

Instruction Manual of the project HBO-IT Corp.
Quarter 2.4
HBO-IT Software engineering

Module information

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1 Content of the project

This project represents the conclusion of the *core* of the HBO-IT course. For this project, you'll need all the skills and competences you've acquired during the first two years of your time here. Your objective is to resolve the problem of an (external) customer by means of implementing a software solution in a proper and methodological way. Consider this project as a final test before you go on your internship.

During this project, you'll be joining the fictional (and simulated) "HBO-IT Corporation". Each team will act independently and will have its own real customer. Each group has its own assignment and will work solely for its respective customer. What needs to be done (and thus be handed in at the end of the project) depends on the request of the customer. The company (HBO-IT Corp., e.g. "us, the teachers") however imposed an additional requirement on the project that each individual member should prove to be a *competent software engineer*. This requirement is fulfilled by (provable) contribution to the result and the overall success of the project.

Towards the customer, each group needs to deliver a solution to the satisfaction of the customer. What exactly needs to be delivered (and is satisfactory as result) can be discussed with the customer and is not set in stone. If, for some reason, that what was promised appears to be unattainable it is important to contact the customer and re-negotiate new terms that are acceptable for all parties involved (the customer, the project group and the company (e.g. "us, Saxion") as soon as possible.

Try to determine as soon as possible what the minimum viable product (fulfilling the must requirements) and what the maximum attainable product (including *should* and *could* requirements) is. Also determine what will *not* be done during the project (*won't requirements*). Working with requirements and monitoring the progress is of the utmost importance. To help you with this process, you'll be assigned a coach on the topic of software engineering.

Good cooperation is also required to succeed. Therefore, in this project we'll implement the *three-strikes-rule* as a disciplinary measure that we hopefully won't need.

Teacher support

Every project team has a coach. The coach guides the project team throughout the entire process. The coach acts also as expert who can help find the right literature, examples or other information needed to create the required software.

Each coach has scheduled 4 times a week for stand-ups with all project groups. There is also room for expert consultation by appointment.

2 Deliverables

As mentioned before, the goal of this project is determined by the customer. What deliverables are relevant in the project also depend on this goal. We do not care for additional documents that have no added value to the project's success. However, you should be able to prove that the product is well-built, and the group performed to the best of their ability. You are required to provide the *proof* that the project is a success and that your effort contributed to that success.

At the very least, we expect the following:

- **A *Plan of Action* (PoA, or project plan)**
The PoA contains all agreements between the group and their customer. The document should contain a summarized version of the project objective, a global planning / timeline of the project (including deliverables and deadlines) and the project requirements.

The PoA also should explain how the project will meet the different HBO-i competence levels (discussed later) and what *extra-curricular* additions were added. We'll discuss these two items later in this manual in more detail.

Tip: Almost every time, the PoA is used by groups to describe their responsibility. However, do note that the customers themselves also have a part to play in the project to improve the success of the overall project. Do mention the role of the customer in your PoA.
- **A *system portfolio***
A system portfolio (Does not need to be a single file) is a collection of all documents that describe the product and its development process. A system portfolio is sent to the customer at the end of a project as part of the final turn-in.

A **system portfolio**, at the very least, should contain:

- A functional design (FD)
A functional design describes what the capabilities of a product are. It is also a first description of the look-and-feel of the final product so that you know what to build and the customer knows what to expect.

Tip: The functional design is also very useful as a *how-to-demo* document for any SCRUM process.

- A technical design (TD)
Where the FD describes what the product does, the TD describes how it will work. Everything from framework / library choices to database design (SQL vs NoSQL, ERD) and the different kind of API calls should be written down in the TD.

Tip: It is highly recommended to link the TD to the FD as tightly as possible. This makes searching for specific information a lot easier.

A system portfolio should also contain any documentation that describe the development (choices, etc.), demonstrates the quality of the result or helps the customer use (or implement or deploy) the product. You can do this do by adding test results, implementation reports, instruction manuals, etc.

- **A *project portfolio***
A project portfolio consists of everything with regards to the development process. Like the system portfolio, the project portfolio does not have to be one single document. The project portfolio are not submitted to the customer at the end of the project, as it potentially contains personal information (e.g. reflections).

A project portfolio for this project should, at the very least, contain:

- A *Code of Conduct* (CoC)
A code of conduct is a list of the working agreements with regards to the project. Think of a *definition of done*, coding standards, but also about practical information on when a *working day* starts and what you should do in case of illness, etc. Also, it should contain information about the previously mentioned strikes (*when could someone receive one?*).
- Scrum-artefacts
As you will most likely be working with Scrum, retrospectives, (sprint) backlogs, burndown charts and possible other reports are generated to help you manage your project. These products should be included (in some form) in the final project portfolio as well.
- Other process artefacts
Since this project has a lot of "freedom" it is mandatory you provide the proof that 12 credits of "effort" are put into the project. This also means describing the final version of the project: was every task completed?

Has the product been finished? Are there any loose ends or known bugs? Etc. You will also provide information about personal involvement with the project (for instance in the form of time sheets).

At the very end, each individual group member also needs to submit two individual documents. These are:

- An **individual reflection** on the project. You can use any reflection method you would like, as long as you discuss the *product* (the technical side of the project), *the process* (where you organised?) and *the person* (you as a group member, the group as an entity, etc.).
- A **declaration of your demonstrated competences**. As it is most likely not possible for us to determine what student did what, you should help us by giving a brief overview of your activities during the project. Note that you should link these competences to the HBO-i competences you stated in your Plan of Approach. (We will discuss this next.)

3 Competences and grading

The competences that this module contributes to are part of the following components of the occupational profile of higher professional Bachelor programmes in ICT (see "Bachelor of ICT, domain description 2018"). A complete project covers 3 out of all 5 competencies at level 2. This depends on the project assignment.

Of the general HBO competences (AHC), 3 areas are explicitly named and tested. We expect that you will learn a lot in all areas.

Occupational profile Bachelor of ICT	Management	Analysis	Advice	Design	Implementation
User interaction					
Organisational processes					
Infrastructure					
Software	2	2	2	2	2
Hardware Interfacing					

Professional skills (PS)	Future-oriented organisation (FO)	Organisational context	ORG	
		Ethics	ETH	
		Management	MAN	2
	Investigative problem solving (IP)	Approach to problems	APP	2
		Investigative	INV	2
		Solving	SOL	2
		Entrepreneurial	ENT	
	Personal Leadership (PL)	Personal Development	PD	
		Personal profiling	PRF	
		Partners	PAR	2
	Targeted interaction (TI)	Communication	COM	2
		Collaborations	COL	2

As stated above, there are five occupational competencies: advice, analyse, design, implementation and management & control. In the first phase of the project, we ask you to choose three out of the five occupational competencies that are applicable in this project assignment and will be the base for grading the project result.

Besides the software-engineering competences: 20% of the learning goals will be about customer relations. Literal text of the learning goal: *"The student is able to communicate and present to a client professionally, honestly and timeously."*
Another 20% will be for project management: *"The student is able to set up and maintain a proper management structure."*

The rubrics for the assessment are published in a separate document on Blackboard.

4 Test Matrix

Learning goal		Knows	Knows how	Shows how	Does***	Total
SW/ANA PS/IP/**	The student is able to analyse the context and problem statement (of the company), to be able to properly formulate the objective(s) and scope of the assignment. This includes the ability to properly define requirements and being able to verify whether these requirements are satisfied.				20%	Choose 3 60%
SW/DES PS/IP/**	The student is able to design an (information based) system which can be considered a solution to the problem statement, meeting some predefined requirements. The student is able to express the design by means of techniques as taught within the different courses.				20%	
SW/REA PS/IP/**	The student is able to, based on a design, realise a solution that resolves a given problem and verify the success of the solution.				20%	
SW/MAN PS/IP/**	The student is able to implement techniques and processes that contribute to the development (and maintenance) of a solution.				20%	
SW/ADV PS/IP/**	The student is able to provide an advise for the long-term development (or implementation) of the solution.				20%	
PS/TI/*	The student is able to communicate and present to a client professionally, honestly and timeously.				20%	40%
PS/FO/MAN	The student is able to set up and maintain a proper management structure.				20%	
					100% ***	100%

** = APP, INV, SOL

***: Every student chooses 3 out of 5 occupational learning goals. They each account for 20% of the grade.

5 Grading the project

This chapter identifies various matters that are a condition for the assessment or that influence the assessment in some other way.

5.1 Rules for delivering the material.

- **Everything in PDF:** All documentation, including what was originally created in Markdown, is delivered as a PDF document. All that is delivered in its original format is software code.
- Material is delivered **at the end of each sprint**. The extent to which this happens according to plan says something about the extent to which the group has the project under control and this will be reflected in the learning objective about project management.
- **The final delivery** determines the grade for the subject competences.
- The subject competences are assessed **individually**, the teamwork competences are **assessed** as a group.

Expected delivery each spring

Name	Deadline	Products
Sprint 1	End of lesson, week 4.2 Sunday 16 May 2021	Plan of Approach
Sprint 2	End of lesson, week 4.4 Sunday 30 May 2021	Retrospective report according to template All produced material Plan for coming sprint Timesheets according to template Account of individual work, according to template, first version
Sprint 3	End of lesson, week 4.6 Sunday 13 June 2021	Retrospective report according to template All produced material Plan for coming sprint Timesheets according to template Account of individual work, according to template, second version
Sprint 4 = Final delivery of project	End of lesson, week 4.8 Sunday 27 June 2021	Retrospective report according to template All produced material Plan for coming sprint Timesheets according to template Account of individual work, according to template, final version
Retake	End of lesson, week 5.6 Sunday 29 August 2021	Instruction about this will be published later

5.2 Plan of Approach

A template is prescribed for the Plan of Action. This template is aimed at students individually making a promise about the work to be delivered. The latest approved PoA serves as basis for the account of individual work. If during the project things change with respect to the PoA, this document will hold the latest status.

Students are free to add chapters after chapter 6.

The Plan of Approach must be approved by the coach and the client, so it is a contract between the project group, Saxion and client.

5.3 Git Canary

The software engineers work in the Git environment supplied by Saxion. In this environment, Git Canary is used to monitor everyone's contribution. The reports are updated daily and can be used by students and the coach to discuss teamwork. It is not more than that.

GitCanary is not used in the assessment. For the assessment, the delivered products are used in combination with the document "account individual work".

5.4 Three strikes rule

The three-strikes rule is a last resort that can be used if some disciplinary measure is necessary. A strike is awarded when a group member, for one reason or another, does not function, does not comply with the agreements set or shows unacceptable behaviour in any other way. Both teachers and students are allowed to report strikes, but a strike will always have to be confirmed by the coach.

The impact of any strikes on the assessment are relatively simple:

- One strike is seen as a formal warning, but without immediate consequences.
- In the event that a group member does not improve his / her behaviour, a second strike will follow: this means that the final mark will be differentiated. The individual will have at least 1 point deducted from the grade of the rest of the group.
- If it is then still necessary to award a third strike, this means exclusion from the project (and therefore the assessment), with the result that a resit must be taken.

5.5 Rubrics

Rubrics have been drawn up for the project. These are published in a separate document on Blackboard. The assessment form has also been published on Blackboard.

5.6 Retake

After an insufficient grade, the project can be improved in the fifth quartile of the academic year, which is the summer vacation period. Since 40% of the grade is determined by teamwork, while retakes are often done individually, this requires extra attention. There will be instructions on this on a later date.