The Smart Home User Experience Dilemma

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Problem statement

- There is no commonly accepted best practise in managing a Smart Home (like the X of closing a window on a PC)
- There is no standard apartment or home (every home has different style, naming and position of windows, doors, light, ...)
- There is no standard set of use cases for the Smart Home but complexity

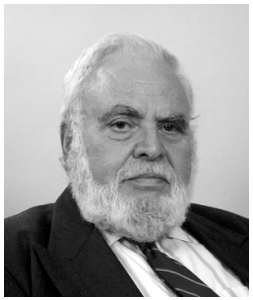
How to solve this

- Learn from the young ones - Elementary School
  - Keep it simple in the beginning
  - Allow early success on little things
  - Repeat, repeat and again repeat
- Learn from the old ones - Modeling science theory (*)
  - Readable yet formal
  - Information hiding
  - Separation of concerns
  - Establish basic set of rules and stick to it.

Ramesh Bharadwaj, C: Heitmeyer: Applying the SCR Requirements Specification Method to Practial Systems: A Case Study, 21st Software Engineering Workshop, NASA Goddard Space Flight Center, Greenbelt, Dec. 1996

Solomon Golomb: Models (1968)

- *Don't apply a model until you understand the simplifying assumptions on which it is based and can test their applicability.*
- *Distinguish at all times between the model and the real world.*
- *The purpose of notation and terminology should be to enhance insight and facilitate computation – not to impress or confuse the uninitiated*



What does this mean to us

- **Elements**
- **Events**
- **Apps**

Elements

- All functions in a smart home, regardless of action or information are displays in one element each
  - "All elements are created equal"
  - Elements have same size, same color, same extensions, same configuration
  - Whether the function is performed by a physical device or a virtual device or a special function or or or , its always one single element

How to manage Elements

- Sea of elements
- Small number of managed elements call for hierarchy, large numbers of elements call for search (see yahoo in the first days versus google today)
- There are only two groupings
  - Dashboard – the important elements
  - Rooms – all elements assigned by room

Events

- Every change of a status (actor) or a value (sensor) is an event
- „All events are created equal"
- Events can be filtered by device, root cause, etc.
- All Events have same size, same color, same information
- Whether the event is generated by a physical device or a virtual device or a special function or or or …, its always one single event

Apps

- Every function above and beyond accessing information or controlling devices is an application, short app
- Apps can do
  - Aggregation of information based on other information
  - Information from outside the home (e.g. weather)
  - Aggregated action (scenes)
  - Automation (e.g. if -> then)
  - Complex usage of the devices (e.g. alarm system)

Apps Display

- All apps are displayed equal
  - In app store
  - In local app repository
  - In list of active apps
- Apps can be added by users, installers,...
- Apps can be created by users, developers, ...

Consoles

- The Smart Home is used (controlled, configured and monitored) in multiple way, parallel and simultaneously
  - Web browser
  - iPAD
  - Phone
  - Wall Panel
  - Local control on device

All displays are created equal

- Web,
- Pad,
- Phone