1) Introduction
2) Human Centered ICT
3) Human Centered Creative Technology
4) Development in Media Technology (DevThis)
5) Ambient and Pervasive Design (AmbiPerv)
6) DevThis versus AmbiPerv
7) Lessons learned and not-learned

Bachelor Media Technology @ CMI @ Rotterdam University of Applied Sciences

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DevThis: Human Centered ICT (2009)

- User Centered Design
- Look at the future and how to research it
- ICT for humane purposes:
  - social computing
  - support of everyday life
  - emotional support
  - calm computing (?)
  - ubiquitous computing (?)
  - etc.
- but still: technology to support design

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AmbiPerv: Human Centered Creative Technology (2013)

- Creative innovations through technology
- Beyond the desktop, tablet, smartphone
- Real life real people real context
  - smart objects
  - augmented reality
  - emotional interfaces
  - information ecologies
  - sensory interfaces
  - etc.

(cf. Nota Creative Technologies 2013)

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Some new developments in HCI

- mash-ups, soa's
- scenario's, co-creation, co-design
- social / mobile computing
- 'make' movement / exploratory design
- agile design / rapid prototyping
- IoT, ambient & ubiquitous computing
- intelligent / sensory interfaces
- context- and location-based interfaces
- open data / semantic web

(cf. paper @ CSERC 2013)
Developments in (ICT) education

- wealth of internet sources
- lecturer as a facilitator
- inter-active role of students
- DIY: own idea, design approach, knowledge about platforms, toolkits, SDK’s ...
- Classic: lectures, scientific papers, video’s ...
- Social: teams, mini-lectures, fablab ...

(cf. paper @ EADiM 2012)

Learning and Doing Research

- overview of ubiquitous computing
- read classical and overview papers
- learn to handle scientific sources
- find, select, review, utilize papers (without google)
- project plan based on publications
- create a concept poster
- requirements and technical specifications
- build and present a demonstrator
- write a project report
- write a short paper

Learning and Doing Research

Ambient and Pervasive Design

- accessible introduction to IoT
- guided introduction to basic techniques
- apply the know-how to a novel problem

Lecture topics

- IoT and the future
- Arduino and electronics
- from web 2.0 to web 3.0
- the semantic web: machines talking
- IoT concept and software design

Accessible introduction IoT / Arduino

Massimo Banzi @ Ted - Arduino as open sourcing imagination

Bassett & Partners - Connecting the Film

Kevin Kelly @ Ted - The next 5,000 days of the web

Introduction to Arduino, IDE, Processing

- setup & connect Arduino (blink)
  http://arduino.cc/en/Tutorial/Blink
- extend with timing variation, button, potmeter, lightsensor, sound ...

```c
void setup() {
    // initialize the digital pin as an output.
    // Pin 13 has an LED connected on most Arduino boards:
    pinMode(13, OUTPUT);
}

void loop() {
    digitalWrite(13, HIGH);   // set the LED on
    delay(1000);              // wait for a second
    digitalWrite(13, LOW);    // set the LED off
    delay(1000);              // wait for a second
}
```

Guided Introduction to basic techniques

- blink, Sensor, Effector
  http://arduino.cc/en/Tutorial/Blink
- button -> effector
- sensor -> effector
  http://learn.adafruit.com/tmp36-temperature-sensor/overview
- processing to connect arduino to / from pc or web
  http://www.arduino.cc/en/Tutorial/PhysicalPixel

- arduino applications (how to)
- concept air quality (research)
- prototype (realization)
AmbiPerv: examples
- arduino applications (how to)
- concept air quality (research)
- prototype (realization)

DevThis versus AmbiPerv
- full and textual overview of IoT --> accessible and visual introduction to IoT
- teaching research using publications --> guided learning by demonstration
- doing research DIY --> apply basic know-how in a creative way
- knowledge-centric design
- design based on creativity + know-how

Discussion - incomplete
- teaching AmbiPerv is much more fun
- students prefer building over studying papers: education should facilitate creativity (Brennan):
  - creativity lessons are hard but being creative works!
  - guided & accessible introduction accelerates
- early introduction of new developments (sensors, IoT, ‘make’, smart objects ...):
  - creates opportunities for innovative curriculum results.
- knowledge, know-how or creativity?

Thank you!
Questions?
geert.de.haan@upcmail.nl
http://members.upc.nl/g.haan24/

Van Turnhout et al. UX in the Wild @ Chi Sparks ‘12
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www.connectingthefilm.com
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