



# Digital Lifestyle Technologies

## Policy considerations for the 21<sup>st</sup> century

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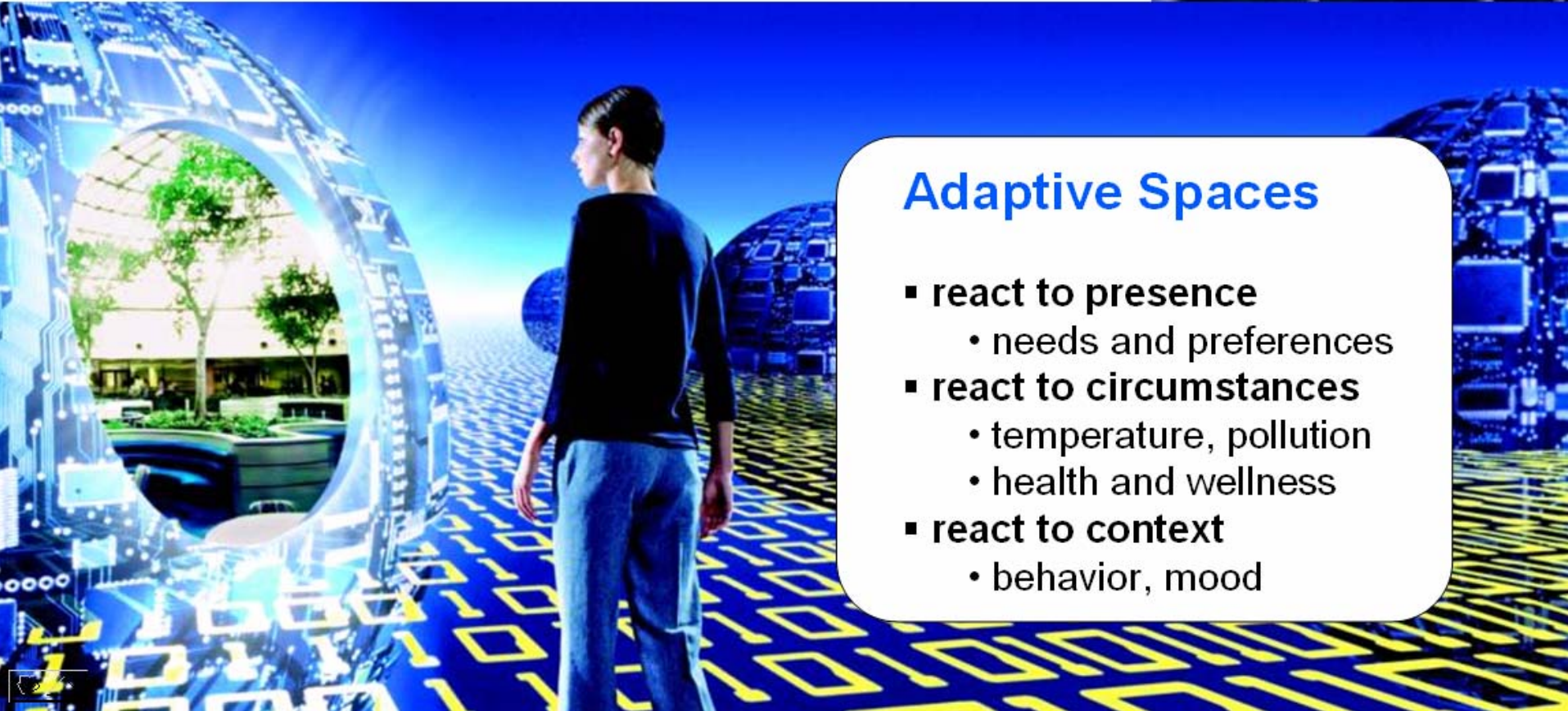


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- The Ambient Intelligence concepts shown in this presentation may be for research purposes only, and do not necessarily depict actual products.

## 21st century: the Ambient World

- In the 19th century machines could DO
- In the 20th century machines could “THINK”
- In the 21st century machines will **PERCEIVE**



### Adaptive Spaces

- react to presence
  - needs and preferences
- react to circumstances
  - temperature, pollution
  - health and wellness
- react to context
  - behavior, mood

Ambient intelligence

Digital environments that are sensitive and responsive to the presence of people



# Smarter living

*Technology for people*

***Embedded***

*Many invisible distributed devices throughout the environment,*

***Context aware***

*that know about their situational state*

***Personalized***

*that can be tailored towards your needs and can recognize you,*

***Adaptive***

*that can change in response to you and your environment, and*

***Anticipatory***

*that anticipate your desires without conscious mediation*

Emile Aarts  
Scientific Program Director  
Philips Research





## Ambient Intelligence

- **Ambient Intelligence** is a world in which technologies are **intangible, invisible and seamlessly integrated in our environments**. A world in which objects - traditionally inanimate - will be enriched by an intelligence that will make them almost 'subjects', **capable of responding to stimuli from the world around them and even of anticipating them**.
- In such a world the **'relationship' between us and the technology around us will be of utmost importance**. This relationship will no longer be one of user towards machine but of person towards 'object-become-subject', thus towards something that is capable of reacting, of being educated and responding.  
(Stefano Marzano, CEO Philips Design, 2001)



## Ambient Intelligence (2)

- Drivers
  - improvement of the quality of life
  - miniaturization
  - civilization
  
- Form and Experiences
  - relevant
  - meaningful
  - understandable
  - built-in good social behavior
  - ability to learn





## Visions of the Future



## Conceptual developments

from

### Ambient Intelligence



**Freedom**

**Intelligence**

**Aesthetics**

**Immersion**

to

### Ambient Assisted Living



**Reassurance  
& Reminding**

**Stimulation  
& Enabling**

**Belonging**

**Safety &  
Protection**



## Ambient Intelligence for Leisure & Pleasure - examples

- **Personal Fitness Coach**
  - Enhances motivation
  - Feedback on body stats
- **Smart Kitchen**
  - Product information
  - Allergies, origin, recipes
- **Smart Objects**
  - Automatic insurance update
  - Localizing objects
  - Preview
- **uWand**
  - Remote Control by pointing and gestures
- **Dreamscreens**
  - Interactive Shop Windows



## Ambient Assisted Living

### - examples

- **Smart Bed**

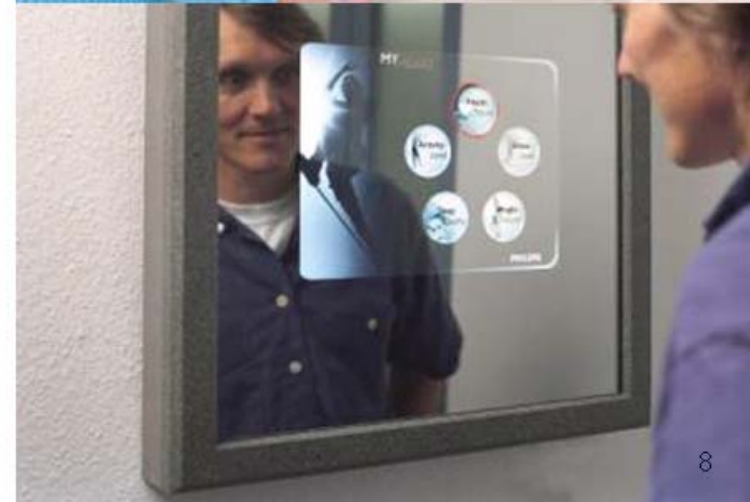
- Monitors cardio-vascular and respiratory performance and sleep
- Integrated into mattress, pyjamas, or bed linen

- **Home Monitoring for Seniors**

- Helps seniors maintain an active, healthy and independent lifestyle
- Emergency service

- **MyHeart**

- Real-time monitoring of body signals
- Can be integrated into wearable garment
- User interaction integrated into everyday appliances like a bathroom mirror





## Near Field Communication (NFC)

– Short range secure user-controlled communication

– **Touch paradigm** (consent by participation)

- Touch & Go, Touch & Confirm, Touch & Explore, Touch & Connect





## Smart User Identification

- **Personal Tokens**

- No/Medium security requirements
- Access to personalized content or objects

- **Active Digital Aura**

- Medium/High security requirements
- Wireless Body-Area Network
- Secure, reliable RFID/NFC-based identification
- Access to personal content or locations

- **Secure Private Biometrics**

- Medium/High security requirements
- Secure, reliable biometrics-based identification
- Presence individual required to match against protected biometric data
- Access to personal or third-party content or locations

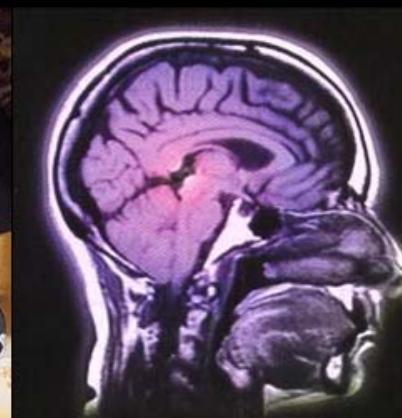


## The Ethics of Ambient Intelligence

- Big brother is watching you
- Alienation
- Which reality is real
- Exit behavior
- Autonomous thinking

Voice beyond choice

SWAMI-project  
<http://swami.jrc.es/pages/index.htm>





# OECD Privacy Principles in 21<sup>st</sup> century

- Ubiquitous computing
- Technology-convergence
- Electronic footprints



<u>OECD Principle</u>	<u>Problem in 21<sup>st</sup> century</u>	
• Purpose specification:	Lack of specificity	} Automatic participation
• Collection limitation:	No limitations	
• Transparency:	Loss of transparency	} Increased invisibility Increased complexity
• Individual's rights:	Lack of control	} Default "hostile" environment
• Data Security:	Loss of confidence and trust	
• Accountability:	Unknown relationships	

- New Privacy Paradigms for 21<sup>st</sup> century needed
- Privacy-by-Design



