

accreditation – last version 30/10/08 (AE)

EWI-Research

The bachelor Creative Technology is primarily an **integrative discipline**, as it aims to deliver graduates that can operator as **mediator(s)** in developing services and technologies addressing issues in both the personal and public domain. As an academic discipline a strong link and direct contact with ongoing research is a pre-requisite for developing the Creative Technology curriculum since, simply put, **innovation requires research**.

In order to involve all parties in EWI, to the extent possible, we have decided not to create a new chair in Creative Technology, but to have a sufficiently representative Working Committee that is truly embedded in the faculty, to stimulate contributions from all sections, including Control Engineering, Pervasive Systems, Short Range Radio, IC-design, Human Media Interaction, Computer Architecture and Embedded Systems, Software Engineering, Signals and Systems, Systems Theory, Applied Analysis and Mathematical Physics, Numerical Analysis and Computational Mechanics, Design and Analysis of Communication Systems. In section 6.3.2 it will be discussed in what way research performed in these groups can be incorporated in the curriculum, and what constraints apply to integrate excellent research in a bachelor-level curriculum.

With reference to the IIP/Create Strategic Research Agenda, we must emphasize that the envisaged (future) role of Creative Technology students is primarily to act, quoting the report, as a **bridge between science and the creative industries**, or, in other words, to take research out of the laboratories and explore deployment in an actual context, both, as we said before, in the public as well as in the personal domain. The Smart XP Lab, which is currently under construction, and is meant as among others a place for Creative Technology students to work, has a similar goal, and we expect our Creative Technology students to play a **pivotal role** in realizing the aspirations of the Smart XP Lab, because they will very likely be the **prime content developers** for the range of applications hosted by the Smart XP Lab.

Although so far no research funds have been allocated for Creative Technology, we wish to mention a project proposal for the first IIP/Create call for proposals, in which Creative Technology might participate as an independent partner next to HMI (Human Media Interaction) of EWI, addressing the issue of *how we might (in a playful way) improve teamwork* and develop a tool to support *creative trans- and interdisciplinary collaboration among scientists, designers, engineers and artists to foster cross-disciplinary creative research and development*. Apart from the tool, the project, aptly called the WOW-project, as submitted by Anne Nigten from V2_, must also result in a **collaborative game**. Together with the expertise from HMI, that covers human-computer interaction, virtual agents and environments for collaboration, research allocated with Creative Technology, focussing on aspects of **game play**, **smart interaction**, and **media technology**, could significantly contribute to the success of the WOW-project.

As a final remark, although the original decision to distribute responsibility for Creative Technology over the various sections within the faculty seems currently to be the only reasonable option, on a long term it might prove to be more effective to create a chair for Creative Technology that is responsible for the active **initiation of research** and that is a clearly identifiable **partner for communication** and cooperation with industry and the cultural institutes such as the Waag and V2_.

appendix – WOW Tool

theme: Programma/Thema: IIP-Create WoW, Interactive and tangible environments

initiator: Anne Nigten (V2_)

description (summary): It is known that art and design are among the catalysts for radical creative innovation in pre-competitive creative ICT cycles. However, the knowledge transfer and collaboration with representatives from different backgrounds often turns out to be a major obstacle. This project deals with the research question: How can we (in a playful way) improve teamwork, and organizational support for creative trans- and interdisciplinary collaboration among scientists, designers, engineers and artists to foster cross-disciplinary creative research and development?

partners: Industry: Philips Design, Almende, T-Xchange t.b.c., Getronics PinkRocade Business Application Services bv, Noldus Information Technology BV, SME: STBY

Science Institutes: University Twente (HMI), TU-Delft (HMI-AI), TUE (Technology Management/Organisation Science and Marketing), VU Amsterdam, multimedia & game development icw University Twente, Creative Technology (t.b.c.)

Creative / Cultural Institutes: The Patchingzone, V2_, Waag

6.3.2. Curriculum follows developments and trends in relevant research

Although the need to include the fruits of excellent research in the Creative Technology curriculum is widely recognized, the actual **translation of research into teaching** needs careful attention, with regard to the fact that Creative Technology is a bachelor study on the one hand, and the special character of Creative Technology, which also allows M-profile students, on the other hand.

Expressing the precise format and constraints that must be satisfied for introducing research in the curriculum is beyond the scope of this accreditation report. Nevertheless, when we express our educational approach briefly as **education by example**, it is obvious that such contributions must be well-packaged and allow for **immediate hands-on experience**, indeed, favoring practical application over deep understanding!

The actual contribution of the various EWI groups may differ, according to the research topics addressed by the group. However, with a number of groups it has already been discussed in what format their research may contribute to the curriculum. For example with the Database group of Prof. Apers, we have agreed to include a package in the 2nd year course CS4: Data-driven Applications, to make the students familiar with their research in **data-management for sensor networks**, in a format that allows the students to apply these technologies in their project(s), for example CA5: Hybrid World(s), which is concerned with applying RFID and sensors in logistics support systems and urban games.

The contributions of the various research groups must in a general way comply with what we have called **opportunistic engineering** in (Obrenovic et al. 2008), a paper describing experiences in the course **intelligent multimedia technology** given at the VU Amsterdam. In the report it is explained how *using opportunistic (software) development principles in computer engineering education encourages students to be creative and to develop solutions that cross the boundaries of different technologies*. More in particular, it is observed that *educators can also use interactive art projects and hacking to demonstrate innovation*, and, may be added here, to motivate students to aspire a high level of excellence. In the course we explicitly wanted *to emphasize the importance of creativity when combining diverse technologies*, simply because the range of ways in which these technologies can be applied are rather overwhelming and may easily discourage the unmotivated students.

As a summary of our experience(s) we suggested the following list of general guidelines, that may be of help in structuring a course and in deciding on how to present the technologies to the student(s):

- support exploration
- low threshold, high ceiling, and wide walls
- support many paths and many styles
- choose black boxes carefully
- invent things that you'd want to use
- balance user suggestions with observation and participatory processes

These recommendations also apply to courses to be developed for the Creative Technology curriculum, although we have to keep in mind, constantly, that we offer education to bachelor students and adjust our expectations accordingly!

reference(s)

Z. Obrenovic, D. Gasevic, A. Eliëns, Stimulating Creativity through Opportunistic Software Development, accepted for: IEEE Software, special issue on Opportunistic Software Systems Development - November/December 08, url: www.idemployee.id.tue.nl/z.obrenovic/papers/obrenovic_cosd.pdf