

a *creative* approach to *smart technology*

from a *new media* perspective

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abstract In this report we look at the requirements for the *smart technology* track from a *new media* perspective, in order to assess how the two specialization tracks in *creative technology* may cooperate in developing *creative applications* that support, in a general fashion *living and working tomorrow*.

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introduction

Although the *creative technology* curriculum is at this stage still in development, with contributions of a variety of tracks or sub-disciplines, an outline of the educational goals of *creative technology* will look like:

educational targets – *creative technology*

- **skill(s)** – *computing, mathematics, simulation, technology*
- **knowledge** – *computer & software architecture, human factors*
- **theory** – *systems engineering, media & communication*
- **experience(s)** – *project(s), deployment in social context*
- **attitude** – *initiative, creative, involved*

Taking these targets as a guideline will help us in determining what the combined role of the *smart technology* and *new media* track should be in the *creative technology* curriculum.

background - the internet of things

On 18/4/08, Antonio Kruger (University of Munster¹), who is actually part of the advisory committee for CreaTe, presented a lecture, in a NWO CATCH² meeting, on *intelligent user interfaces* and the **internet of things**. He discussed the following aspects and applications of *pervasive* or *ubiquitous* computing:

- sensors – including RFID technology, and localisation (GPS)
- tangible interfaces – using new display technologies, such as responsive surfaces
- mobile (multi-device) applications – such as WikEye³ (see below)
- urban applications – using devices and (urban) screens

WikEye provides an virtual reality enhancement of (prepared) maps, and gives access to information on the Wikipedia by browsing a map with a mobile phone equipped with a camera. In general, new technologies, such as FTIR⁴ (Frustrated Total Internal Reflection) in combination with sensors, allow for novel interaction paradigms, that can be applied in both domestic as well as urban environments.

Antonio Kruger mentioned two problems that hamper the development and deployment of such applications:

1. *content creation* – to develop useful applications
2. *coordinating stakeholders* – to communicate about design & development

It is in line with the **integrative** function of CreaTe students that they might take care of both points, and there is no need to emphasize that actual expertise with (installing and programming) sensors is mandatory to allow our students to work on **creative projects** in this domain.

new media – targets and learning goals

Elements of which the *new media* curriculum will consist, at least for the students taking *new media* as a specialisation, include:

learning goals – *new media*

¹ifgi.uni-muenster.de/~kruegera

²www.nwo.nl/catch

³www.deutsche-telekom-laboratories.de/~rohs/wikeye

⁴en.wikipedia.org/wiki/Total_internal_reflection

- interactive video – in customizable format
- web technology – for developing information portal(s)
- animation – for simulations and (physical) systems
- virtual reality – for games and virtual environments
- game development – for entertainment and instruction
- rich internet application(s) – for multimedia (web) applications
- interactive installation(s) – media art

With regard to the use of media *out of screen*, in the private sphere in non-computer bound displays, and in the public sphere in *urban screen* and *responsive surfaces*, it is a challenge for the *new media* track to closely cooperate with *smart systems* both in design and development of such systems, which includes programming as well as digital content creation, that may be regarded as a crucial factor in the successful deployment of these systems.

smart technology – requirements

For the specialisation of *smart technology* we may, perhaps somewhat naively, come up with the following list of educational goals:

educational targets – *smart technology*

- **skill(s)** – modeling, construction
- **knowledge** – mechatronics, ubiquitous computing, dynamic systems
- **theory** – human perception, privacy, security
- **experience(s)** – deployment of smart (multi sensor) systems
- **attitude** – inventive, with a playful mind

Minimally, the topics in *smart technology* will include:

learning goals – *smart technology*

- dynamic systems, control systems
- smart technology engineering
- instrumentation – software development

In order to cooperate in projects under a theme such as the *internet of things*, together with *new media* students, there must be sufficient attention to both instrumentation and programming skills, to develop concepts for relevant applications of such technologies in a creative fashion.

the *smart technology* curriculum – creative applications

Let us look at the theme, proposed by Bernard Geurts in a late night email, such as the **internet of things**:

The market of logistics is growing rapidly. In order to withstand this tremendous growth and complexity, advanced process management systems are required: Smart Systems that integrate planning, coordination, and control of all logistic business processes and activities in the supply chain network to deliver good consumer value at low cost to the supply chain as a whole while satisfying requirements of other stakeholders in the supply chain.

As indicated above, similar identification technologies can be used in other contexts, such as for example the museum, to identify visitors and paintings, in art to find interesting references related to identifiable objects or persons (as for example in PICNIC07⁵), or in an urban games, where *places of interest* may be identified using RFID and/or localisation technologies. See for more references Mediamatics Reader for Hybrid World Lab⁶. that surpasses the mere *problem solving* approach

conclusions

We have discussed the *smart technology* track in relation to the *new media* track. In creating a *hybrid world*, in a way that surpasses the mere *problem solving* approach of traditional computing and engineering disciplines, both students and, why not, the world would benefit from a close cooperations between the two disciplines of *creative technology*.

⁵www.picnicnetwork.org

⁶www.mediamatic.net/article-9691-en.html