Dit projectplan is het startpunt voor de student om 1) een voorkeur voor een project uit te spreken en
2) te gebruiken als start informatie bij begin project. Het is tevens bijlage van het contract.
INTRODUCTIE
QLVR accelerates learning with serious games and interactive media. Or to put it differently: we solve serious problems with playful solutions. Always with a commitment to finding the ideal ‘blend’ - a clever mix of gameplay, interaction and visualisation. Built on solid scientific foundations.

We apply games, gamification, and storytelling to improve existing developmental and learning processes. The products we make look and feel good, and are based on scientific knowledge. That's the best way to drive engagement and deliver real results. With a team of Behavioural Scientists, UX Designers and Developers, the complete development process is safe in our hands. From idea to finished product. We always aim for impact with our projects. That's why we pay close attention to the implementation and integration with existing processes: the blend design. Delivering a solution that is a valuable part of the care, the education, or the business. Clients include major players in the corporate world, education, and in the care sector.

QLVR started its adventure in 2008, with our two founders, Antoon Sturkenboom and Jaap Gerretsen, two experienced Interactive-media makers. What began as two, is now a team of twelve, rapidly growing into an important player in our field. The Qlvr team won the prestigious Future of Health Award Europe in 2012 with the Supportr game concept.

DOEL
DiagnostiGO is a serious game being developed by the University Medical Center Utrecht in collaboration with QLVR, an IT-developer specialised in game-based solutions for education an behavioural change.

Many, if not most, hospitalised patients presenting with acute clinical deterioration either suffer from a hospital-acquired infection or have nosocomial infectious disease in the differential diagnosis of their deterioration. Management of such patients remains a challenge for many medical specialists, as microbiology, infectious diseases, and antibiotic therapy often get but little attention in medical curricula, and as these patients often fall outside the scope of their day-to-day practice.

DiagnostiGO will mimic the real-life decisions and available options to manage such patients. The player has to actively choose the right diagnostic and therapeutic approach, meanwhile selecting the correct diagnosis. This includes drawing the appropriate samples to identify the pathogen, and interpreting previously obtained results. In particular the results of microbiological diagnostics needed to guide the antibiotic therapy, such as susceptibility results. The game is intended to train medical professionals in diagnosing and treating acutely deteriorating hospitalised patients with a differential diagnosis of infection. Skills evaluated in the game include drawing the appropriate samples to identify the pathogen, and interpreting previously obtained microbiological diagnostic results, to guide the antibiotic therapy.
Currently the first phase is being wrapped up, in which storyboards and look-and-feel of the computer interface are being developed. The next stage consists of programming and testing a playable demo version with a limited number of cases.

**WAT IS DE FUNCTIONALITEIT VAN DE GAME EN/OF SOFTWARE?**

For players:

- Diagnostic simulation; deciding what information from different sources is relevant. Various data from patient files, biomedical research, and images are presented to the player who decides in which order he will use it.

- Save and keep track of all these choices. The player has to decide what information is relevant for the diagnosis and treatment. He is able to see his earlier decisions, visualised in a graphical overview. Players get feedback regarding the choices and results, and get information about the possible diagnoses. The system presents them with a set of possible diagnoses. In the more difficult levels these clues are not given.

- The cases will have different levels of complexity. Progressively, time constraints will be added, and at the most difficult level the player will also need to keep track of costs, thus striving for an diagnosis and treatment.

- Dynamic Difficulty. We would like the system to suggest or select the most relevant case in terms of complexity, based on earlier results.

- Individual progression visualisation and reward system. The players collect points for the different skills in the cases and will be able to view his progression. We will create a motivating system for instance by showing the individual progression next to the average progression.

For the Client/UMCU medical education:

- We require a CMS for adding and managing case content (various combinations of data and media).

- A dashboard for insight in the statistics and progression of the students/players.

**TOEPASSINGSGEBIED**

Professional medical education

- Medical students

- Refresher courses for doctors and specialists of internal medicine

**CONTEXT/GERELATEERD WERK**

There is an Axure prototype where you can click through a case, with a preliminary design style.

**URL:** http://oizbdf.axshare.com/#c=2  password: qlvr
WAAROM IS HET PROJECT INTERESSANT?

An innovative step in (medical) education. Diagnosis and treatment decision making is a good subject for gamification, but there are no good practices yet.
Better doctors.
Better healthcare, happier patients.
Correct use of antibiotics, which is important because of the increase in resistance in bacteria. In the content there will be a focus on infectious diseases which have to be treated with antibiotics. These cases can be very complicated, for instance if the patient is a pig farmer and is affected by an animal disease. Or a patient spent time abroad in (for example) a tropical country, and exhibits signs of infection upon their return.
If the treatment isn't done right it can not only affect the patient's health, but pose a risk to other patients and the doctor. The incorrect use of antibiotics leads to an increase in resistance in bacteria, which is already a worldwide health threat.

We think this gamified approach will be a succes, because diagnosis skills and (antibiotics) medication are important issues in healthcare, and game-based education can be a very relevant solution.
There is a strong need for better, more innovative, medical education worldwide. This solution is scalable to different countries and to other medical fields.

WAAROM IS HET PROJECT INTERESSANT VOOR DE STUDENT?

Healthcare is a subject that will affect everybody, including students. Through this project they can contribute to the improvement of medical education and healthcare in the future.
The target group is also (mainly) students.
Students can work closely with a serious game company and medical professionals in this project.

DELEVERABLES

• The proof of concept of DiagnostiGO has to be transformed into a working, testable prototype.
• Mathematical algorithms which can be the base of this decision making proces.
• Back-end with database for users and data.
• A level system and basic adaptivity.
• Front-end implementation of the design end user interface.
• A CMS for new content.
Besides the software itself:

- Description of the algorithms
- Documentation of the developed software:
  - Relevant UML diagrams (Use Case / Activity, ER) and Pseudocode of at least the most intricate parts of the software (what those parts are will be discovered/discussed during the course of the project).
- Technical test results of internal tests and user tests.
- Co-Development of user tests and reports of test results.
- Research for possible (future) functionality (e.g.: more complex adaptivity, a dialogue module for patient conversation, collaborative functionality)

PROJECTDUUR

This phase starts in February and ends in July 2016

ONTWERP GRENZEN

De studenten zijn verantwoordelijk voor het uiteindelijke technische ontwerp van de game en/of software. Hiervoor zullen zij ook contact hebben met de opdrachtgever. De grenzen van het ontwerp dienen echter wel deels te worden bedacht vooraf. Het doel hiervan is om te zorgen dat de studenten op een goede manier het project in stappen. Deze secties dienen deze grenzen aan te geven.

BEPERKENDE VOORWAARDEN

The game must be appropriate for tablets and pc’s. It will likely be browser based.

SYSTEEM INPUT

Content in a CMS: cases, data, possible diagnoses.
The choices of the users during the game. Keep track and represent in graphical overview.
The game will be part of an education program. Users will be able to play the game independently.

GEWENST GEDRAG

The user needs to take the cases in the game as serious as real patients.
The user will practice the same cases and wants to do more cases to learn from.
After the game the user knows what to do to make a good diagnosis, and can apply this knowledge. He will take the necessary steps in this process.

The combination of design, gameplay, and content lead to this behaviour.

**ONGEWENST GEDRAG**

We don’t want the users to play “for the points” and not think about their choices and their consequences.

**GEbruIK**

The game will simulate the diagnosis process. Have a look at the proof of concept.
http://oizbdf.axshare.com/#c=2 password: qlvr

See screenshot at the end of this document.

Description:

The player logs in and gets a little information about the patient. He chooses the information he needs. Then he decides what the right diagnosis is, and if he needs more research and/or already starts with a treatment. He can consult a specialist. He gets information about the “progression” of the patient and results of research. He decides again on the diagnoses. The patient has to be cured in the least possible iterations (time) and at the most efficient (costs) way.

**VISUALISATIE**

There is a graphical style developed for this game. Have a look at the proof of concept.
http://oizbdf.axshare.com/#c=2 password: qlvr

**ARTWORK**

Qlvr provides the designs.

**SPELERS-/GEbruIKERSPERSPECTIEF**

Medicine study, professional education.

**ACTIES/HANDELINGEN**

- Ask questions, interpret answers.
- Interpret (visual) data.
- Decide on necessary examinations and research.
- Interpret results.
• Choose from different possible treatments and/or medication.
• Evaluate the results and decide on change of treatment.
• Reflect on the results and your performance.

VEREISTE MATERIALEN

Tablets and PC’s

TESTOMGEVING

At the University Medical Centre Utrecht

CONTACTPERSOON

Main contact/Product owner: Antoon Sturkenboom, Qlvr
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