Personalization and the Semantic Web

- Web 1.0 was you.
- Web 2.0 is us.
- Web 3.0 will be ME.


And it's happening now.
Today’s Home Area Network (HAN)

- Lacks interoperability
  - One remote control for each device

- Lacks scalability
  - Electronic home system should evolve naturally as the user adds devices

- Lacks open standards for user interface
  - Difficult to develop user interfaces on multiple controller platforms (TV, PC, Mobile Device)
We constantly invent technology to solve problems…

But, people just want something to be really easy to use

Interoperability at the User Interface Level:
Making sense out of Alphabet Soup
It’s My Home

Q. Where do all the service silos converge?

A. The user interface.

Q. Does health belong on the same user interface as energy, entertainment?

A. Universal Remote Console (URC) ISO/IEC 24752 makes it scalable.

Q. How do you prevent vendor lock-in?

A. Open Standards and User-Centered Design.

Personalized user interface to aggregate all of your technology.
User Engagement Strategies

You could standardize the user interface look and feel.

1. Operating System approach
2. Not very personal
3. Static

Or, provide tools for choice architects.

1. Dynamic messaging system
2. Compare different incentive results
3. Nudge positive behavior change
Web 3.0 Consumer Portal

- Allows people to tailor their interface to suit their needs.
- Guarantees accessibility for everyone.
- Integrates with intelligent agents.
- Offers a single-sign on.
- Contextual, dynamic, better than search.
User Interface Socket Detail

- Web 2.0
- Flash
- XMPP
- Natural Language Interface
- Intelligent Help Agent
- Pluggable User Interface
- Networking Platform
- User Interface Socket
- ZigBee
- 6loWPAN
- Z-Wave
- DLNA / UPnP
- Web Services

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Task Model Based User Interface

- Task models at runtime can make devices and services easier to use
  - Assist users in complex tasks
  - Troubleshooting
  - Automatically generated user interfaces
- Task Model Descriptions standard published in 2008
  - ANSI/CEA-2018
- Currently focus of research activities
  - Next-generation user interfaces
Open URC Provides Accessibility

- Multiple user interface capability addresses needs of all users regardless of their age, mobility or cognitive ability
- Severe or multiple disabilities: User can connect their own assistive technology controller to the URC ecosystem effortlessly
- Universal Access increases participation
- Section 508 – compliance suitable for Federal funding
Choice of Language

- User can use the language of their choice (and tongue)
- Language-specific labels and icons defined by resource sheets
  - Easy internationalization
- Additional languages can be added even after physical installation
Tools & Implementations

- Trace Institute at the U. of Wisconsin
  - UCH open-source implementations in Java and C/C++ (with tutorials)
  - Various target adapter and controller packages

- dot UI
  - Resource server: http://res.dotui.com/

- European projects
  - i2home: Intuitive Interaction for Everyone with Home Appliances based on Industry Standards
  - VITAL, MonAMI, EasyLine+, INREDIS
Open URC References

- **Open URC Consortium**
  - Mission: Promotion and implementation of the Universal Remote Console framework
- Technical Reports for Implementation
  - [URC Technical Primer](#)
  - [Universal Control Hub specification](#)
  - [URC-HTTP Protocol specification](#)
  - [Resource Property Vocabulary specification](#)
  - [Resource Server HTTP Interface specification](#)
- Publications
  - [URC Whitepaper](#)
ISO/IEC 24752 References

  - **Part 1: Framework.** Provides an overview of the components of the URC framework, and how they interact. Specifies conformance requirements for target devices/services and controlling devices/services.
  - **Part 2: User interface socket description.** Defines the "user interface socket", an abstract user interface model through which a target device/service exposes its functionality to a controlling unit. Specifies an XML language for describing a user interface socket.
  - **Part 3: Presentation template.** Specifies an XML language for describing a flexible user interface language that can be used as "user interface implementation description" for a specific user interface socket.
  - **Part 4: Target description.** Defines the "target description" and pertaining XML language. A target description contains pointers to sockets and resources as provided by a target, for the purpose of building a user interface that fits to its sockets.
  - **Part 5: Resource description.** Specifies how user interface resources are described via an RDF-based language in terms of "atomic resources", "resource sheets", "resource directories", and "resource services".

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