Bespoke Appliances for the Digital Home

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Acknowledgment - Jeannette Chin

Notices

• Prints attributed to Villemard (1910) and available from the National Library of France (BnF). See also http://expositions.bnf.fr/utopie/feuill/index.htm (last visited on the 10th of July, 2008) for the entire collection and additional information.

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Introduction

Three Concepts with the consumer at the center
- MAps Concept Overview
- CEA Overview
- iSpace Overview

• Example Implementation
  - Decorating your digital home or has your toaster become Big Brother?

Deconstruction

- Networks facilitate deconstruction of appliances into elemental services.
- Network services can be reconstructed to form the same or novel appliances – soft-appliances or virtual appliances or, as we call them Meta-Appliances MAps)
- Maps are a topology description and behavior rules
MAps Concept Overview

MAps (meta -appliances and applications), 'soft objects' that provide a means to aggregate elemental network services together to create virtualized forms of regular and user created appliances

- TV MAp could consist of a "display", "audio", "media stream" and "control" service. (alternatives to appliances or extracted from networked connections sent to appliances). MAps also contain rules that determine how the services coordinate actions to provide the behaviour of the virtual appliance

- MAps could be created and traded by new appliance manufacturers or end users - "Do-it-Yourself" (DIY).

CEA Overview
User engagement in the Design Process: the University of Essex iSpace

Removable access panels to wall and ceiling voids (with extensive networking and power distribution within voids and throughout apartment)
Focus on the engineering, social and environmental aspects of renewable Energy.

Laboratories are for doing Experiments....

High

Artificial

Explanation

Quantitative

Low

Control

Natural

Description

Qualitative

Purpose

Data
But experiments are….

- High on internal validity
- But lower on external validity (ecological validity)

And

- Living labs are high on external validity but lower on internal validity

Thus greater risk of making Type I errors (false positives) with Lab experiments and Type II errors (false negatives) with Living Labs investigations.

Positioning methods….

<table>
<thead>
<tr>
<th>Artificial</th>
<th>Low Control</th>
<th>High Control</th>
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<tbody>
<tr>
<td>Experiment</td>
<td>Survey</td>
<td>Quasi-experiment</td>
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<td></td>
<td>Living Labs</td>
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<td>Field trials</td>
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Positioning tools & techniques.....

Multi-methods are critical in the living lab for...

- Reducing Type II errors (high intercorrelations between measures of the same 'thing')
- Providing Multiple perspectives/views (multi actors; different theories etc)
- Describing and explaining (both are essential)

But are restricted by:
- small sample sizes (generalisable?)
- problems in recruiting subjects
- moral and ethical issues (invasion of privacy?)
Which approach to data collection?

- **Ethnography**
  - Living with the participant is intrusive
  - Interpreted through researcher

- **Monitoring/Observation**
  - Video – significant analysis task
  - Interpreted through researcher

- **Interview**
  - Agenda implicitly or explicitly driven by researcher

- **Dervin’s Sense-Making**
  - Participant driven structured reflections
  - Concerned with external circumstances and internal sense-making process

**The Sense-Making Metaphor**

**CONTEXT**
- Power structures & dynamics
- Domain knowledge systems
- Cultures & communities

**SITUATION**
- Histories
- Experiences
- Identities
- Past horizons
- Present horizons
- Barriers & constraints

**SPACE-TIME**

**VERBINGS**
- Sense-makings
- Sense-unmakings

**BRIDGE**
- Ideas, cognitions, thoughts
- Attitudes, beliefs, values
- Feelings, emotions, intuitions
- Memories, stories, narratives

**OUTCOMES**
- Helps, hindrances
- Functions, dysfunctions
- Consequences, impacts, effects
- Future horizons

**GAP**
- Questions, confusions
- Muddles, riddles
- Angst

With permission: Dervin (2003)
Sense-Making data collection process

- Train participants to reflect on his/her own sense making processes
- Micro moment time line interview – gap reflection
- Subject matter that is important to participant
- Circling phenomena

Exploring user behaviour through cultural probes

- Self Directed Photography
- Labels
- Diary
- Paint-me-a-picture
Living Labs

- Living Labs are a compromise; by using tools and techniques from both the experimental and ethnographic traditions they can:
  - provide more control in natural settings
  - explain and describe
  - offer a richer, more complete and valid picture
  - be cheaper than running field trials

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>iSpace</th>
<th>Field Trials</th>
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</thead>
<tbody>
<tr>
<td>Single system</td>
<td>Multiple sets of participants</td>
<td>Multiple sets of participants</td>
</tr>
<tr>
<td>Short controlled</td>
<td>Single system</td>
<td>Multiple systems</td>
</tr>
<tr>
<td>User tests</td>
<td>Single environment</td>
<td>Diverse environments</td>
</tr>
<tr>
<td>Unreal situation</td>
<td>Semi-real-life</td>
<td>Embedded in real life</td>
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Example Implementation

Research and investigation has identified a key barrier and problem with consumer’s mental model of MAps.

Decorating your digital home?

or

Has your toaster become Big Brother?
Example Implementation

1. Making your Home Safer
   Expanding the current model of home security, a range of “security” or “safety” MAps could be presented as an extension of a home monitoring system.

2. Greening your Home
   Social consciousness coupled with the fierce personal customization of MAps could position technology as a way to not only save money but also to do the right thing for the planet.

3. Customize your digital home like your email
   MAps could provide a mechanism that allows consumers to personalize the functionality of their digital homes in the same way they personalize their online lives.