NM1: *web technology*

date: 25/2/08; author: A. Eliëns; version: 1.0 (discussion)

infomation

project-based course, semester 1, 3 ects

contents

The course presents elementary web technology, primarily from the perspective of content development, with special attention to form, style, dynamic behavior and interaction.

course outline(s) – nm1: web technology

In this part a more detailed discussion will be provided of **topics**, **learning goals**, **materials** used, and the actual **structure of the course**, as well as a sketch of the **assignments** given. Also **references** to releveant literature is provided, including **online resources**. At the end, **advice for students** following the course will be given, as well as **hints for the instructor(s)**.

course topic(s) The NM1 course will cover a great variety of topics. Although the main focus of the course is to bring about the skills needed to effectively use the web in later projects and applications, we will also deal with the web as a societal phenomenon, as an element of our daily life.

- web languages for markup, styling and interaction
- elementary web technology authoring tools
- client-side vs server side solutions
- basic scripting, styling and interaction design
- separating content, form, style, behavior and interaction
- elements of web 2.0 business model(s)
- analysis of (commercial) web-sites and portals
- privacy and security – web applications as attack surfaces

Recently, issues of privacy, security and trust gain increaing attention. Also from a technical perspective, some knowledge about **hacking the web** is worthwhile for understanding the potential and dangers in deploying the web as a computing platform.

learning terget(s) The NM1 course is meant to bring competence(s) and skill(s) at varioys levels. In addition, references will be made to literature for further theoretical study. Small projects will further give the experience needed for using web technology in an effective manner.

- skill(s) – scripting, styling, configuration
- knowledge – html, javascript, css, xml, php
- theory – basic(s) of web 2.0
- experience(s) – small scale multi-language web application development
- attitude – understanding, craftmanship, discovery

Apart from practical skills, the course aims at an intuitive understanding of the complexity of the web as a platform for communication and services. To prfit from the course, must have a sufficient degree of curiosity and lust for discovery.

lesson material(s) Although there are many good books available, the is also a wealth of material online, which should suffice for a first introductory course.

- canonical example(s) – *game* / *calculator* / slogan(s) / lookat(s)
- (online) reference material(s) – standard(s) / javascript / www.w3schools.com / kit(s)

- challenging target(s) – heart(s) / labs.google.com (*edu* / *code*)

In the course, we will take an **example-based approach** to learning, that is by showing a selection of examples that demonstrate essential features of web-technology. A dissection, or discussion of these examples will help the students in understanding the most salient features.

course structure – session(s)
Although the course is essentially **project-based**, and to a great extent relies on the students' activity in completing the assignments, there will be a number of lectures, to assist the student in the assignments, and in understanding both the technical and societal context of web applications.

1. introduction of language(s), tool(s) & technology
2. scripting – basic assignment(s)
3. web standard(s) – client-side
4. styling – basic assignment(s)
5. web standard(s) – server-side
6. interaction – basic assignemnt(s)
7. advanced topic(s) – ajax, dhtml, plugin(s), addon(s)
8. presentation of final assignment(s)

The structure presented here is only indicative, and may differs from the actual sequence of topics treated in the lectures. In particular topics such as privacy and security, and societal issues, will be dealt with as items in the lecture, also dependent on actual news items and developments.

assignment(s)
There will a small number of assignemts, to be made by the students individually. The goal of these assignments is to provide a structure that assists the students in exploring the technology. Basic assignemnts (may) include:

basic(s) – *web technology*

1. style – adapt three basic example(s) in style and functionality
2. form – construct a simple calculator or converter in a domain of choice
3. chaos – create the worst, that is visually confusing, web page possible, in an aesthetic way though
4. portal – make a small information site about some topic of choice
5. mimic – evaluate and mimic, e.g. from best of the web

For the final assignment(s) of the course, students are allowed to work indidually, or in groups of two or three (maximally) students. Work done in groups must be proportionally more challenging and complex. Students can make a choice out of (among possibly others):

final(s) – *web technology*

- health information site – www.digifit.eu
- collection of javascript math games – www.cut-the-knot.com
- javascript (visual) adventure game – www.astoundme.com/scottadams
- alternative(s) – submit a proposal

In effect, students will be encouraged to follow their own ideas, in for example implementing a game using web technology, or a deep exploration in style, corresponding with (parallel) course(s) in design.

reference(s) There are many books dealing in one way or another with **web technology**. In particular the **Programmer to Programmer** series of Wrox (www.wrox.com) is highly recommended, especially for learning specific technologies in a practical way.

1. JavaScript: The Definitive Guide by David Flanagan – (amazon)
2. CSS: The Definitive Guide by Eric Meyer
3. Professional Web 2.0 Programming (Wrox Professional Guides) by Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, Alessandro Vernet
4. business model(s) – www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html

5. Webbots, Spiders, and Screen Scrapers: A Guide to Developing Internet Agents with PHP/CURL by Michael Schrenk
6. The Web Application Hacker's Handbook: Discovering and Exploiting Security Flaws, by Dafydd Stuttard amd Marcus Pinto
7. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

online resource(s)
There is a great, tha is massive, number of online resources, about web technology, including treatments about technology, solutions to HCI issues, style and semantics.

- topic(s) – http://www.digital-web.com/topics
- tutorial(s) – tizag.com / www.w3schools.com
- hci – www.digital-web.com/articles/the_pinball_effect
- style – www.csszengarden.com / webdesignfromscratch.com/web-2.0-design-style-guide.php
- game(s) – nl.youtube.com/experiencewii
- semantic(s) – www.thefutureoftheweb.com/blog/writing-semantic-html

For your basic as well as final assignment(s), the following resources might be useful:

- tool(s) – www.aptana.com / firefox addon(s)
- example(s) – javascript.internet.com / openjsan.org / code.google.com/apis/ajax/playground
- ajax – softwareas.com/ajaxjavascript-8-ways-to-create-graphics-on-the-fly
- graphic(s) – raphaeljs.com/reference.html / me.eae.net/archive/2005/12/29/canvas-in-ie
- css – nubyonrails.com/pages/css_graphs / codepunk.hardwar.org.uk/css2js.htm
- javascript – tool-man.org
- dynamic(s) – www.hunlock.com/blogs/Howto_Dynamically_Insert_Javascript_And_CSS
- menu(s) – www.noupe.com/css/13-awesome-java-script-css-menu.html
- processing – ejohn.org/blog/processingjs
- physic(s) – box2d-js.sourceforge.net
- adventure(s) – zproxy.wordpress.com/2007/11/11/javascript-2d-adventure-game-demo
- dream(s) – jsc.sourceforge.net
- server(s) – www.softintegration.com/webservices

For the final assignment, look for example at the following health site(s)

health

- run – www.runnersworld.com
- nike+ipod – nikeplus.nike.com/nikeplus/?locale=euen_eu
- sport – www.digifit.eu
- moral(s) – morale.erikbenson.com/person/erik

For additional information look at create/resource-web.html.
Particular attention will be given to the complex computational infrastructure provided by the web platform, which is constituted by a wide variety of (scripting) languages and representation formalisms.

prerequisites
CS1 – computer & network architecture(s)

goals and attainment targets

learning terget(s) The NM1 course is meant to bring competence(s) and skill(s) at varioys levels. In addition, references will be made to literature for further theoretical study. Small projects will further give the experience needed for using web technology in an effective manner.

- skill(s) – scripting, styling, configuration
- knowledge – html, javascript, css, xml, php
- theory – basic(s) of web 2.0
- experience(s) – small scale multi-language web application development
- attitude – understanding, craftmanship, discovery

Apart from practical skills, the course aims at an intuitive understanding of the complexity of the web as a platform for communication and services. To prfit from the course, must have a sufficient degree of curiosity and lust for discovery.

place in curriculum
NM1 is an introductory course for all students. It is relevant to NM2 (*interactive visualization*), for publishing the results of CA-projects, as well as for the creation of *individual portfolio(s)*.

application area, motivating examples

The course *web technology* will be based on a collection of online examples, that provide an intuitive illustration of content development issues, as well as online reference material, that will be used for self-study.

lesson material(s) Although there are many good books available, the is also a wealth of material online, which should suffice for a first introductory course.

- canonical example(s) – *game* / *calculator* / slogan(s) / lookat(s)
- (online) reference material(s) – standard(s) / javascript / www.w3schools.com / kit(s)
- challenging target(s) – heart(s) / labs.google.com (*edu* / *code*)

In the course, we will take an **example-based approach** to learning, that is by showing a selection of examples that demonstrate essential features of web-technology. A dissection, or discussion of these examples will help the students in understanding the most salient features.
Although the final assignment will be a small scale project, students are encouraged to find inspiration in current developments and projects on the web.

teaching methods

The course will be organised around lectures, which will introduce basic examples and which will provide an in-depth explanation of the technologies.

course structure – session(s)
Although the course is essentially **project-based**, and to a great extent relies on the students' activity in completing the assignments, there will be a number of lectures, to assist the student in the assignments, and in understanding both the technical and societal context of web applications.

1. introduction of language(s), tool(s) & technology
2. scripting – basic assignment(s)
3. web standard(s) – client-side
4. styling – basic assignment(s)
5. web standard(s) – server-side
6. interaction – basic assignemnt(s)
7. advanced topic(s) – ajax, dhtml, plugin(s), addon(s)

8. presentation of final assignment(s)

The structure presented here is only indicative, and may differs from the actual sequence of topics treated in the lectures. In particular topics such as privacy and security, and societal issues, will be dealt with as items in the lecture, also dependent on actual news items and developments.
In addition, students will be invited to give presentations on selected topics, as wll as concepts and implementations of their own projects.

Grading will be based on basic assignments, a small project with documentation, as well as an essay in which a topic of choice, either technical or in relation to the business model of the web or its societal impact, is discussed in more depth.

assignment(s)
There will a small number of assignemts, to be made by the students individually. The goal of these assignments is to provide a structure that assists the students in exploring the technology. Basic assignemnts (may) include:

basic(s) – *web technology*

1. style – adapt three basic example(s) in style and functionality
2. form – construct a simple calculator or converter in a domain of choice
3. chaos – create the worst, that is visually confusing, web page possible, in an aesthetic way though
4. portal – make a small information site about some topic of choice
5. mimic – evaluate and mimic, e.g. from best of the web

For the final assignment(s) of the course, students are allowed to work indidually, or in groups of two or three (maximally) students. Work done in groups must be proportionally more challenging and complex. Students can make a choice out of (among possibly others):

final(s) – *web technology*

- health information site – www.digifit.eu
- collection of javascript math games – www.cut-the-knot.com
- javascript (visual) adventure game – www.astoundme.com/scottadams
- alternative(s) – submit a proposal

In effect, students will be encouraged to follow their own ideas, in for example implementing a game using web technology, or a deep exploration in style, corresponding with (parallel) course(s) in design.

reference(s) There are many books dealing in one way or another with **web technology**. In particular the **Programmer to Programmer** series of Wrox (www.wrox.com) is highly recommended, especially for learning specific technologies in a practical way.

1. JavaScript: The Definitive Guide by David Flanagan – (amazon)
2. CSS: The Definitive Guide by Eric Meyer
3. Professional Web 2.0 Programming (Wrox Professional Guides) by Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, Alessandro Vernet
4. business model(s) – www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html
5. Webbots, Spiders, and Screen Scrapers: A Guide to Developing Internet Agents with PHP/CURL by Michael Schrenk
6. The Web Application Hacker's Handbook: Discovering and Exploiting Security Flaws, by Dafydd Stuttard amd Marcus Pinto
7. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

NM1 – resource(s) / inspiration(s) inspiration(s)

- learn – smart.fm
- browser(s) – www.armorsurf.com

- standard(s) – www.indelv.com
- javascript game(s) – www.eyehook.com/games / www.javascriptgaming.com
- must read – www.smashingmagazine.com/2009/10/05/mastering-css-coding-getting-started
- scalable page(s) – bullit(s) / www.alistapart.com/articles/sizematters
- javascript include(s) – webdeveloper.earthweb.com/repository/javascripts/2003/06/195171/jsinc.html
- js/cc grammar(s) — online / jscc.jmksf.com
- inheritance – www.crockford.com/javascript/inheritance.html
- cloud computing – myfreecloudhost.com/static/what_is_cloud_hosting
- history of the web – www.dejavu.org
- about google wave – blogs.zdnet.com/BTL/?p=25972&tag=nl.e539
- (do not) read tutorial(s) – PHP / XML / javascript
- kill flash – www.stevenwei.com/2010/01/31/the-best-way-for-adobe-to-save-flash-is-by-killing-it
- stream(s) – activitystrea.ms
- advanced javascript – www.smashingmagazine.com/2010/04/20/seven-javascript-things-i-wish-i-knew-much-earlier-in-my-career

NM2: *interactive visualization*

date: 25/2/08; author: A. Eliëns; version: 1.0 (discussion)

information

project-based course, semsster 2, 6 ects

contents

The course will cover a variety of issues related to rich media presentations using current web technology, with a special focus on interactive visualization(s) of dynamic complex systems.

course outline(s) – nm2: interactive visualization

In this part a more detailed discussion will be provided of **topics**, **learning goals**, **materials** used, and the actual **structure of the course**, as well as a sketch of the **assignments** given. Also **references** to releveant literature is provided, including **online resources**. At the end, **advice for students** following the course will be given, as well as **hints for the instructor(s)**.

course topic(s)
Since the web must be considered to be the most prominent platform for the dissemination of information and services, the *interactive visualization* course will primarily focus on web-based rich media technologies. Topics treated in the course include:

- elementary web-based multimedia technology
- programming and tools for interactive animation
- first principles of information visualisation
- elements of interaction design
- data representation issues for rich media applications

However, instead of using advanced high-level tools, our approach will start from **first principles**, that is using computational means to get access to, manipulate, and present data, in **visually appealing** ways.

learning target(s) With regard to the programming skills, the actual **topics** treated in *interactive visualization* will to a large extent on what has been covered in the earlier **programming course(s)** However, taking a **technology-agnostic view** our learning goals can be summarized as:

- skill(s) – scripting, XML-based configuration
- knowledge – interactive animation & visualization
- theory – dynamic systems, information presentation
- experience(s) – medium scale interactive visual application(s)
- attitude – explorative, problem-finding, aesthetics

In particular, students must gain an **intuition** on how to create **visualizations using computational means**, and how to approach visualization issues by iteratively, as outline in Ben Fry's book on **visualizing data**, going through the following steps: *acquire*, *parse*, *filter*, *mine*, *represent*, *refine* and *interact*. No need to emphasize that an **exploratory attitude** is essential, as well as a (to be developed) sense of **(computational) aesthetics**

lesson material(s)
Apart from the highly recommended book Visualizing Data by Ben Fry, all material(s) will be online, including a (large) number of examples, as well as reference material, and challenging targets, that examples that may serve as a target for students' accomplishments.

- canonical example(s) – *animation* / draw / www.processing.org
- (online) reference material(s) – resource(s) / adobe live docs: actionscript / flex

- challenging target(s) – labs.adobe.com / flash art / sample(s) / www.processing.org

During the course this list will be extended, and dependent on circumstances, particular aspects of **interactive visualization** will be emphasized, in particular visualization techniques that use **physics-based animations** as a means of conveying relationships between data, examples of which are given in the onlune resources below.

course structure
The course does require active participation of the student(s), not only in exploring the technolgy by making the assignments, but also by presenting **solutions and problems** in class.

session(s)

1. introduction of (rich) media platform(s)
2. basic assignment(s) – animation (1)
3. essentials of animation and visualisation
4. basic assignment(s) – visualization (2)
5. principles of interactive information presentation
6. basic assignment(s) – interaction (3)
7. elements of data-driven information systems
8. presentation of final assignment(s)

At this stage it is not clear whether to enforce the use of one particular technology, **flex/as3** or **processing**, to use multiple technologies, or to allow students a choice of technologies, which would then also include **javascript**, **Ch** and **C++**.

assignment(s)
There will a small number of assignemts, to be made by the students individually. The goal of these assignments is to provide a structure that assists the students in exploring the technology. Basic assignemnts (may) include:

basic(s) – *interactive visualization*

1. particle systems – with collisions and effects
2. map-based visualization – e.g. using www.umapper.com with flex/as3
3. information overlays – e.g. in combination with interactive video

For the final assignment(s) of the course, students are allowed to work indidually, or in groups of two or three (maximally) students. Work done in groups must be proportionally more challenging and complex. Students can make a choice out of (among possibly others):

final(s) – *interactive visualization*

- geo-located information – e.g. health or finances
- activity-monitoring – e.q. sensor-data, web-traffic
- information game – e.q. climate issues

In effect, students will be encouraged to follow their own ideas, in for example implementing a game using visualization technology, giving information and (game-play) feedback in visually compelling ways.

reference(s)
As said before, a highly recommended reference for interactive data visualization is **Visualizing Data** by Ben Fry, not in the least because the approach described is tightly connected with **processing** and its underlying philosophy of creative intuitive understanding by computational means. However, also the flex/as3 related references are worthwhile because they give access to the display environment of **flash**, which is the dominant media technolgy for (business-related) web-applications.

1. Visualizing Data: Exploring and Explaining Data with the Processing Environment, by Ben Fry
2. Foundation Actionscript 3.0 Animation: Making Things Move! by Keith Peters
3. Professional Adobe Flex 2 (Programmer to Programmer) by Rich Tretola, Simon Barber, and Renaun Erickson
4. Foundation Flash 8 Video (Foundation) by Jordan L Chilcott and Tom Green

5. Visualizing the Semantic Web: XML-based Internet and Information Visualization by Vladimir Geroimenko
6. Eliëns A., Wang Y. van Riel C. and Scholte T. (2007), 3D Digital Dossiers – a new way of presenting cultural heritage on the Web, In Proc. Web3D 2007, ACM SIGGRAPH, pp. 157-160
7. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

online resource(s)
Of the many online resources, in particular the **flow(s)** from **diggs.com** deserve special mention, because they apply **physical principles** in an experimental way to gain understanding of patterns of information flow on the internet, as an example of what as been called **cultural analytics**[1] by Lev Manovich.

- beauty of numbers – www.generatorx.no/category/beautyofnumbers/
- visual(s) – www.visualcomplexity.com
- code & form – workshop.evolutionzone.com
- design(s) – www.adobe.com/devnet/flex/articles/fig_pt6.html
- data structure(s) – lab.polygonal.de/ds
- physic(s) – diamondtearz.org/blog/2008/06/03/exploring-the-actionscript-physics-engine-in-flex
- flow(s) – labs.digg.com – (oa. buzzcut(s)) – observation(s), no judgment!
- community – blprnt.com
- jared tarbell – www.complexification.net / levitated.net/gravityIndex.html (flash) /
- learning – www.learningprocessing.com
- visualizing data – benfry.com/writing
- computational art – friendsofed.com/book.html?isbn=159059617X
- physic(s) – www.pathf.com/blogs/2008/09/flash-flex-physics-engines-and-examples/
- js – ejohn.org/blog/processingjs
- org – www.processing.org
- living planet – unicef report
- visible city – vimeo.com/2437214 / vimeo.com/2437344
- gadget(s) – code.google.com/apis/visualization/documentation/gadgetgallery.html
- networked visualization – www.latebytes.nl
- student(s) work – www.annehelmond.nl/2009/05/15/ma-students-present-projects-visualizing-our-world-of-data

After mastering the first principles of visualization, it may be interesting to use actual **(game) physics engines** for the presentation of **(dynamic) data**.
The delivery platform of choice is the *flash* plugin, which is currently the only widely available rich media technology for the web. This platform allows for high-performance animation, efficient data (re)presentation, as well as interactive video, using XML configuration files.

prerequisites
CA1, CS1, NM1, MA1

goals and attainment targets

During the course students are expected to learn the skills to create complex media applications, involving animation, visualization, and information presentation.

learning target(s) With regard to the programming skills, the actual **topics** treated in *interactive visualization* will to a large extent on what has been covered in the earlier **programming course(s)** However, taking a **technology-agnostic view** our learning goals can be summarized as:

[1] www.hastac.org/node/1514

- skill(s) – scripting, XML-based configuration
- knowledge – interactive animation & visualization
- theory – dynamic systems, information presentation
- experience(s) – medium scale interactive visual application(s)
- attitude – explorative, problem-finding, aesthetics

In particular, students must gain an **intuition** on how to create **visualizations using computational means**, and how to approach visualization issues by iteratively, as outline in Ben Fry's book on **visualizing data**, going through the following steps: *acquire*, *parse*, *filter*, *mine*, *represent*, *refine* and *interact*. No need to emphasize that an **exploratory attitude** is essential, as well as a (to be developed) sense of **(computational) aesthetics**
In addition to the technical and practical aspects of the realization of rich media applications, attention will be given to the principle(s) underlying animation and visualization as well as issues of information presentation and user interaction.

place in curriculum
NM2 is meant to be an intermediate course, required for both ST and NM students. The course will enable students to apply their knowledge of dynamic systems and mathematics in a (media-rich) context, as a preparation for more advanced projects in interactive narratives and game development.

application area, motivating examples

The course will be built around a collection of (online) examples and reference materials, partly drawn from the references listed below.

lesson material(s)
Apart from the highly recommended book Visualizing Data by Ben Fry, all material(s) will be online, including a (large) number of examples, as well as reference material, and challenging targets, that examples that may serve as a target for students' accomplishments.

- canonical example(s) – *animation* / draw / www.processing.org
- (online) reference material(s) – resource(s) / adobe live docs: actionscript / flex
- challenging target(s) – labs.adobe.com / flash art / sample(s) / www.processing.org

During the course this list will be extended, and dependent on circumstances, particular aspects of **interactive visualization** will be emphasized, in particular visualization techniques that use **physics-based animations** as a means of conveying relationships between data, examples of which are given in the onlune resources below.
In addition, representative examples from the area of art and design will be discussed to serve as inspiration for student projects.

teaching methods

The course will be organized around lectures in which both technical and conceptual issues, related to animation and visualization, are dealt with.

course structure
The course does require active participation of the student(s), not only in exploring the technolgy by making the assignments, but also by presenting **solutions and problems** in class.

session(s)

1. introduction of (rich) media platform(s)
2. basic assignment(s) – animation (1)
3. essentials of animation and visualisation
4. basic assignment(s) – visualization (2)
5. principles of interactive information presentation

6. basic assignment(s) – interaction (3)
7. elements of data-driven information systems
8. presentation of final assignment(s)

At this stage it is not clear whether to enforce the use of one particular technology, **flex/as3** or **processing**, to use multiple technologies, or to allow students a choice of technologies, which would then also include **javascript**, **Ch** and **C++**.
The lectures will include student presentations, in which explorations and solutions of students are discussed, on technical as well as aesthetic merits.

nr of participants
20

special facilities
computer lab & presentation facilities, installation of flex 3 SDK.

reference(s)
As said before, a highly recommended reference for interactive data visualization is **Visualizing Data** by Ben Fry, not in the least because the approach described is tightly connected with **processing** and its underlying philosophy of creative intuitive understanding by computational means. However, also the flex/as3 related references are worthwhile because they give access to the display environment of **flash**, which is the dominant media technolgy for (business-related) web-applications.

1. Visualizing Data: Exploring and Explaining Data with the Processing Environment, by Ben Fry
2. Foundation Actionscript 3.0 Animation: Making Things Move! by Keith Peters
3. Professional Adobe Flex 2 (Programmer to Programmer) by Rich Tretola, Simon Barber, and Renaun Erickson
4. Foundation Flash 8 Video (Foundation) by Jordan L Chilcott and Tom Green
5. Visualizing the Semantic Web: XML-based Internet and Information Visualization by Vladimir Geroimenko
6. Eliëns A., Wang Y. van Riel C. and Scholte T. (2007), 3D Digital Dossiers – a new way of presenting cultural heritage on the Web, In Proc. Web3D 2007, ACM SIGGRAPH, pp. 157-160
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A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

CA1: *we create identity*

author: A. Eliëns

information

creative application, semester 1, 3 ects

contents

The goal of the course, which will take the structure of a group project, is to set a new group of students to work, to learn about the topics of *creative technology*, to get to know eachother and the staff, and find ways of expressing there interests and viewpoints.

course outline(s) – ca1: we create identity

In this part a more detailed discussion will be provided of **topics**, **learning goals**, **materials** used, and the actual **structure of the course**, as well as a sketch of the **assignments** given. Also **references** to releveant literature is provided, including **online resources**. At the end, **advice for students** following the course will be given, as well as **hints for the instructor(s)**.

course topic(s) The course covers a somewhat bewildering number of topics. However, keep in mind that the main aim of the course is to get familiar with the means to express ideas, and communicate thoughts.

- basic content creation – editors, image tools, video
- use of blogging sites, and media content management systems
- topics of *creative technology* – mathematics, *smart systems* & *new media*
- communication and presentation issues
- presence in oral & written presentation(s)
- individual on-line (digital) portfolio(s)

The CA1 course underlying aim, obviously is to bring about an awareness of Creative Technology and first ideas on what this means for the individual students' aspirations and, why not, dreams. The focus on communication tools may be then justified by observing that such a process may easily lead to many undigested notions, for which expression may hopefully bring some relief.

learning target(s)
More specifically, the learning goals may be summarized as:

- skill(s) – (digital) content creation
- knowledge – information management & presentation
- theory – relation technology, science & art(s)
- experience(s) – presentation of ideas, concepts & plans
- attitude – exploration, communication, discovery, presentation

In particular, experience and attitude are relevant since Creative Technology is relatively unique in targeting **creativity** at an academic level in a bachelor curriculum.

lesson material(s) We may expect that our first year students already have some degree of media literacy, at least as it concerns using the tools and the facilities, such as socila networks a la Hyves.

- canonical example(s) – *interactive video* / portal(s)
- (online) reference material(s) – instruction(s) / teamwork software
- challenging target(s) – www.youtube.com / www.symbaloo.com/nl / create-media.blogspot.com / www.scrapblog.com

The online references should suffice for enabling the students to fullfill their assignments. However, when neceesay, the references will be augmented by explicit instruction material(s).

viewing(s) Apart from the regular meetings and lectures it seems worthwhile to have a number of viewings, where selected videos or documentaries are shown. In addiotion to the famous **edgcodes**[2] documentary, about film editing, and technological innovations in digital video editing, the following selection of video lectures and examples may considered:

- **learning(s)** – next generation
- **dream(s)** – last lecture
- **architecture(s)** – the architecture of the unfamiliar
- **application(s)** – hello world
- **(dis)order(s)** – everything is miscellaneous
- **game(s)** – games for change
- **presentation(s)** – how to (not) use powerpoint / five ways to speak
- **campaign(s)** – what political campaigns can teach business
- **politic(s)** – privacy matters
- **rip(s)** – a remix manifesto
- **idea(s)** – change the world through game design
- **clip(s)** – **submit your clip**

Such viewings may provide a preparation for the later **creative explorations**, and may also serve to create a **honors track** in developing a **creative technology game**.

course structure The *we create identity* course takes place in the first month, and allows for only a limited number of seesions. A first indication sessions included may look as follows:

course structure

1. introduction of tool(s) and platform(s)
2. topics in *creative technology* (1)
3. teamwork – *identity as a group*
4. topics in *creative technology* (2)
5. *identity* – individual portfolio(s)
6. topics in *creative technology* (3)
7. presentation(s) – individual & group work
8. evaluation – reflection(s) on *we create identity*

Apart from the sessions and viewings indicated above, we plan a number of excursions to places of interest:

excursion(s)

- visit(s) to regional initiative(s) – www.creatievefabriek.nl / www.gogbot.nl
- lecture(s) at PICNIC Academy – www.picnicnetwork.org/search?q_mm=academy
- visit(s) around campus – www.t-xchange.nl

These excursions should provide the students with ideas about what to expect later in the study and motivate them to set their individual targets and aspirations for follow-up courses.

assignment(s)
Assignments range over individual tasks, assignments for small groups of 3-5 students, and some collective tasks.

individual

- create account(s) at – google site, blogspot, flickr
- maintain blogs & records – minimal 5, with pictures

[2] www.edgecodes.com

- create personal portfolio – with (symbaloo) start page
- prepare poster and pitch for final session(s)

The individual assignments have as a goal to ensure that each student becomes familiar with the tools and technologies needed for later work.

The main focus of the course is the creation of a **creative technology map**, a brief (1-2 min) clip, and am **interactive video**, usig the ximpel platform.

small group(s)

- construct creative technology map – www.umapper.com/maps/view/id/12356
- create clip & interactive video – ximpel.net

Since **self-organisation** is one of the learning targets of the course, the students are supposed to take responsibility for the final evaluation session(s) as a group.

collective assignment(s)

- create and maintain group site – groups.google.com
- maintain creative technology wiki
- organize final poster exhibition

Although some competitive elements will be part of the course, in particular in selecting the best **interactive video(s) & map(s)**, the individual grading of the course will largely depend on participation and effort. A selection of the students' work will be made available online permanently for **public exposure**, as a reference for future creative technology students and other interested parties.

reference(s)

An initial set of references should include the list below, although many more are available.

1. Mitchel Resnick, Sowing the Seeds for a more Creative Society – online video
2. Facets of Fun – On the Design of Computer Augmented Entertainment Artefacts, available in online version
3. Kress G. and van Leeuwen T. (1996), Reading Images: The Grammar of Visual Design, Routledge
4. Geert Lovink and Ned Rossiter (eds), MyCreativity Reader, A Critique of Creative Industries, Institute of Network Cultures, Amsterdam 2007
5. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

online resource(s)

As a mix of examples, tools and possible inspiration(s) we may present the following list of links:

resource(s) / CA1

- software – processing.org / **ximpel** / material(s)
- inspiration(s) – www.beautifullosers.com
- **map(s)** – **twente** / example(s)
- group(s) – groups.google.com / **site(s)** / tool(s) / drop.io
- **tag cloud(s)** – tagcrowd.com
- **ximpel** – ximpel.net / view(s)
- concept graph(s) – philosopher(s) (double click to center, double click on center for info) / **amazon**
- **flickr** – **creative technology**
- **video vortex** – networkcultures.org/wpmu/portal/publications/inc-readers/videovortex
- identity – www.personalbrand.nl

It must be emphasized that rather than presenting all the examples exhaustively, the students should be an actual selection of links available on their site(s), since as we all should realize an overload of examples is generally considered to be a **creativity killer**.

Equally important is that students discover the means that are at their disposal to communicate and document their work, using basic tools for web development and content creation.

prerequisites

admission to curriculum

goals and attainment targets

Although at an introductory level, a wide variety of skills, both technical and communication skills need to be developed in a short time, in a playful manner.

learning target(s)
More specifically, the learning goals may be summarized as:

- skill(s) – (digital) content creation
- knowledge – information management & presentation
- theory – relation technology, science & art(s)
- experience(s) – presentation of ideas, concepts & plans
- attitude – exploration, communication, discovery, presentation

In particular, experience and attitude are relevant since Creative Technology is relatively unique in targeting **creativity** at an academic level in a bachelor curriculum.
In close cooperation with the staff, students will be invited to explore the topics of *creative technology*, and present their view in a creative way, using whatever means suit that purpose best, including blogs, wiki(s) and interctive video.

place in curriculum
Introductory course for all students, just after arrival.

application area, motivating examples

There are various way to create identity, form social networks and communicate personal and professional information using the web, examples of which are collected in the online material(s) listed below:

lesson material(s) We may expect that our first year students already have some degree of media literacy, at least as it concerns using the tools and the facilities, such as socila networks a la Hyves.

- canonical example(s) – *interactive video* / portal(s)
- (online) reference material(s) – instruction(s) / teamwork software
- challenging target(s) – www.youtube.com / www.symbaloo.com/nl / create-media.blogspot.com / www.scrapblog.com

The online references should suffice for enabling the students to fullfill their assignments. However, when neceesay, the references will be augmented by explicit instruction material(s).

viewing(s) Apart from the regular meetings and lectures it seems worthwhile to have a number of viewings, where selected videos or documentaries are shown. In addiotion to the famous **edgcodes**[3] documentary, about film editing, and technological innovations in digital video editing, the following selection of video lectures and examples may considered:

- **learning(s)** – next generation
- **dream(s)** – last lecture
- **architecture(s)** – the architecture of the unfamiliar
- **application(s)** – hello world
- **(dis)order(s)** – everything is miscellaneous
- **game(s)** – games for change
- **presentation(s)** – how to (not) use powerpoint / five ways to speak
- **campaign(s)** – what political campaigns can teach business
- **politic(s)** – privacy matters
- **rip(s)** – a remix manifesto
- **idea(s)** – change the world through game design

[3] www.edgecodes.com

- **clip(s) – submit your clip**

Such viewings may provide a preparation for the later **creative explorations**, and may also serve to create a **honors track** in developing a **creative technology game**.
Students are encouraged to explore these means of expression, and select those that fit their needs, in discussiong with supervising staff.

As an example, to emphasize the use of adequate media, students may take parts of the lecture by Mitchel Resnick, on aspects of a Creative Society, available as online video [1], and mix part of this material with own video material, to create an interactive video, reflecting (on) the topics treated in the lecture(s) in *creative technology*.

teaching methods

Apart from a number of topical lectures by senior staff members, this first CA course will primarily be an exercise in self-organisation, with an important goal to create coherence in a group of new students, with a variety of backgrounds.

course structure The *we create identity* course takes place in the first month, and allows for only a limited number of seesions. A first indication sessions included may look as follows:

course structure

1. introduction of tool(s) and platform(s)
2. topics in *creative technology* (1)
3. teamwork – *identity as a group*
4. topics in *creative technology* (2)
5. *identity* – individual portfolio(s)
6. topics in *creative technology* (3)
7. presentation(s) – individual & group work
8. evaluation – reflection(s) on *we create identity*

Apart from the sessions and viewings indicated above, we plan a number of excursions to places of interest:

excursion(s)

- visit(s) to regional initiative(s) – www.creatievefabriek.nl / www.gogbot.nl
- lecture(s) at PICNIC Academy – www.picnicnetwork.org/search?q_mm=academy
- visit(s) around campus – www.t-xchange.nl

These excursions should provide the students with ideas about what to expect later in the study and motivate them to set their individual targets and aspirations for follow-up courses.
Additional instruction may be needed to clarify issues of communication and presentation, and to prepare students for the creation of an individual (digital) portfolio, which will be used for later courses and assignments.

It might also be useful to let students develop a *wikipedia*, similar to AV WIKI[4], providing information on the various topics of *creative technology*.

CA1 – resource(s) / inspiration(s)

- ...

reference(s)

An initial set of references should include the list below, although many more are available.

1. Mitchel Resnick, Sowing the Seeds for a more Creative Society – online video
2. Facets of Fun – On the Design of Computer Augmented Entertainment Artefacts, available in online version
3. Kress G. and van Leeuwen T. (1996), Reading Images: The Grammar of Visual Design, Routledge

[4] avwiki.nl

4. Geert Lovink and Ned Rossiter (eds), MyCreativity Reader, A Critique of Creative Industries, Institute of Network Cultures, Amsterdam 2007
5. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

CA3: *have fun and play!*

author: A. Eliëns

information

creative application, semester 2, 6 etcs

contents

The course is meant as an integrative project, which combines the various elements introduced in the first year of *creative technolgy*, where students experience the need for planning and project-management.

course outline(s) – ca3: have fun and play!

In this part a more detailed discussion will be provided of **topics**, **learning goals**, **materials** used, and the actual **structure of the course**, as well as a sketch of the **assignments** given. Also **references** to releveant literature is provided, including **online resources**. At the end, **advice for students** following the course will be given, as well as **hints for the instructor(s)**.

course topic(s)

As a **creative application**, which takes place at the end of the first year, the *have fun and play!* course has, strictly speaking, no actual course topics, but is rather defined as a collection of high level requirements for the student(s) to achieve:

- application of *creative technology* elements
- explore combination *smart technology* & *new media*
- development interactive game play
- write business & communication plan
- reflection on societal context of media & smart system deployment

A major principle here is **self-organization** and **learning by challenge**, that is finding suitable challenges for achieving the goals set.

learning target(s)

In terms of skills, competences, etcetera, the learning goals of this course can be indicated as follwos:

- skill(s) – multi-platform technical development
- knowledge – interaction & game play
- theory – smart technology, media & communication
- experience(s) – large scale application with (societal) impact
- attitude – acquisition, problem-finding, self-organization, creative solutions

Perhaps not present in the list in a sufficiently explicit way is that the application must be resiatant to **public exposure**, and that the student must develop a sense of **aesthetic responsibility** as well as a suffient degree of **artistic autonomy**.

lesson material(s)

The material that will actually be relevant during the course, will to a large extent depend on the actual topics chosen and the **context of application**, for example a regional festival, or a contribution to **interactive theatre** production(s).

- canonical example(s) – art(s) / quote(s)
- (online) reference material(s) – visual design / game development
- challenging target(s) – multimedia theatre / VJ! / festival(s)

Very likely, the notion of **urban space(s)** will play a role, one way or another, where urban space must be understood as any space outside the private space of the home where interaction between people is one of the denominated functions of that space, be it a meeting room in a health-care institution, a market place for regional goods, or the dance floor in a late night disco. The challenge here, obviously, it to develop applications that conform with the **primary function(s)** of such spaces, using technology that available, affordable and sufficently robust to be deployed in such a context.

course structure
Despite the self-organizing nature of the course, a sequence of seesions is needed to guarantuee continuity of work, and to avoid the risk that the *creative aaplication* diverges into one of the many pitfalls that haunt such projects.

session(s)

1. introduction topic(s) & challenge(s)
2. exploration of platform & production requirements
3. planning – concept & application development
4. establishment of business plan
5. contract negotiation & realization
6. basic media and communication theory
7. business and societal context of the creative application(s)
8. delivery and presentation of final application(s)

Dependent on the size of the group, addtional mechanisms of **monitoring progress** may be needed, including logs, periodic accounts, and regular feedback or possibly even **shout-out sessions**.

assignment(s)
With the actual format depending on the application context, we can indicate as a minimal set of deliverables and presentations the items collected in the list below:

assignment(s)

- concept pitch presentation(s)
- planning - approach, realization, deployment
- report(s) – application development and installation
- evaluation(s) – summary of experience(s) and deployment result(s)

To guarantee that progress can be monitored and that results can be evaluated, the group(s) must **maintain a website** with all relevant information available in a suffienntly accessible way.

reference(s)
Apart from some general information about for example **agile method(s)**, we have included some references to our own work, not as a reference in the sense of a standard to be adhered, but rather to **share experience(s)**, and indicate a possible format for **writing a report** or even paper to be published at some suitable venue.

1. method(s) – www.agilemanifesto.org/principles.html
2. resource(s) – game design patterns / team work
3. Eliëns A. and Vyas D., Panorama – explorations in the aesthetics of social awareness, In Proc. GAME-ON 07, Nov 20-22, University of Bologna, Marco Roccetti (ed.), p. 71-75, EUROSIS-ETI Publication, ISBN 9789077381373
4. Eliëns A., van de Watering M., Huurdeman H., Bhikharie S.V., Lemmers H., Vellinga P. , Clima Futura @ VU – communicating (unconvenient) science, In Proc. GAME-ON 07, Nov 20-22, University of Bologna, Marco Roccetti (ed.), pp. 125-129, EUROSIS-ETI Publication, ISBN 9789077381373
5. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

online resource(s)
As online resources, we suffice with a brief list of links to online manifestations or descriptions of art. The student is encouraged to bypass this list and google his/her way around, searching information and inspiration(s).

- (my)mondriaan – www.cjny.com/mydata
- charm(s) – www.dgc-cga.org/about ¡Li¿ digital – www.digt-paint.nl/digital_view
- demo(s) – pilgrimage.scene.org/demoscene.html – (wikipedia)
- net – wwwwwwwww.jodi.org
- emergent – www.sandberg.nl
- science – computational-aesthetics.org

The given resources, and those found with search, should also be looked at from the **perspective of design**, that is as one of the possible ways to present information on the web. Use your knowledge and experience to decide on a proper format for presentating the information about your own project(s) on the web.
Although acquisition of the actual theme of the project must be done by senior staff, students will be expected to take an active part in the selection of theme(s) and target(s), and developing the final application(s) or product(s).

prerequisites
CA1&2, CS1&2, NM1&2, ST1&2, MA1&2, DE1&2

goals and attainment targets

The integrative nature of the CA3 project will contribute to more firmly establishing skills, and deepening students' knowledge of smart systems and interactive media applications.

learning target(s)
In terms of skills, competences, etcetera, the learning goals of this course can be indicated as follwos:

- skill(s) – multi-platform technical development
- knowledge – interaction & game play
- theory – smart technology, media & communication
- experience(s) – large scale application with (societal) impact
- attitude – acquisition, problem-finding, self-organization, creative solutions

Perhaps not present in the list in a sufficiently explicit way is that the application must be resiatant to **public exposure**, and that the student must develop a sense of **aesthetic responsibility** as well as a suffient degree of **artistic autonomy**.
In addition, it allows students to gain experience in a more independent approach to identify requirements delevop creative solutions, and perform risk-analysis.

place in curriculum
Integrative course for end of first year.

application area, motivating examples

Each year a preparatory investigation must be done, preferably by a group consisting of staff members and students, in close contact with potential industrial or societal partners, to select one or more potential theme(s) and topic(s) in areas such as (not-exhaustively) indicated in the list below:

lesson material(s)
The material that will actually be relevant during the course, will to a large extent depend on the actual topics chosen and the **context of application**, for example a regional festival, or a contribution to **interactive theatre** production(s).

- canonical example(s) – art(s) / quote(s)
- (online) reference material(s) – visual design / game development
- challenging target(s) – multimedia theatre / VJ! / festival(s)

Very likely, the notion of **urban space(s)** will play a role, one way or another, where urban space must be understood as any space outside the private space of the home where interaction between people is one of the denominated functions of that space, be it a meeting room in a health-care institution, a market place for regional goods, or the dance floor in a late night disco. The challenge here, obviously, it to develop applications that conform with the **primary function(s)** of such spaces, using technology that available, affordable and sufficently robust to be deployed in such a context.
The references below provide additional material to potentially fit a project in a wider intellectual or academic context.

teaching methods

The structure of CA3 project will be determined by the students themselves. The role of the staff will primarily be to safeguard the project from (beginners) mistakes, and to encourage critical reflections on decisions and potential consequences.

course structure
Despite the self-organizing nature of the course, a sequence of seesions is needed to guarantuee continuity of work, and to avoid the risk that the *creative aaplication* diverges into one of the many pitfalls that haunt such projects.

session(s)

1. introduction topic(s) & challenge(s)
2. exploration of platform & production requirements
3. planning – concept & application development
4. establishment of business plan
5. contract negotiation & realization
6. basic media and communication theory
7. business and societal context of the creative application(s)
8. delivery and presentation of final application(s)

Dependent on the size of the group, addtional mechanisms of **monitoring progress** may be needed, including logs, periodic accounts, and regular feedback or possibly even **shout-out sessions**.
If acquisition and brainstorming is taken into account, the project should run for a longer period of time. However, after the initial phase, when production and development take priority, students should be allowed to work (almost) fulltime, with full attention to the challenge(s) offered by the project.

nr of participants
20

special facilities
Computer lab, meeting room(s) & presentation facilities.
Contacts with potential industrial or societal partners must be established, which may require additional technical support.

reference(s)
Apart from some general information about for example **agile method(s)**, we have included some references to our own work, not as a reference in the sense of a standard to be adhered, but rather to **share experience(s)**, and indicate a possible format for **writing a report** or even paper to be published at some suitable venue.

1. method(s) – www.agilemanifesto.org/principles.html
2. resource(s) – game design patterns / team work

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4. Eliëns A., van de Watering M., Huurdeman H., Bhikharie S.V., Lemmers H., Vellinga P. , Clima Futura @ VU – communicating (unconvenient) science, In Proc. GAME-ON 07, Nov 20-22, University of Bologna, Marco Roccetti (ed.), pp. 125-129, EUROSIS-ETI Publication, ISBN 9789077381373
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