

Is there a market for smart houses and services?

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Agenda

- Introduction
- Smart houses & smart living
- Experiences with smart home implementation in NL
- Barriers and challenges
- Future expectations
- Conclusions



Technology and ageing in 1992

- Elderly:
 - “Betagten”
 - Elderly homes and nursing homes
 - Old: sick, weak, disabled, nasty.
 - Marketing for senior citizens: never heard of!
- Technology:
 - No Internet, broadband, mobile telephony or GPS
 - Little start of home automation within the house.



Technology and ageing in 2014

- Senior citizens:
 - “Ältere Leuten” and “older adults”
 - Independent living with all kinds of services
 - Old: silver wave, enjoying, having fun, comfort, travelling;
 - Average older person feels 10 years younger;
 - Older persons (including very old) don't want to be patronised;
 - Marketing for senior citizens: still difficult (everyone likes to become old, not to be old!)
- Technology:
 - Always connected, mobile and wireless
 - AAL: services in the living environment



Life Expectancy after 65 in NL

	Number of years	Good Health	Without limitations	Good mental health
men	15.8	61%	78%	89%
women	19.4	53%	64%	81%



What is smart home technology

- Integration of technology and services for better quality of housing and living
- Types of smart houses:
 - houses with “intelligent” objects
 - houses with some “intelligence” and communicating objects
 - connected houses
 - learning and reacting houses
 - anticipating houses

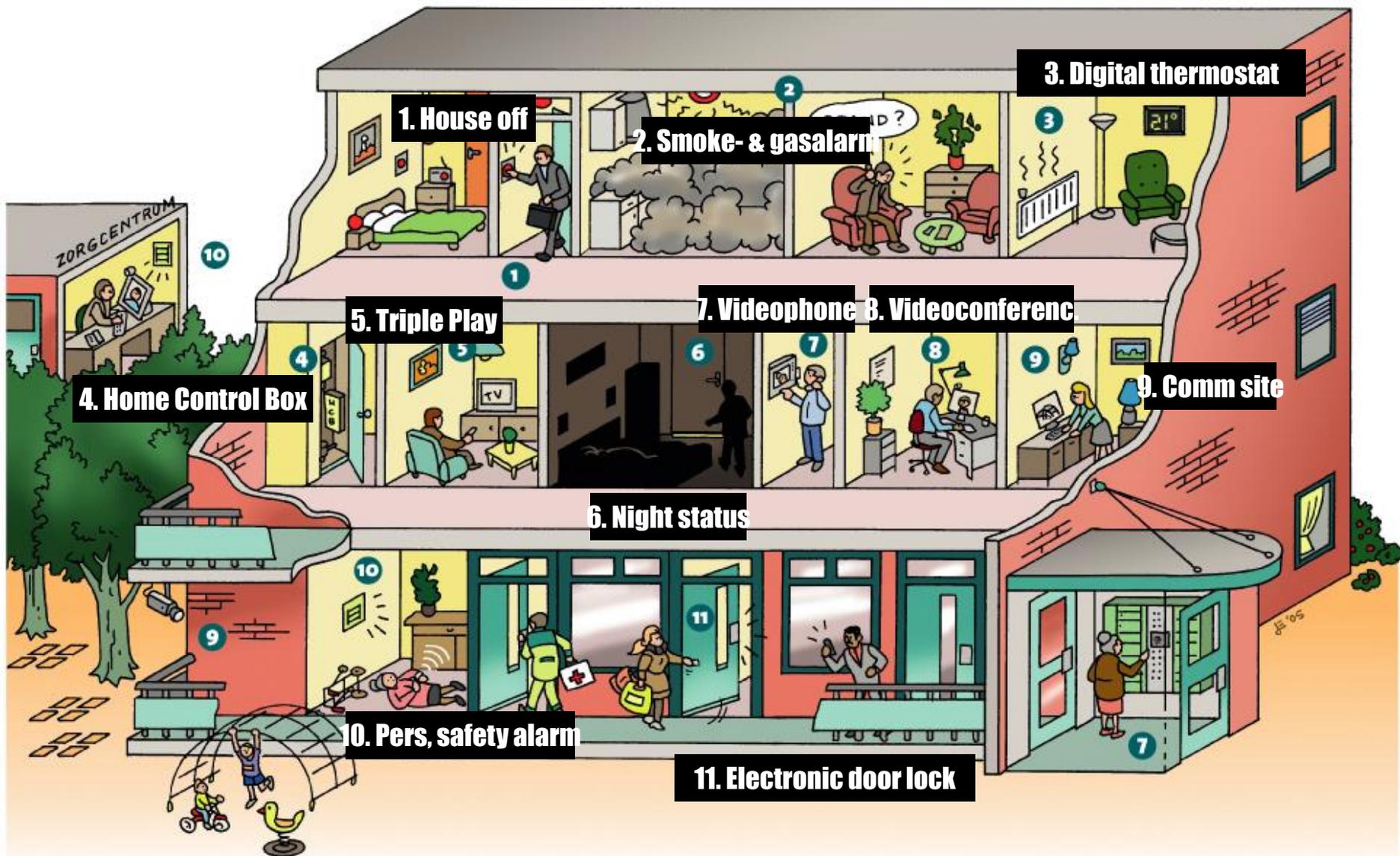


Evolution of “smartness” in telecare

	Tradit. telecare (alarms & monitoring)	Smart houses (Domotics)	Fixed + mobile intelligence
1st generation	Social alarms	Social alarms + sensors + actors	Smart house + independ. robot
2nd generation	Social alarms + sensors + telemonitoring	Connected sensors + actors+ some intelligence	Smart house + integrated robot
3rd generation	Social alarms + sensors + telemonitoring + context awaren.	Connected sensors + actors+ intelligence + context awaren.	Smart house + integrated autonomous robot + context awaren.



Current "Ageing well at home" applications





Pattern recognition

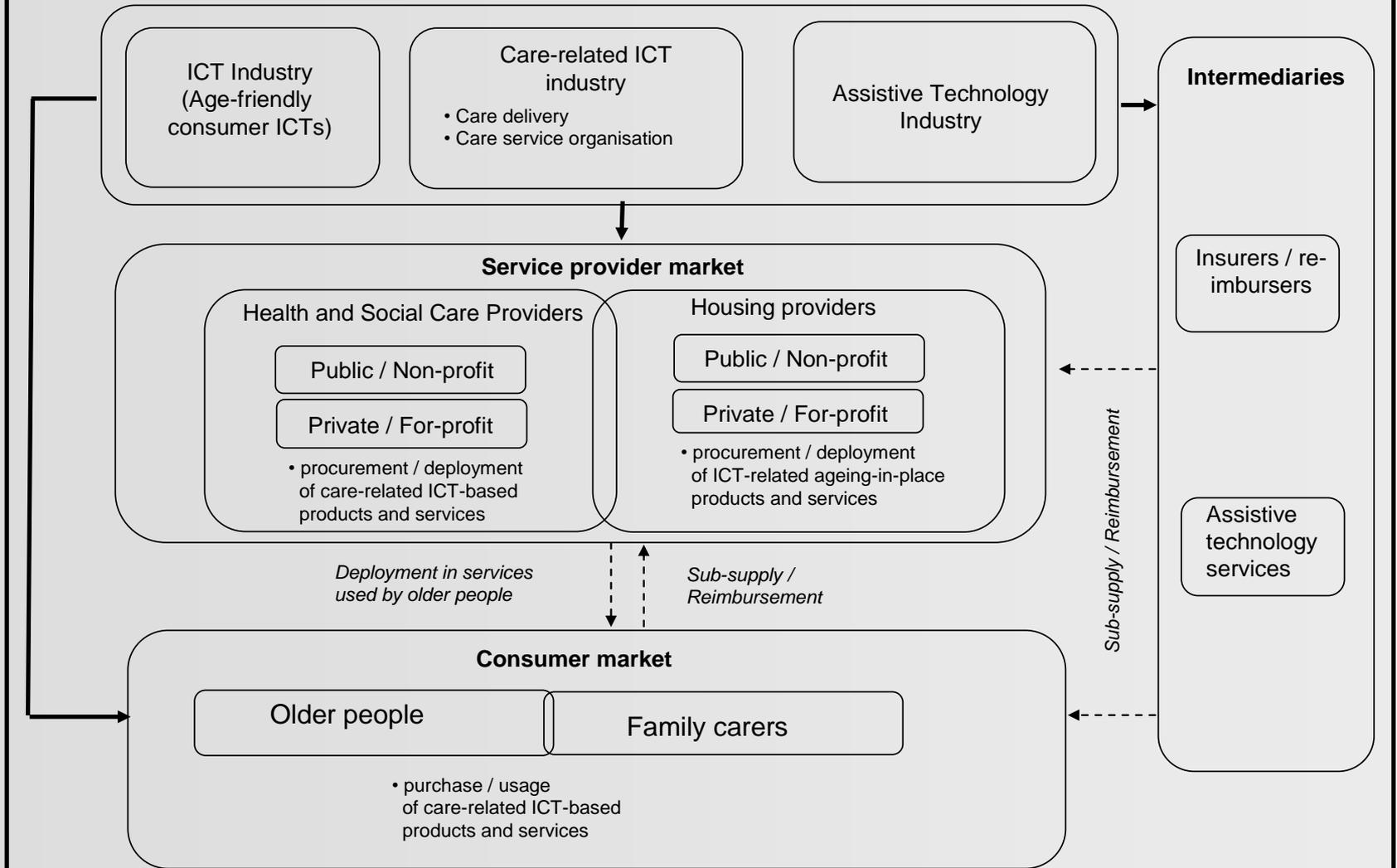
- The bulk of human intelligence is based on pattern recognition;
 - Machines are rapidly improving in pattern recognition;
 - Human pattern recognition is limited to certain types of patterns (faces, speech, sounds, etc.);
 - Machines can apply pattern recognition to any type of pattern;
 - Humans are limited to a couple of dozen variables, machines can consider thousands simultaneously
- (Source Ray Kurzweil)





The complex landscape

Key markets / supply chains: ICTs and Ageing well / independent living



Funding schemes in NL (1)

- Investments by housing associations
 - From 2001 up to 2012
 - As part of ambitions in innovation
 - For learning
 - For image building
- Supported by all kinds of temporary subsidies
 - Regions, provinces (municipalities)



Funding schemes in NL (2)

- Long term policy for investing in technical infrastructure
 - Up to € 2.500 - € 3.000 per apartment;
 - For support of independent living;
 - Only care organisations eligible for funding;
 - Period: 2006 – 2013;
 - From 2014 on: not as a special arrangement, but in total lump sum for specific care package;
 - Less “luxurious”.



Funding schemes in NL (3)

- Remote care
 - Screen-to-screen care in elderly care;
 - 4 hours of care per month is paid for, but only as substitute for 4 hours or care in physical presence;
 - 2,5 hours per month for pharmaceutical care;
- Telemonitoring (vital signs)
 - Limited up to now, but in special arrangement between hospital and health insurance company;
 - € 100 per patient per month;
- GP and medical specialist consult via e-mail
 - Accepted and paid for, but in starting phase now.



Barriers and challenges

- Interoperability and standardisation still big issues;
- Installers traditionally from electro technical mono discipline;
- Installation needs customised work (in details!) with in depth communication with resident;
- Consumer not aware of possibilities and opportunities;
- Basic control systems too expensive;
- Human – machine interaction permanently underestimated.



Barriers and challenges (2004)

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Barriers and challenges (2014)

- Interoperability and standardisation still big issues;
- Installers traditionally from electro technical mono discipline;
- Installation needs customised work (in details!) with in depth communication with resident;
- **Very old healthy adults do not need/want it;**
- **Cheaper platforms and subsystems;**
- Human – machine interaction permanently underestimated.

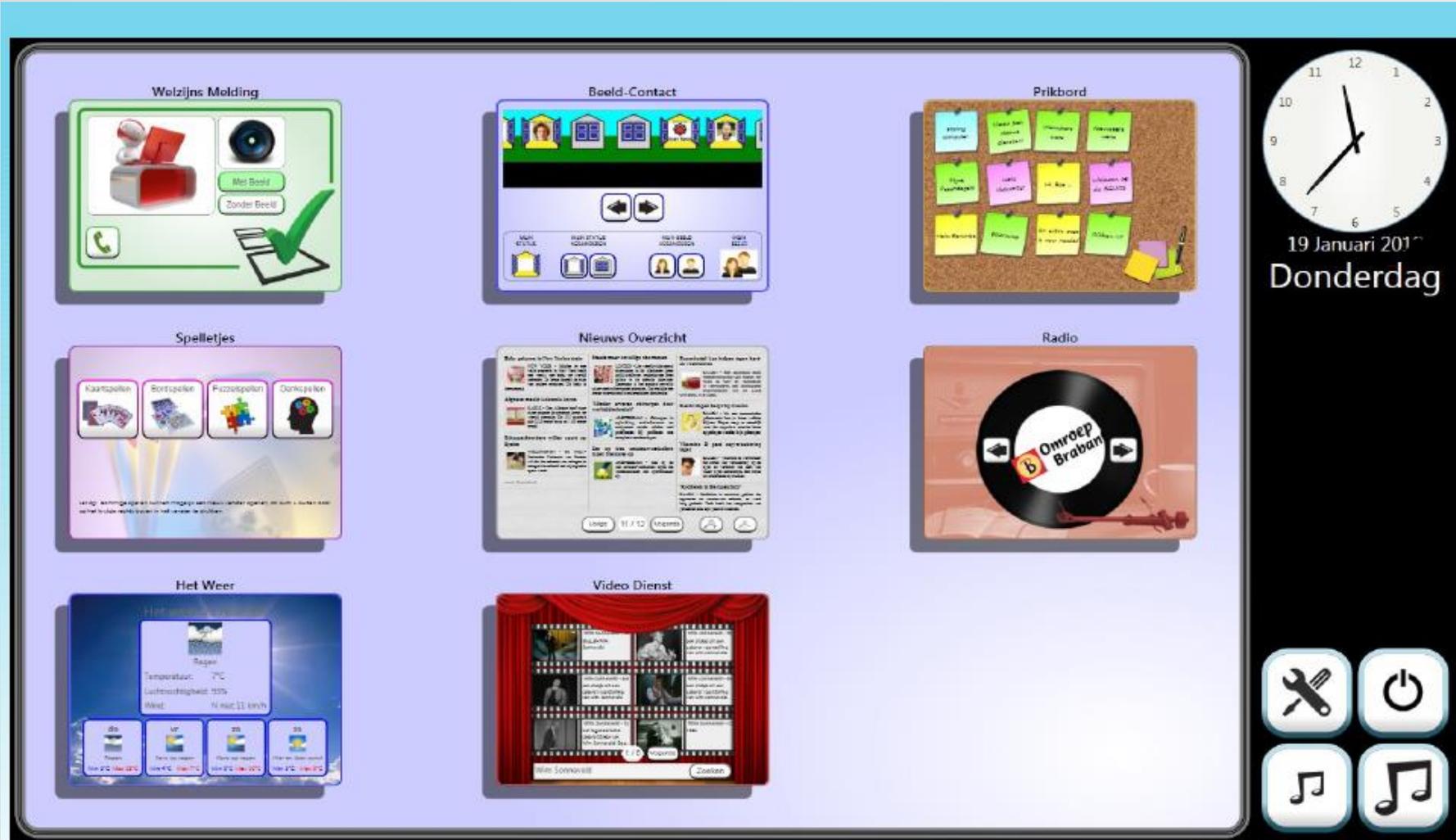


Mibida platform



MiBida

Very simple touch screen interface



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So, smart homes for persons that want to stay independent?



For the oldest old?



Or for the active baby boomers?



Comparison with the car

- Electronic key
- Cruise control
- Airconditioning
- Automatic light
- Security via ABS, airbag, etc.
- Automatic parking
- Fully automatic driving

- Not asked for by the customer, but gradually developed for more comfort and safety;
- Built-in and offered as options at extra costs.



Henri Ford was disruptive

- What did people say when he asked them: “what would you want better with your horses and carriage?”: Better and faster horses!
- So, which answers would we expect when we ask residents: “what would you want better in your household, in your daily living, etc?”



More housing issues

1. Ageing

2. Energy

Europe has relatively poorly insulated homes and of the energy we buy up to 80% escapes into the external environment very quickly.

We could prevent this happening; we estimate Europe wastes up to €0.5 Trillion worth of energy every year*.

* (from Eurostat figures)



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What is already happening in the "home space"?

- Communications infrastructure is rapidly improving: every home access to high speed broadband;
- Smart metering will mean we will know how much energy we are using;
- Home energy management systems will soon be widely available to optimise energy use (f.e. Nest).
- But, we are still throwing energy away and homes are not adapted for people as they get older.



So, what can we do?

- In NL: manifest on trans-sectoral approach: invest € 30.000 in each house for energy + AAL readiness;
- In UK: project proposal "20 20 20 Rapid Retrofit", looking at total home refurbishment on an industrial scale.
- Its aims:
 - to reduce energy consumption to just 20% of existing energy use
 - to do the on-site work in 20 days
 - and to do it for £20,000 (€25,000)



Retrofit at scale

- UK proposal: In a total refurbishment, it is *inexpensive* to ensure that every home you refurbish is made AAL ready with all the energy and occupancy sensors that can support AAL;
- If you are spending €25k on each home (average) over a 25 year period, for the UK, each year you will inject around €22 billion into the economy with a multiplier effect making this €45 billion of UK economic growth;
- Austria equivalent : € 7 billion pa. of growth;
- And if people are spending only 20% of their previous energy bill, this means that some €1200 pa per home, becomes available for other expenditure such as AAL.



The home of the future?

- Warm, homely, comfortable, cheap to run, lots of interfaces with personal devices;
- Intelligent – It will learn people's traits and activities, minimise costs and identify changes;
- It will have lots of sensors that help it run;
- It will have smart meters and be connected to the smart grid;
- It will have intelligent home energy management systems;
- It will be AAL ready and easy to live in.



Looking forward

- We know how to build smart houses;
- We know how to do energy efficient houses;
- We know about AAL technology, but may not understand why older people are not buying it;
- We don't know how to cope with the size of the problem;
- The solution means a trans-sectoral approach, at industrial scale and understanding the economics;
- The answer is all about political will and investing the money differently.



Main observations & conclusions (1)

- The healthy oldest older adults don't "need it anymore";
- Most healthy older adults have strongly decreased cognitive and motor performances and can thus not learn new interfaces anymore;
- There is a big market for technology that supports the oldest adults with multiple co-morbidities;
- There is an upcoming market (gradually and smoothly) for smart home technology and services for baby boomers;
- But is all about personalization!!



Main observations & conclusions (2)

- Interoperability: projects like universAAL and ReAAL demonstrate how difficult this is;
- Waiting for Google, Apple, Samsung?
- USI: Speech recognition is not a solution (yet);
- Certainly tablets and smartphones have given a boost in acceptance of technology in the home;
- Would real broadband (optical fiber) be a trigger and solution?
- Energy saving may become an important economic trigger;
- And not to forget: big data!



So, is there a market for smart houses and services?

- Yes, but....



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- Not explicitly for older adults;
- With slower uptake than expected;



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- Yes, but....
 - Not explicitly for older adults;
 - With slower uptake than expected;
-
- And....
 - It will be huge with the real Internet of Things,
 - And then all houses will become normal houses, just as cars are still “normal”.



Hippocrates

the art of medicine is to cure
sometimes, to relieve often and to
comfort always...



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And...

the art of smart living is to care
sometimes, to relieve often and to
comfort always...

