|  |
| --- |
| **Manual Project Innovation** |
| Term 2.2  Course Manual study year 2020/2021  Bachelor Creative Media and Game Technologies (CMGT)  School of Creative Technology |



|  |  |
| --- | --- |
| Publication date | 06 November 2020 |
| Version | 1.08 |
| Module coordinators | Ruben Hulzebosch & Kasper Kamperman |
| Participating teachers | * Paul Bonsma & Patrick Huitema (Class A) * Douwe van Twillert & Hester van der Ent (Class B) * Yiwei Jiang & Herman Paasen (Class C) * Hans Wichman & Ruben Hulzebosch (Class D) * Bram den Hond & Ron Talman (Class E) |

# General overview

|  |  |
| --- | --- |
| Module Name | Project Innovation |
| Unit code | L.25884 |
| Year and Term | 2.2 |
| CMGT roles | Engineer, Designer & Artist / Team size 6 students |
| Credits | 3 ECTS |
| Lesson structure | Kick-off, weekly labs & sprint reviews |
| Study load | 84 hours |
|  |  |
| Responsible lecturer | KKA02 – Kasper Kamperman / Ruben Hulzebosch |
| Lesson structure | Kick-off, Guided work, sprint reviews |
| Module summary | Project Innovation is about exploring new technologies, tools. Doing R&D experiments and come up with an awesome prototype. |
| Industry relevance | As an Artist, Designer or Engineer your task is often to do R&D on new software and technologies within the company that you are going to work on. The perspective of this project are the questions that you are asked for when you are an employee in a company. |
| Type of exam | Group presentation of products |
| Exam code | T.51695 |
|  |  |
| CMGT Competencies | 1. Technical research and analysis  2. Designing, prototyping and realizing  3. Testing and rolling out  4. Investigating and analysing  5. Conceptualising  6. Designing  ~~7. Enterprising attitude~~  ~~8. Enterprising skills~~  9. Working in a project-based way  10. Communication  11. Learning ability and reflectivity  12. Responsibility |
| Required prior knowledge and skills / conditions for enrolment | We expect that you have worked already with different software tools and supporting theory from previous lectures, so you are aware of the conceptual models behind them. You apply this knowledge by learning to work with other and new workflows and hard & software technologies. |
| Preparatory for: |  |

# General information

## Project Description

Innovation delivers new possibilities for a market. In this project, we focus on the research & development side of innovation. Exploring new hard- and software with technical and/or functional innovations that result in an interactive demonstrator.

As an Artist, Designer or Engineer, your task is often to do R&D on new software and technologies within a company to push the boundaries of reality.

The perspective of this project is to experiment with an R&D approach. This is your first step towards graduation since most graduation projects of CMGT are focussed on R&D. An active and transparent track record in R&D increases your added value for the creative industry. The deliverable is an interactive Proof of Concept (POC). You make a short a 2 to 3-minute video of the POC in action and explain the purpose and innovation. Next to that, you can also create an informative website, blog to capture and showcase your innovation.

A proof of concept is often used to easily pitch an interactive idea to an investor, clients, team or developers effectively.

Your proof of concept:

* Demonstrates the proper user flow/experience
* Is completely Interactive
* Works almost like a functional interactive app/solution/product

In order to innovate it's important to:

* explore what's already out there (research)
* familiarize yourself and work with new software and hardware
* to prototype and create demo's in an iterative way (demo or die, show don't tell attitude)
* test and get feedback from users and/or stakeholders (CEO, CTO, consumers, investors)

In this project, you pick a question and enroll yourself as a team. Any combination of members is possible (so you don't have to work with engineer, designer and artist roles in one team). Everyone in the team has a clear R&D task, so being there to only program, to only create assets or to only do design is not an option.

Most questions are role-specific, so some questions are interesting for a team of artists, others are more design-focused and others more engineering.

We really focus on the R&D process and the insight you give us in that. It's not about a working end-product, although you need to deliver some Proof of Concept (this can be also a combination of several experiments).

You'll make a team and can make clear to us why you are the dream team.

## Company and CMGT cases

|  |  |  |
| --- | --- | --- |
| Company | Question | Roles requirements |
| CMGT | How can an interactive experience result in a user profile based on the CMGT programmers, artist and designers' tracks (for new or first year students)? | All: Engineer, Artist, Designer |
| Springlab | How can we build a smart object\* for kids, that utilises audio cues, to get away from their screens and to engage in physical (educational) activity? | All: Engineer, Artist, Designer |
| Tick Tick Boom | How to create an interactive AR exposition of 2D/2.5D images in an existing art style including a pseudo randomized audio experience. | All: Engineer, Artist, Designer |
| CMGT | How can we create a cool demonstrator for the Looking Glass hardware? (only 2 devices available to pick up). | Artist, Designer |
| CMGT | How can we create a non-visual, audio only game, where navigation and gameplay is solely powered by audio feedback? | All: Engineer, Artist, Designer |
| CMGT | How can we create an AR treasure hunt based on audio feedback on the Stationsplein in Enschede? | All: Engineer, Artist, Designer |
| Total Reality | How can we create an efficient workflow which envisions the process of scanning real life objects to obtaining 3D models ready for AR/VR applications and even online configurators? | Artist |
| Enschede Promotion | How can we create and pre-visualise an attractive interactive projection mapping concept for one of the buildings in the inner city of Enschede? (There is a big chance the project will happen in real-life!). | All: Engineer, Artist, Designer |

## Examples of R&D questions from graduation projects

* All 3 roles
  + How can we use AR, VR or holographic technologies to support maintenance technicians in their fieldwork?
  + How can we improve educational learning capabilities using VR?
  + How can we use AR, VR or holographic technology as an interactive learning tool?
  + How to demonstrate the added value of goal driven state machines in games?
* Engineer:
  + How can we create a stable and user-friendly marker less object detection for augmented reality applications?
  + How to implement a new type of hardware as a controller for interactive systems
  + How to combine new software and/or hardware technologies to improve the online user experiences
  + How can we adapt browsers to convert website into a colour-blindness friendly colour scheme?
  + How to create an intuitive and designer friendly node based interactive dialog system for interactive systems
  + How to use machine learning to create recognizable images
  + How to apply real time rendering for a holographic display
* Designer:
  + How to apply goal driven state machines to mimic human behaviour in games.
  + How can we design a mobile notification system that is sensitive to users' locations (home, work, cinema etc)?
  + How to use goal driven behaviours to create more believable dialogs with interactive systems
  + How to use shape recognition methods to support interactive whiteboard users in notating shapes / notes
* Artist:
  + How can we convert models created in DELFTship to Unreal for a serious game?
  + How can we scan and implement environments using Realtime rending in a game engine?
  + How can we use procedural generated elements to generate realistic interactive 3D environments?
  + How can we use shaders to create a performance effective stylized rendered image?
  + How can use 3d objects and environments for a UI/dialog/text free story telling in VR?

# Organization

**Kickoff day 11 November 2020 @ Blackboard Collaborate**

11 November 2020: mandatory *kickoff* project innovation*.* During the kick-off CMGTintroduces the project and available hardware via Blackboard Collaborate.

During the kickoff Lindy Damen, an alumni of CMGT, will explain how she does R&D for her personal projects.

**Project teams**

You may choose your own group, with certain constraints (e.g. every role required by the topic should be represented). These groups should be formed before the first project working day, using an online sign-up sheet. Groups will be assigned to *project classes* by the teachers. Every project class is guided by teachers (with complementary skills) who do the grading and sprint reviews. Your weekly presence, progress and teamwork will be monitored and archived. For the available hardware your team submits a pitch document/ presentation on blackboard.

Subscribe your team using the link @ blackboard

**Guided work sessions**

In addition, there will be two *guided work sessions* scheduled per week, with one of the guiding teachers present. Here you can get feedback, and technical help related to the teacher’s expertise. In addition, you can show your work method (which might help for the grading).

**Final presentation and sprint reviews**

The *final presentation* and *sprint reviews* are on Friday. Here you’ll present the results of that week’s sprint (e.g. design documents and prototypes), and detailed plans for the next sprint, and receive feedback from the grading teachers.

**Presence**

*Presence for guided work, sprint reviews and final presentation is mandatory. Contact your teacher in advance if you have a good reason to miss one of these scheduled moments. Absence without a good reason leads to a yellow card (see below).*

See assessment criteria

# Learning objectives (What are you going to learn in this project?)

You

* apply and extends previously learned technical skills in a creative way, in an integrated, multidisciplinary context.
* apply research and development.
* apply tools and techniques for planning team projects.
* clearly communicate results and intermediate steps.
* design and evaluate an interactive deliverable that demonstrates the added value the selected innovation.

Explanation of these goals, and how they will be graded:

1. *Technical skills* refer to the contents of previous content related/technical courses. Although there is some overlap, these skills are generally different for artists, designers and engineers. For this project, these are the main relevant skills, per role:
   1. *Engineer:* programming, scripting, algorithms, (vector) mathematics, Web technology, procedural generation.
   2. *Designer:* UX/UI, scripting, cinematics, 2D/3D assets, sound design, behaviorism, Web technology, storytelling, procedural art
   3. *Artist:* Engine/framework editing tools, cinematics, 2D/3D assets, sound design, concept art, Web technology, procedural art

For a precise description of these skills / learning goals and expected levels, see the relevant course materials. For all these skills, a minimum technical level is required, but the emphasis in the project is on creative application of these skills and extending the knowledge from the courses. In principle the whole team will be graded on all the above aspects, even though they may only be the responsibility of one or two roles.

1. Project planning (methodology) and team communication will be graded. In addition, it is expected that professional tools for software-related team projects are used, such as Trello, Hacknplan, git, on a higher level than for first year projects (e.g. git flow branching model, burndown charts, ...).
2. There are two *sprint meetings* for weekly deliverables and a final presentation where the team presents the results. Every presentation is a moment to demonstrate progress and collects feedback. This learning goal will be judged based on these presentations. Professional and engaging presentations are expected.
3. The team must demonstrate that sufficient attention has been paid to all the necessary research and design process. In this project, empathizing becomes more important than before, since the interactive deliverable demonstrates the added value of innovation. Using an iterative approach, prototypes and user tests is important. Because of the innovative character and length (3 weeks), successful and less successful iterations and test sessions are expected.

Which resources do you need?

* 1. Teamwork (6 students)
  2. Personal motivation for innovation
  3. 84 hours of work
  4. Possible hard/software (demonstrated during kickoff)

# What does the programme of this module look like?

On Blackboard you'll find the course content and a detailed course overview.

|  |  |  |
| --- | --- | --- |
| week | Lecture/Lab | Topic(s) |
| 1.10 | Kick-off | Presentation of the project and available hardware |
|  |  | Subscribe your team & R&D question @ blackboard, 6 team members per team  Unbalanced group are reshuffled. Teachers can add extra team members to your team.  Every team will be assigned to a project group (a,b,d,e,f etc) with mandatory guided work (technical & artist/design)  For AR/VR/Looking glass: Submit an AR/VR/Looking glass proposal and create an alternative “normal” plan. Due to the limited hardware there is no guarantee on the selection of your proposal  Submit your team an optional proposal @ blackboard. Deadline Friday 13 November 18:00  Results will be posted on blackboard on Saturday. |
| 2.1 | Start |  |
| 2.1 | Guide work | Mandatory: show technical, art & design progress, get feedback.  Check your research question with your guiding / assessor teachers  Verify your research on all applicable Artist, Designer, Engineer roles  Guided work / assessor teachers: applicable artist, designer, engineer grading criteria for your research question / deliverable. |
| 2.1 | Sprint review | Show weekly results (task completed, task to do, problems)  Show your artist, designer, engineer research results  Check your progress on the agreed grading criteria with your guiding / assessor teachers. |
| 2.2 | Guide work | Mandatory: show technical, art & design progress, get feedback. |
| 2.2 | Sprint review | Show prototype / testing results (task completed, task to do, problems)  Show your artist, designer, engineer deliverables  Check your progress on the agreed grading criteria with your guiding / assessor teachers. |
| 2.3 | Guide work | Mandatory: show technical, art & design progress, get feedback. |
| 2.3 | Assessment | Show weekly results (task completed, task to do, problems)  Show your artist, designer, engineer deliverables  Check your progress on the agreed grading criteria with your guiding / assessor teachers. |

# How is this module assessed?

## Assessment

Weekly progress (sprint reviews) & final presentation in week 3.

## Procedure

Every project group will be graded by teachers with complementary skill sets. These teachers will be present for the final presentation, and for the two sprint reviews in the weeks before that (at least two of the teachers). The sprint reviews are an opportunity to get feedback and formative grading. The final grade will be determined after the final presentation.

The detailed grading form can be found below. The first four categories of the grading form (technical skills) will be graded based purely on the end products. The last four categories of the grading form refer to the process. The final grades for these categories will be determined after the last presentation, but they are largely based on what the team showed during earlier sprint reviews and guided work sessions and uploaded to Blackboard in the first weeks. (For example, if there was no user test session or concept art in the previous weeks, there is no way to make up for this during the final presentation.)

In principle, the whole team gets the same grade, as determined by the grading form. If there is a clear reason for it, the graders may decide to deviate from this, and apply the (relevant categories of the) grading form individually. Possible reasons are:

* The team clearly indicates that certain team members have contributed differently (either positively or negatively). (See green/yellow cards below.)
* There is a clear difference in quality for aspects that are the responsibility of only certain team members (e.g. very different quality in research, programming vs artwork).

Green/yellow cards:

During the project, the team can give yellow cards to team members, and communicate this to the grading teachers. Two yellow cards (with good reason, accepted by the teachers) lead to a red card, and exclusion from the project. During the final presentation, the team can give green cards to team members to indicate that they value their extraordinary contribution to the project. Yellow cards and green cards will be considered for the grading process by the grading teachers. (Note that this is advice, not binding.)

Explanation grading: If the graders decide to apply individual grading to a student, the grade for non-relevant categories are replaced by the average of the grades for the relevant categories.

Example: A student contributed to content & art (good) and concept & narrative (excellent), but not to the research. This will impact the individual grade of that student.

## Redo

second opportunity will be in week 2.9/2.10

# Rubric

The grading criteria in this document reflect a team of engineer, artist and designer. In the case of a different team setup, grading can be done partly holistic. Based on your research question the grading teachers will choose the correct applicable assessment criteria for your project. Example: If your project has no engineer/coding or there is no sound required the grading impact of those items will be adjusted. This applies to criteria of programming, user interaction, content & art, concept & narrative.

Pre-condition:

You have to hand-in a video in which you demonstrate and showcase your proof of concept. This video can be used to show fellow students and interested people in CMGT (open days). Make it professional, don’t use copyrighted material and name yourself in the end credits.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| "Empathize, define, ideate. (sprint review week1) (10%) " | "2 points Minimal research into the issue/topic, or into the target group. " | "6 points Sufficient research is done into the topic. Problem definition reflects users’ needs / expectations, research (why) and insights (causes / consequences). Multiple solutions are evaluated using SWOT method. If applicable: Mood boards, stylesheet, user journey / UX, concept & first iterations on assets and UI. Functionality diagrams/UML. " | "8 points S + at least half of the excellent criteria satisfied." | "10 points S + (1) Detailed and relevant empathy map. (2) Detailed and relevant research (why, user expectations) and insights (causes / consequences of the current situation / technical and functional designs). (3) Target group is built out of multiple personas. (4) per team member: one or more solutions are evaluated. " |
| "Prototype & test (sprint review week2) (10%) " | "2 pts Unproductive or no user tests, no weekly functioning prototypes, or missing design documents. " | "6 pts Student shows user test prototypes, reports and iterations on style, UI and interactive UX. Student demonstrates used prototypes. Student uses appropriate test methods and documents. Conclusions are reported. " | "8 pts S + at least half of the excellent criteria satisfied. " | "10 pts S + (1) student show serval user test with different user groups. (2) user test feedback applied to iterations, (3) advanced user testing (4) interactive system supports narrative / functionality / progression shortcuts and or adjustments. " |
| "Planning & teamwork (week 1–3) (10%) " | "2 pts Bad communication within team, unbalanced division of tasks, low effort, conflicts that are not handled well, or bad planning. " | "6 pts Professional tools for planning and version/file control. Relevant weekly milestones and user stories. Weekly tasks, conditions of satisfaction and time investment. Daily team communication. Possible conflicts are handled professionally. Sufficient team performance and presence @ Saxion. " | "8 pts S + at least half of the excellent criteria satisfied." | "10 pts S + (1) Good use of planning tools, (2) good use of version control tools, (3) weekly team performance reports/graphs. (4) Excellent team performance and presence @ Saxion " |
| "Programming (week 1-3) (15%) " | "3 pts Basic functionality and tooling is missing, or serious bugs. " | "9 pts Basic functionality and tooling is present, no serious bugs. " | "12 pts S + at least half of the excellent criteria satisfied. " | "15 pts S + (1) Well-structured project setup is demonstrated in week 1-3, (2) Complex interactions and (3) advanced features are present " |
| "User Interaction (week 1-3) (15%) " | "3 pts Interaction unclear, bad UI design, or minimal user feedback. " | "9 pts Basic interaction is clear. If applicable: sufficient UI design, basic user feedback on interactions is present." | "12 pts S + at least half of the excellent criteria satisfied. " | "15 pts S + (1) Intuitive designed UI (2) extensive user feedback (3) good interactive tutorial or dynamic user guidance / difficulty system (4) navigation is intuitive & consistent " |
| "Content & Art (week 1-3) (15%) " | "3 pts Does not satisfy basic functional and art criteria, or large memory waste / bad file formats used. " | "9 pts Style is applied, assets are complete, assets are functional, (if applicable): Audio is present, Workflow for assets & editing/iterations is explained. | "12 pts S + at least half of the excellent criteria satisfied. " | "15 pts S + (1) consistent style, fitting the concept, (2) polished assets (3) efficient and optimized assets. (4) well-mixed or high-quality custom audio, (5) optimized workflow for assets & editing/iterations is demonstrated. " |
| "Concept & Narrative (week 1-3) (15%) " | "3 pts Does not convey functionality or concept, or unclear narrative/functionality/usage in both trailer and interactive product. " | "9 pts Functionality or concept is clear, narrative structures guides the users through the highlights of the interactive product and trailer. If applicable: Three act structure is applied and explained (setup, progression, results) " | "12 pts S + at least half of the excellent criteria satisfied. " | "15 pts S + (1) Conveys functionality or concept in a clear & original way, (2) engaging interactive storytelling/progression/usage (3) good use of interactive possibilities (4) If applicable: Persuasion theory applied and explained (5) If applicable: Goal (setup) – achievement (progression) - reward (results) cycle is implemented and demonstrated " |
| "Communication / Presentation (week 1-3) (10%) " | "2 pts Unstructured, unprepared presentation, unclear message, or missing essential information. " | "6 pts Well-prepared, structured presentation with sufficiently informative slides. Week 1 & 2 slides are included (research, prototype, test). Presentation focuses on last iteration, main functionality / concept, overview of each team members research and deliverables and personal reflection (lesson learned). The interactive product and promotional website, blog or video are demonstrated. " | "8 pts S + at least half of the excellent criteria satisfied. " | "10 pts S + (1) Engaging presentation (2) Show-don’t-tell principle applied (3) presentation in style of product (4) convincing argumentation. " |