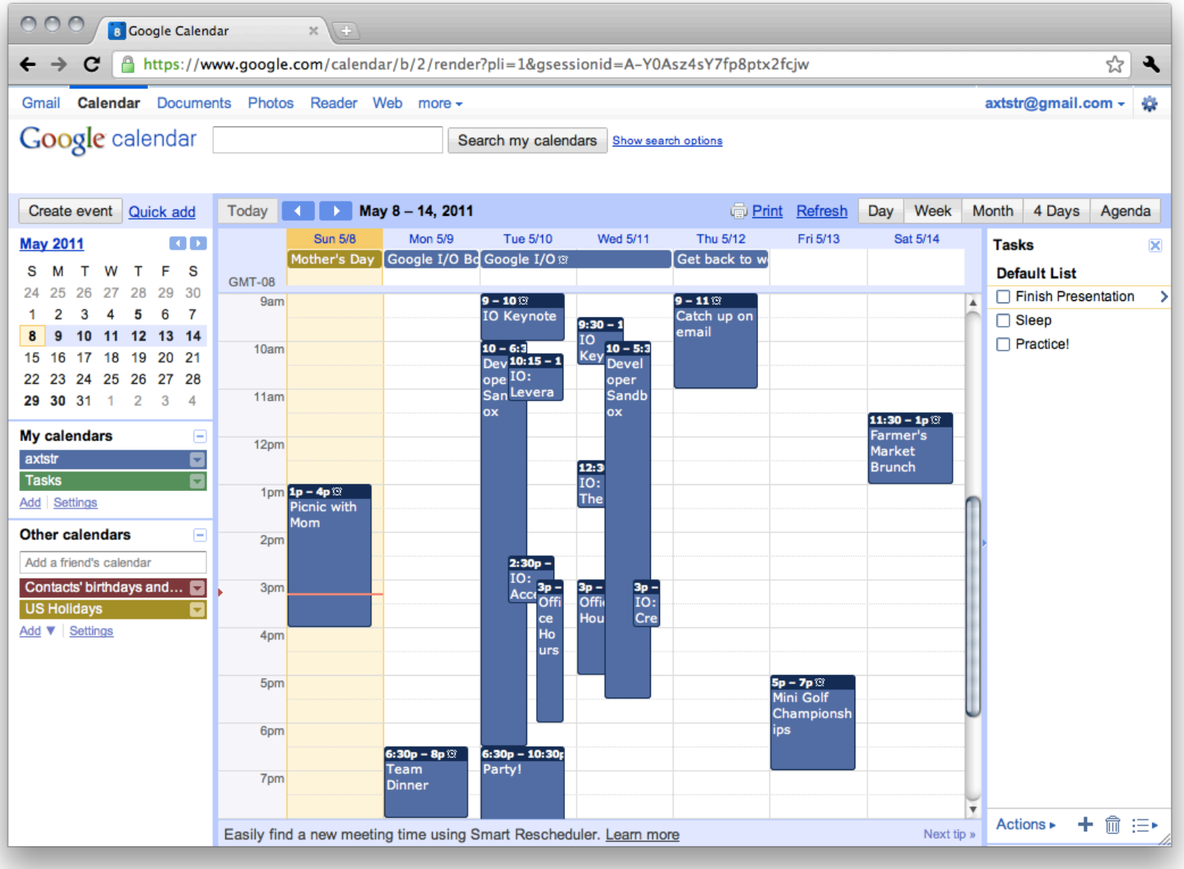


Over time the web has evolved



And evolved…





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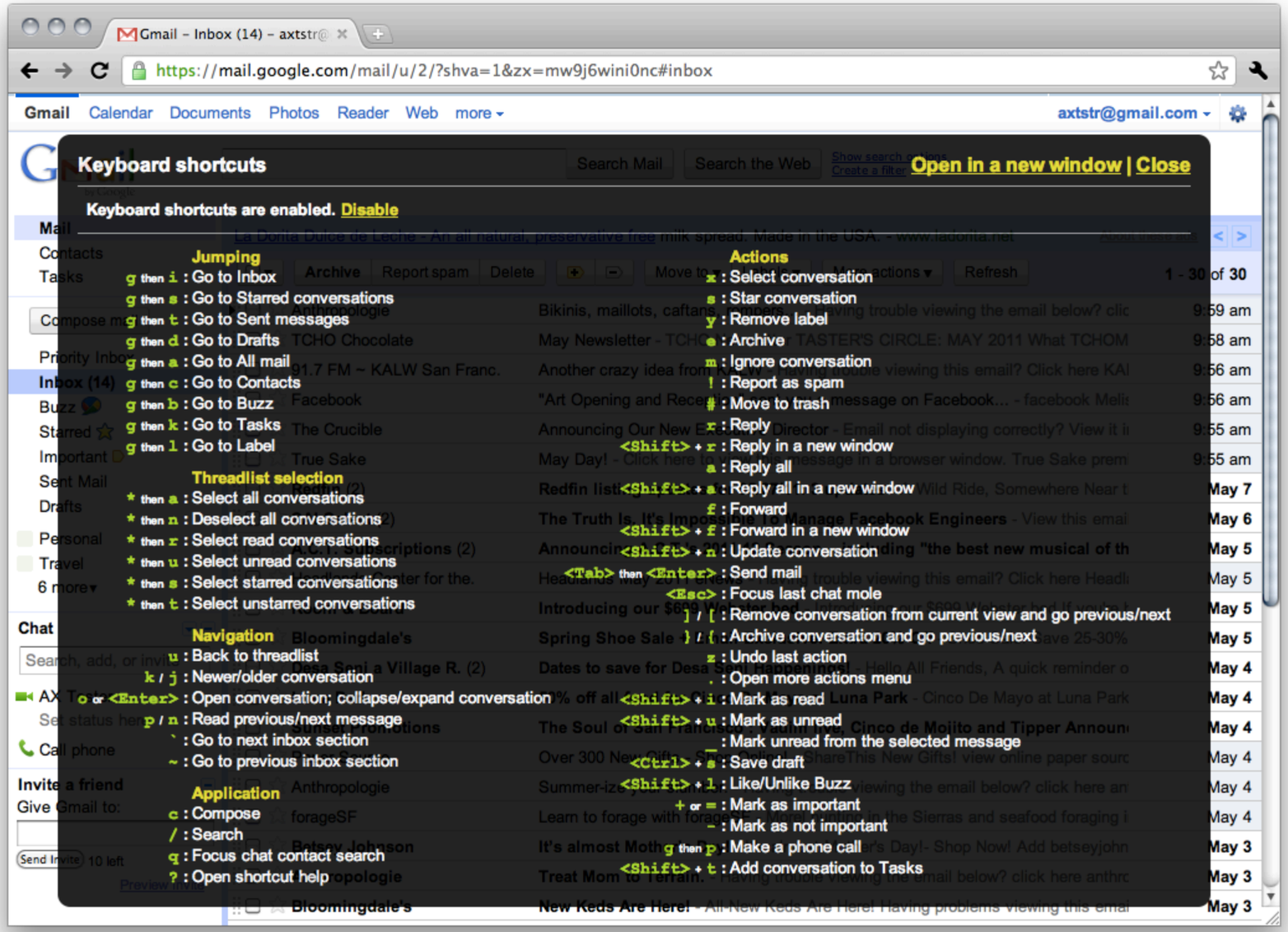
Keyboard navigation



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ARIA: New accessibility standards

```
<div role="toolbar" tabindex="0"
    aria-activedescendant="btn1" id="tb1">
    <img src="bold.png" role="button" alt="bold" id="btn1">
    <img src="italic.png" role="button" alt="italic" id="btn2">
    <img src="uline.png" role="button" alt="underline" id="btn3">
</div>
```

How is Google helping?

- *Chrome* integration with screen readers
- *ChromeVox*, a screen reader built into ChromeOS also available as an extension for developers
- *ChromeShades*, a tool for visualizing accessible navigation for your website

`code.google.com/p/google-axs-chrome/`

What ChromeVox does

- Provides spoken feedback as you navigate
- Uses latest accessibility standards including ARIA
- Reacts to dynamic updates
- Speaks relevant information
- Plays ‘earcon’ audio indicators
- Unprecedented control through VoxScripts

VoxScript

```
syncToNode(targetNode)
speak(text, queueMode, options)
playEarcon(earcon)
```


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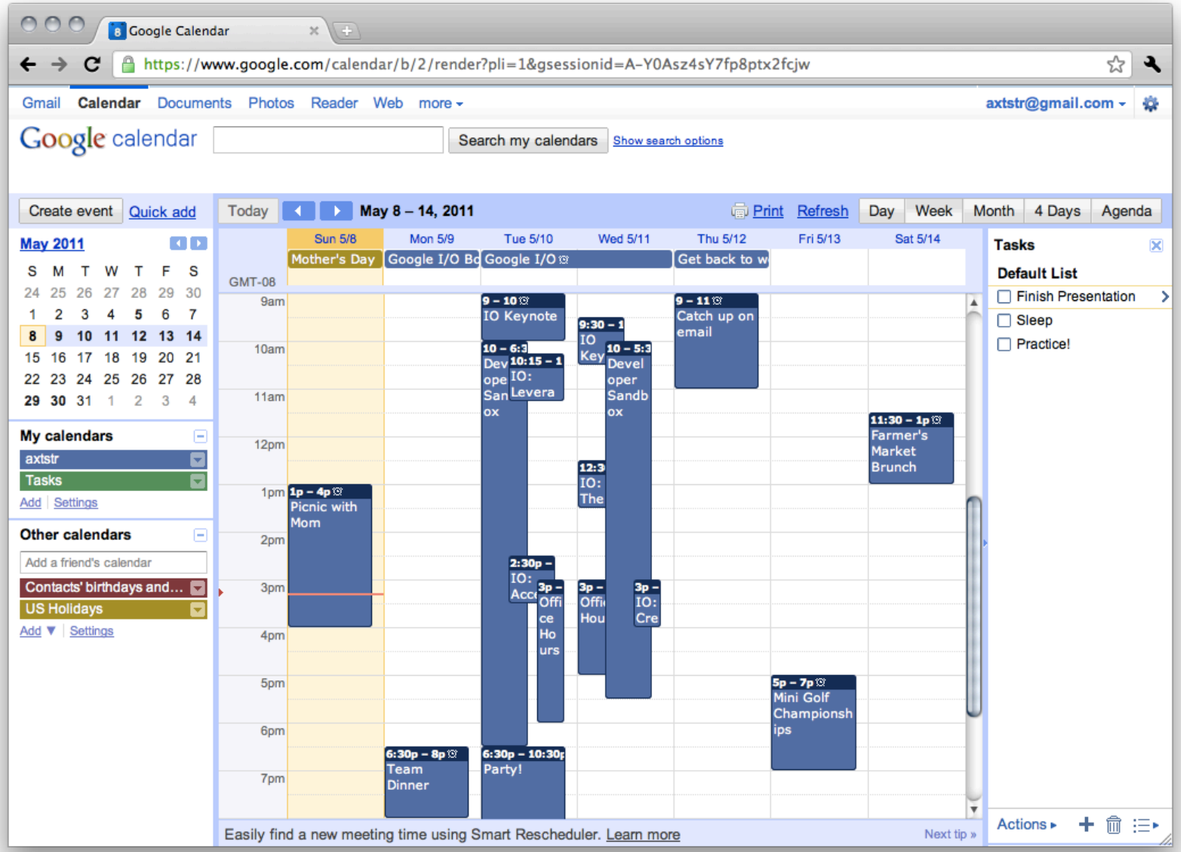
Demo: ChromeVox on Chrome OS

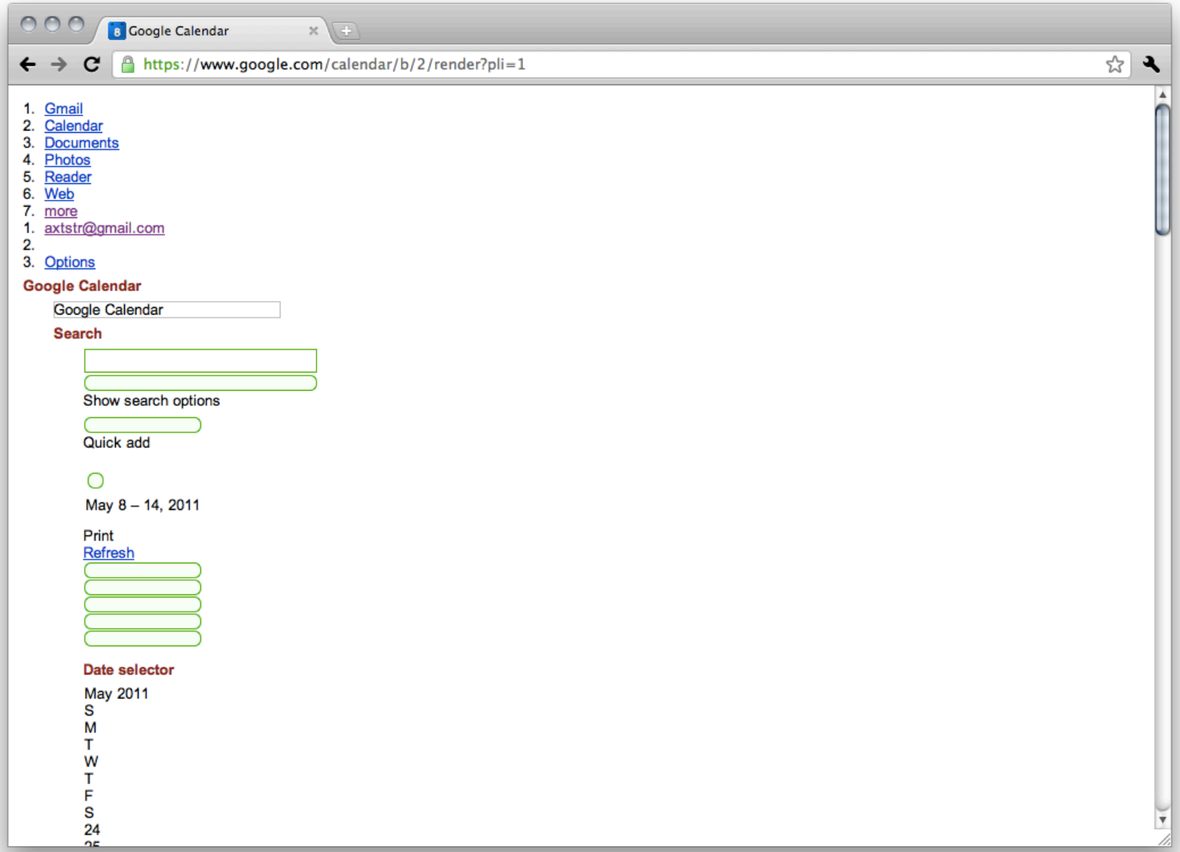
Charles Chen
Software Engineer @ Google

ChromeVox on ChromeOS

- Recreate the desktop experience
- Unprecedented level of control
- Seamless user experience

ChromeShades





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Accessibility in Android

Accessible mobile apps are everywhere

- Inherent accessibility
- Designed for being distracted
- Open, customizable platform

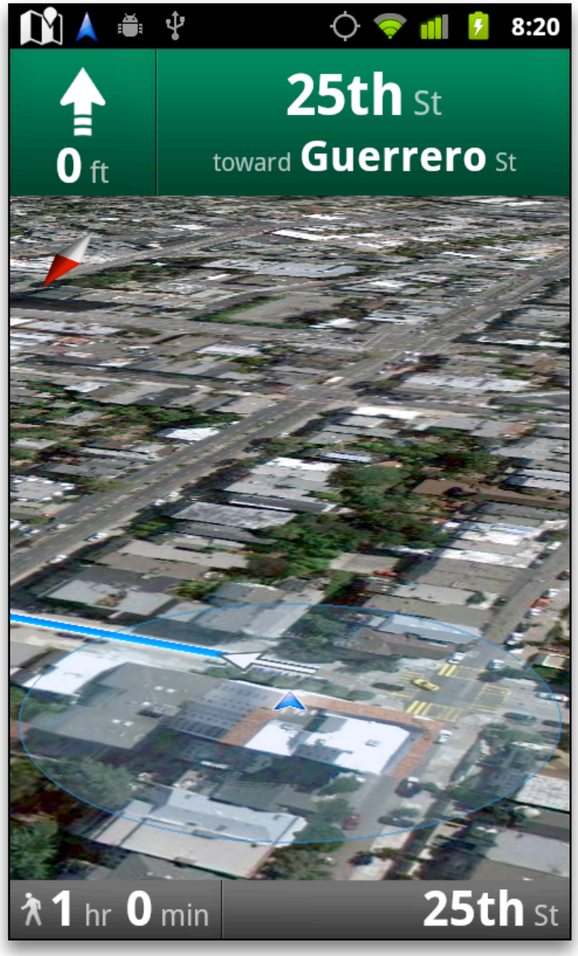
Many eyes and ears

Phone
Speaker
Microphone
Touch Screen

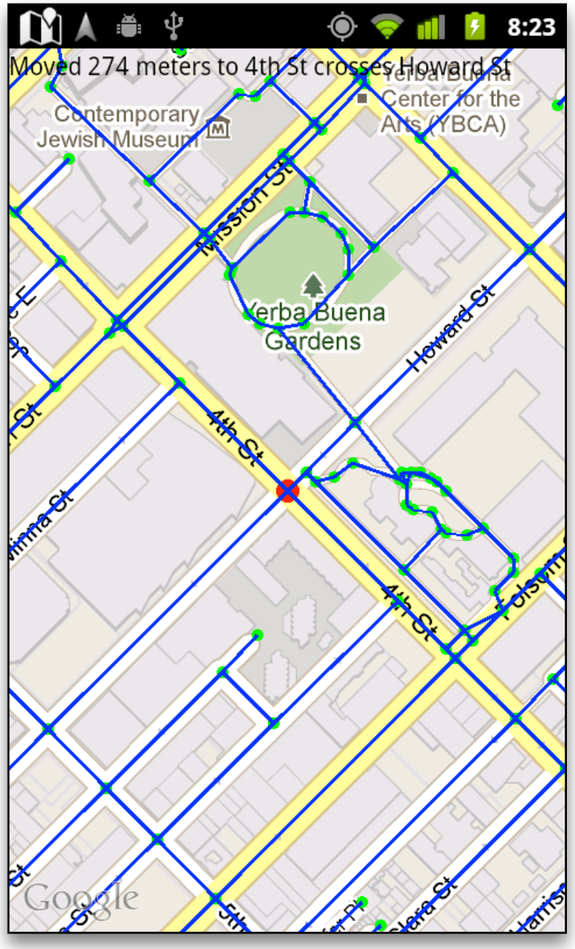
Internet
Camera
GPS
Near field communication

Location aware. Context aware. Extremely powerful

Take advantage of the technology



Walky Talky



Intersection Explorer

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Android Accessibility Support

- Accessible framework
- Accessible services
  - TalkBack
  - KickBack
  - SoundBack
- Open, highly customizable platform

What makes an Android App Accessible?

- Use standard controls
- Label controls with `contentDescription`
- Make all controls reachable with D-pad and Trackball
- Include focused states
- Raise accessibility events

Demo: Cool Reader & KhAndroid

Steve Jacobs
President, IDEAL Group, Inc
CEO, Apps4Android, Inc

IDEAL Group

- CoolReader
  - Uses gestures to interact without needing to see the screen
  - Provides verbal feedback
- KhAndroid
  - Provides great access to great content for everyone
  - Based on Google Accessibility Developer Challenge

“Deaf people can do anything but hear.”

Dr. I. King Jordan
The first Deaf president of Gallaudet University

Enabling communities

- Quickly adopted by the deaf community
- Text chat & SMS
- Video phones
- Watching videos with captions

Demo: Mobile ASL

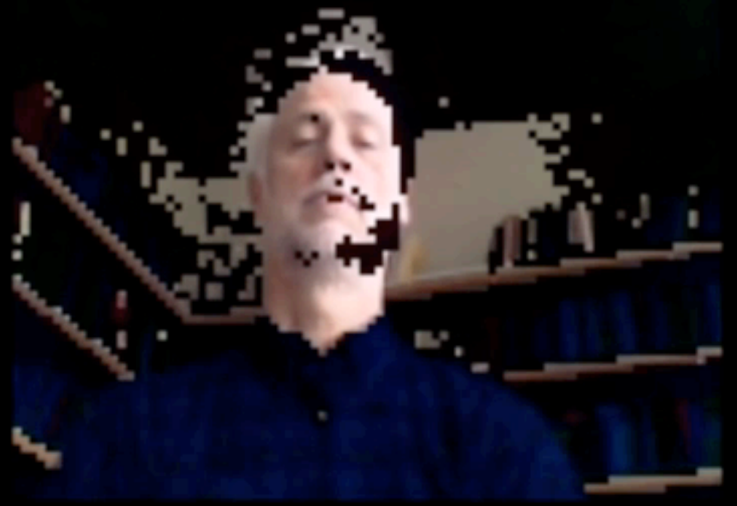
Jaehong Chon
Ph.D. Student at University of Washington

Mobile ASL Android App

- Video chat for sign language
- Works on Cellular network and Wi-Fi
- Optimized for low bandwidth
  - Maintain quality of face and hands in image
  - Audio stream removed
  - Lower FPS for static content (when listening)

http://mobileasl.cs.washington.edu

Original

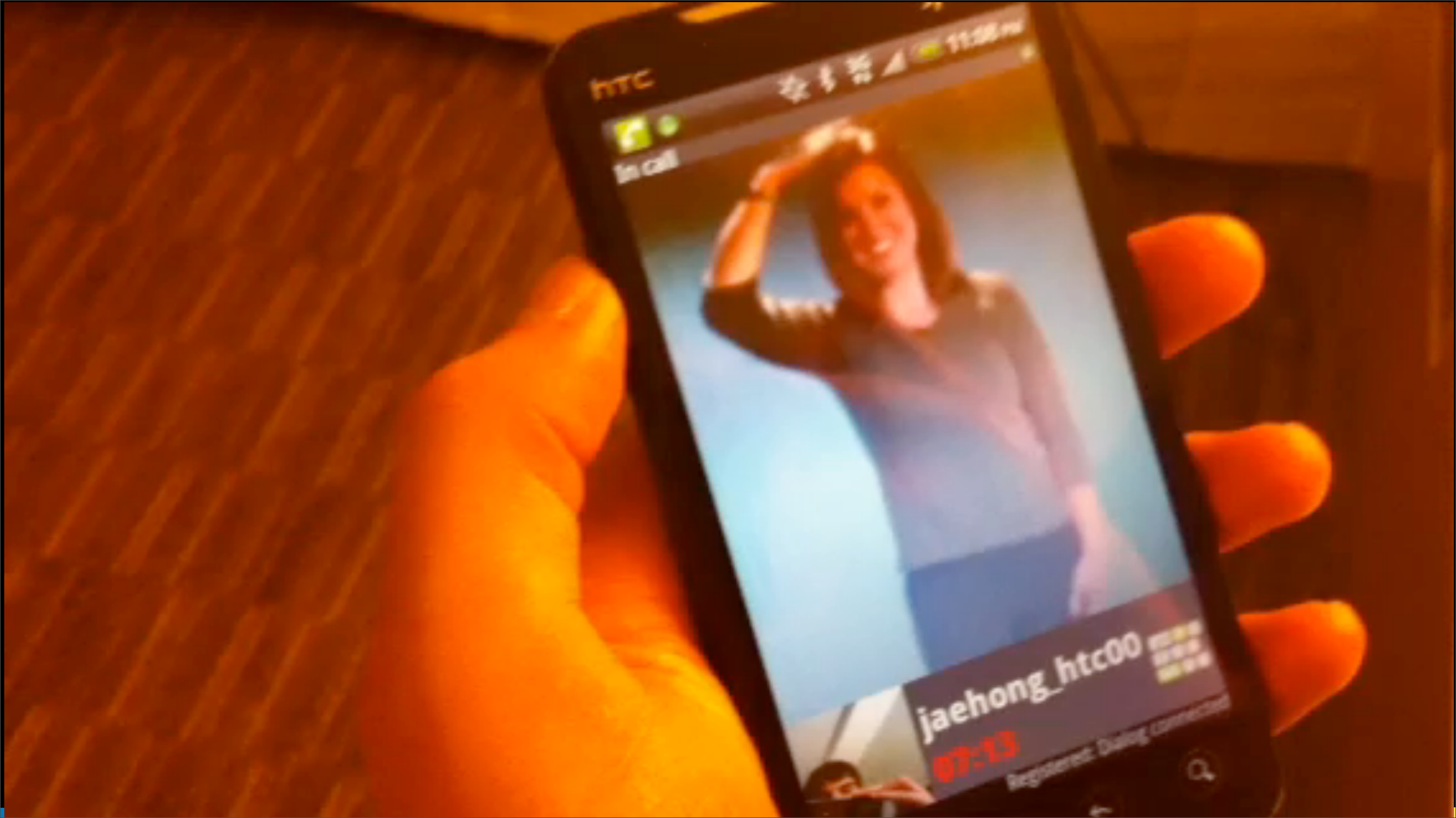


Skin Pixel

Skin Block

30K

30K ROI


htc
In call
jaehong_htc00
07:13
Registered. Dialing connected

Making your applications accessible

- Understand your users and use cases
- Enable independence
  - Multiple ways to interact
  - Good feedback
- End to end experience

Making your applications accessible

- Use standard toolkits
- Make sure there are keyboard workflows for all tasks
- Be aware of tab order and focus
- Test it in a screen reader, like ChromeVox

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Learning more @ I/O

Accessibility Sessions

Today

10:15am – 11:15am (available on YouTube)
Leveraging Android Accessibility APIs to Create an Accessible Experience

Tomorrow

12:30pm – 1:30pm
The YouTube Caption API, Speech Recognition, and WebVTT captions for HTML5

3pm – 4pm
Creating Accessible Interactive Web Apps using HTML5

Developer Sandbox – 2nd Floor

All day

Office Hours – 2nd Floor

Tuesday 3pm – 6:30pm

Wednesday 3pm – 5pm

Contact us

Brad Green (bradgreen@google.com)

Erin Rosenthal (erosenthal@google.com)

Session Hash Tags: #io2011, #TechTalk

Feedback: goo.gl/n9BBr

Other Links

google.com/accessibility

code.google.com/p/google-axs-chrome/

developer.android.com/guide/practices/design/accessibility.html

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