Increasing the Adoption of AAL solutions, Senior Centred IoT, Workshop 9

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Workshop 9: Increasing the adoption of AAL solutions

SENIOR CENTERED IoT
A new challenge for Senior friendly habitats

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COIMBRA, PORTUGAL

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Our focus is to empower Senior Citizens to change their own world

Education, to enable Senior Citizens engage....
If a person has blurry vision & lights are turned up, they’ll just see a much brighter blurry image. But they might be able to make out what the image is. However, if you focus that image through a lens they can see the image distinctly with less light.
Digitization v's Digitalization

- Digitization
  - High Volume
  - High Accuracy
  - Acquisition, exploiting data links & knowledge

- Digital Thermometer
- Digital SLR
- 35mm SLR
- Internet, Modbus, WiFi,

- Liquid Thermometer

Diagram showing the comparison between Digitization and Digitalization in terms of high and low business connectivity and technical connectivity.
How do we establish communications?

Nouns, People Place or thing

Verbs, Action

Adjective, describes the noun

Compound-Complex Sentence

An adjective... sweet round big
describes a noun! green hot sad
Labelling...for example

Nouns

Adjective describes a Range

Nouns Could be Icons

Verbs

But what is the underlying CONSTRUCT to make meaning
The man turned on the bedroom light
My dream
Compound-Complex Sentence

Tom cried because the ball hit him and he apologized immediately.
Attributes: Have a Name and a value
Methods

Education is vital

Nouns: Person Place or Thing

Verbs: Action words

Adverbs

Units
Subliminal messages
1 Serving Size
2 Calories
3 Daily Value
4 Fat
5 Cholesterol & Sodium
6 Carbohydrates
7 Fiber
8 Protein
9 Vitamins & Minerals
## Current Label

### Nutrition Facts

Serving Size: 2/3 cup (55g)  
Servings Per Container: About 8

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>230</td>
</tr>
<tr>
<td>Total Fat</td>
<td>8g</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>1g</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>0mg</td>
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<tr>
<td>Sodium</td>
<td>160mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>37g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>4g</td>
</tr>
<tr>
<td>Sugars</td>
<td>1g</td>
</tr>
<tr>
<td>Protein</td>
<td>3g</td>
</tr>
</tbody>
</table>

### Alternate Format

8 servings per container  
Serving size: 2/3 cup (55g)

<table>
<thead>
<tr>
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<th>Calories</th>
<th>230</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Daily Value*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fat</td>
<td>8g</td>
<td>12%</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>1g</td>
<td>5%</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
<td></td>
</tr>
<tr>
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<tr>
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<td>1g</td>
<td>14%</td>
</tr>
<tr>
<td>Added Sugars</td>
<td>0g</td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>3g</td>
<td></td>
</tr>
</tbody>
</table>

### Proposed Format

8 servings per container  
Serving size: 2/3 cup (55g)

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</table>

* Footnote on Daily Values (DV) and calories reference to be inserted here.
Tyre Labelling Information

Fuel Efficiency Class
7 classes from G (least efficient) to A (most efficient)
Effect may vary among vehicles and driving conditions, but the difference between a G and an A class for a complete set of tyres could reduce fuel consumption by up to 7.5% and even more in case of trucks.

Tyre External Rolling Noise Class
In addition to the noise level in Decibel dB(A) a pictogram displays whether the tyre external rolling performance is above the future European maximum limit value (3 black bars = noisier tyre), between future limit value and 3dB below (2 black bars = tyre) or more than 3 dB below the future limit (1 black bar = low noise tyre).
NB: The tyre external rolling noise is not entirely correlated with interior noise.
Privacy

Things I think about but never disclose externally

Things I disclose by my gesture/behaviour/manner/reaction

Things I disclose by my intention typing/writing/searching/shopping

Loyalty cards gave you something for your data?

Behind my walls I should be safe
Common causes of memory loss

Memory loss can occur in words and thought patterns, and can also be present physically with the loss of motor memory. Memory loss is not always complete, sometimes failing to remember only a selected group of items.
If a person has blurry vision and the lights are turned up, they'll just see a much brighter blurry image. But they might be able to make out what the image is. However, if you focus that image through a lens they can see the image distinctly with less light.
Processing in the Brain
Processing in the Brain
Processing in the Brain
Emotion and Feelings are different

Feeling mental portrayal of what is going on in your body when you have an emotion and is the by-product of your brain perceiving and assigning meaning to the emotion, and are subjective being influenced by personal experience, beliefs, and memories.

Emotions are lower level responses occurring in the subcortical regions of the brain, the amygdala and the ventromedial prefrontal cortices, creating biochemical reactions in your body altering your physical state.
In 2050, the **33% of population** will be over 60 years old

**Decrease of fertility rate** within worldwide developed markets

Increase **spending** on **healthcare** and **welfare system**
Today, the welfare system is still deeply structured with assistive traditional methods, which are managed directly by staff, careers and doctors, with high demanding of time and costs.
Could smart technologies become useful to improve people’s quality of life within their own environment?

Which kind of methods, tools and scenarios could enhance wellbeing and healthy conditions, reducing time and costs?
77% OVER 65 OWN A CELL PHONE

59% OVER 65 SURF ON INTERNET

27% OVER 65 OWN A TABLET

55% OVER 65 HAVE BROADBAND AT HOME

Source: Pew Research Center 2013
IOT FOR A BETTER LIVING

Jibo - Robot Companion
IOT FOR A BETTER LIVING
IOT FOR A BETTER LIVING
IOT FOR A BETTER LIVING

Nest - Smoke Sensor
IOT FOR A BETTER LIVING
IOT FOR A BETTER LIVING

Goji - Smart Lock system
STATE OF ART OF TECHNOLOGIES

WHAT WE HAVE TODAY?

- Smoke sensor prevents fire, can be used as a people monitoring
- Smart lighting system understands when people are
- Smart dish-washer can start when energy cost less, in silent mode
- Smart oven can be controlled via smartphone
- Smart plugs help in using home appliances via remote control
- Flooding sensor prevents water damage & send alerts on smartphone
STATE OF ART OF TECHNOLOGIES

WHAT WE HAVE TODAY?

- Smart lighting system turns down when watching TV or relaxing on sofa
- Curtains and windows controlled via Wi-Fi or Bluetooth
- Anti-blackout notify you if energy consumption is too high
- Robotic devices for connecting and socializing with people
- Lifestyle monitoring systems help in daily activities & keep in good conditions
- Smart trackers help in reminding where things are left
- Smart plugs turn on/off appliances when needed, via Wi-Fi
- Connected speakers play favourite music inside home
- Smart thermostat sets the right temperature if there are people or not
- Smart TV is connected to Internet and provide infos & home control
STATE OF ART OF TECHNOLOGIES

WHAT WE HAVE TODAY?

- Lighting system set scenarios when going to bed or waking up
- Surveillance systems keep control of home if there's an unexpected entry
- Assistance systems aid in keeping good physical conditions
- Monitoring devices keep you under control and tell info to doctors & familiars
- Security systems keep home secure & aid for keyless entry or easy access
- Smart cleaner helps in daily cleaning activity & is connected to home systems
EMOTIONAL DESIGN

PINCH TO ZOOM
EMOTIONAL DESIGN

iPhone Alarm Setting - Interface of an iPhone 3GS and iPhone 6
AFFORDANCE IN DESIGN

Round Knob and Lever style: How to open a door

KNOB HANDLE

LEVER HANDLE
FORM - FIT - FUNCTION

Does it look good?
AESTHETICS

Does it make sense?
CLARITY

Does it have intended effect?
IMPACT
- Interactions to increase usability
- User interfaces
- Simplicity & Usability
- Complexity inside systems
- User Acceptance – Affordance
SENIOR FRIENDLY HOUSES
HIGHLIGHTS

11 Worldwide Case studies

14 European Case studies

11 Italian Case studies

Universal Design approach

Design for All

User Centered Design

Case Studies
SENIOR FRIENDLY HOUSES

CRITERIA ANALYSIS

KEY POINTS

DEVELOP & CONSTRUCTION

FEEDBACKS

EVALUATION CHART

PASSIVE TECH +

ACTIVE TECH +

USER FEEDBACK +
SENIOR FRIENDLY HOUSES: RESULTS

Users
- Primary users
- Secondary users
- Experts, designers, researchers, doctors

Feedback
- Positive feedback
- Negative feedback
- Not available feedback

Graph showing percentages of positive and negative feedback from different user categories.
A STRATEGY FOR DESIGNING A SENIOR FRIENDLY ENVIRONMENT

EDSU
Environment Design Sustaining Users

Lifelong Housing Design
Passive Technologies
Lifelong Technological Integration
Active Technologies

SMART PACKAGES
LIFELONG HOUSING DESIGN: LABELS

A new assessing and evaluation method for establishing Good Design Practices to guarantee accessibility, adaptability and flexibility features for a Senior friendly house.
LIFELONG TECHNOLOGICAL INTEGRATION:
SMART PACKAGES

LIFELONG TECHNOLOGICAL INTEGRATION:
SMART PACKAGES

COMFORT PACK
SAFETY PACK
FAMILY PACK
HEALTHY PACK

Philips HUE Lighting System
VIPER Home Security&Monitoring
SAMSUNG Novobot cleaning Robot
CUPTIME Smart Cup aider

Wireless system connection
APP
Application provided for usage & control
Power supply needed

Wireless system connection
APP
Application provided for usage & control
Power supply NOT needed

Wireless system connection
APP
Application NOT provided
Power supply NOT needed

Wireless system connection
APP
Application provided for usage & control
Power supply NOT needed

PER SERVING

450 CALORIES
5 g SAT FAT
360 mg SODIUM
14 g SUGARS
500 mg POTASSIUM
3 g FIBER

Philips HUE Lighting System

Application provided for usage & control
Power supply needed
DESIGNING SCENARIOS

SCENARIOS

- Incourage the usage of new technologies for users, by simply & clear informations
- Makes more accessible & affordable existing devices instead of domotics systems
- Increase the added value of products by making easier trading and a larger diffusion

OUTCOME

Smart Packages
Lifelong Tech Integration
Lifelong Housing Design
Labels

OUTPUT

Each house could earn added value by a wider purchasing audience
Could be established more reductions & tax incentives, in case of improving the indoor equipment following “Lifelong Housing Design” principles

Helps to easily identify which features are in a “Senior Friendly” Home
Are an information tool to help people in choosing devices for meeting their needs
GOOD DESIGN ENABLES, BAD DESIGN DISABLES!

Paul Hogan, EIDD-DFA Europe president Emeritus

THANK YOU FOR YOUR ATTENTION

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