An Accessible Network Of Everyday Things

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What Does Accessible Mean?

Access Goals

- Retain present level of access to functionality
- Increase reach by enabling wider access
- Wider access:
  - Bring within reach of more users
  - Enable access in more user contexts
  - Improve user effectiveness by enabling rapid task completion

Important to go beyond the status-quo

(Content, UA, AT)

- Content: Capture adequate semantics
- UA: Degrade gracefully
- AT: Bridge the gap

Together determine overall user experience

Evolution Of Personal Computing

Evolution Of Computing

Important: Define accessibility in the present context.

- Mainframes $\longrightarrow$ PCs $\longrightarrow$ Smart Phones ...
- Monolithic $\longrightarrow$ Distributed $\longrightarrow$ Cloud Computing ...
- Available To The Few $\longrightarrow$ Accessible To All!

Computing has become part of our daily lives!

Accessibility: Key Drivers

- Digital information,
- Multiple interaction modalities,
- Separation of user interface and application logic,
- Ubiquitous access to data,
- Ever-increasing access to compute cycles.

Unlimited potential to connect users with their information.

Accessibility: Key Drivers

Electronic information can be:

- Displayed visually,
- Read aloud,
- Translated to multiple languages and formats.

Moving from atoms to bits separates the message from the medium!

Rich interaction: Challenge and Opportunity!

- Speech input and output.
- Gesture-based interaction.
- Touch interaction with haptic feedback.

UI: Collect User Intent, Capture User Attention!

Next-generation Accessibility Metrics

- Separate content from presentation to enable content re-use.
- Separate interaction from presentation to enable multiple interactions.
- Separate application logic from user interaction to enable flexible access.

- Ensure open access to *all* data.
- Enable broad interoperability among everyday devices.

Collectively further accessibility!

Ubiquitous Data And Computing

Computing blends into our daily lives

- Ubiquitous network access.
- Devices that can access user's environment and context.
- Access to computing cycles.

Together enable innovative access not dreamt of before.

Accessibility Impact

We have come a long way!

- Digital information available via the cloud.
- Devices that enable rich interaction:
  - Devices can *see*, *hear* and *speak* !
  - Devices can *sense* the user's environment.
  - Devices are *aware* of each user's needs and abilities.

Empowering people to choose

- Access information — from desktop web browsers to mobile devices
- Built-in accessibility to reduce/eliminate add-ons.
- Consume information — any language, any medium, any format.

Redefines scope and reach of accessibility!

Looking Forward

- Identifying objects in the environment using computer vision.
- Locating and speaking text in one's visual space.
- Speech recognition and translation to overcome communication barriers.

- Conversational interfaces for rapid task completion.
- Learning usage patterns to minimize explicit user interaction.

yesterday's science-fiction is tomorrow's reality!

Conclusion

Summary

Accessibility needs to be present in everyday things!

- Bring more and more information on-line.
- Make all information accessible via multiple formats: speech, Braille, ...
- Make all information available across different languages.

Improved access to all aspects of how we work and play!

Conclusion

Accessibility can be a key driver of innovation for all.

- Web applications force separation of user-interface from core application
- Makes development of multiple user interfaces affordable
- Enables delivery to multiple user contexts.
- Opens up new opportunities for meeting user needs

Watch Computing Take Off!