# Project Assignment

| Scope | Covers course topics |
|---|---|
| First steps of a start-up company, from an idea towards a business.<br><br>The assignment focuses on creating a business plan including<br>• a business model<br>• MOM test<br>• prototyping<br>• an implementation plan<br>• a risk assessment<br>and<br>• review of one other project report. 1 review / group member | • Business models including Lean startup<br>• Software project management (SPM)<br>• Presentation & writing<br><br>*Use the course material on these topics to perform this assignment.* |

This assignment shall be performed in groups of 4-6 students. There are *seminars* (denoted övningar in TimeEdit schedule) related to the topics covered by this assignment. Each project group attends the same seminar session (classes A, B, C etc.-) to work with each topic and to discuss your assignment with the seminar leader.

The project assignment is reported through a *written report* and an *oral presentation* that are assessed using the criteria in the grading grid, see page 4. Consider these criteria throughout your work and use them to direct your work, together with the review criteria provided for Draft 1.

You are free to choose which language to write and present in, Swedish or English.

Submission deadlines are noted in the course schedule (kursöversikt on course page and on Canvas) and in the course calendar in Canvas. All submissions/hand-ins, e.g. reviews, are handled in Canvas where instructions for this are found.

Use the provided course material (e.g. literature list, lecture slides, seminar material) to understand what is required for this assignment. For example, what is meant by “top-down structure”, “rhetorical model”, “visualised timeplan” etc.

# Description

You are to develop a business plan for a *software-based product or service.* This includes validation through MOM test and prototyping (sketch, shallow and with a low degree of refinement), and an implementation plan for required software. In addition, you should pitch your idea through an oral presentation at the final seminar.

## a) Develop a business plan including implementation plan & Write report

Develop your business idea by

- designing a business model using Lean Canvas.
- validating your idea and exploring the problem domain with potential customers and/or users through MOM test. Use the obtained insights to improve your business model.
- analysing the market and competitors.
- Explore and validate your solution through prototyping. Concretize your solution by producing a simple prototype, e.g. a sketch or a simple mock-up (**not** executable software). Show the prototype to potential customers/users, and user pictures of the prototype to illustrate your idea / solution in report and oral presentation.
- developing an implementation plan (using anatomy planning) for the development of the first version of your software that enables identifying total cost and lead time of the implementation, and what resources that are needed.
- performing a risk assessment of your business and implementation plan

Describe your business plan in a written report using the given disposition[1]: The grading grid describes the criteria for pass. The Tasks (within ()) provide a suggested work order.

| Front page: Title and Authors (including group name). Suitable artwork / image. | |
|---|---|
| 1. Executive summary (3, 5) | 5. Implementation plan (6) |
| 2. Management team (3) | 6. Risk assessment (6, 7) |
| 3. Business model (2, 3, 5) | 7. References |
| 4. Market analysis (3, 8) | Appendix: Contribution statements |

The final version of the report shall include correctly formatted references and be written in understandable English or Swedish (not Swenglish) with cohesive flow using top-down structure including topic sentences. Write the report so that people with different backgrounds and competence can understand it, including 2nd year engineering students and non-techie investors. Keep in mind that **a well-structured report** is easier to read and understand, and thereby has **better potential to reach the intended audience.**

## b) Present a sales pitch

Your business idea is to be pitched to (fictive) intended investors at a seminar. You will also act as discussants (in the role of investors) for one other project group.

[1] Om ni skriver på svenska så använd följande rubriker: Sammanfattning, Ledarskapsteam, Affärsmodell, Marknadsanalys, Implementationsplan, Riskbedömning, Referenser, Appendix: Ansvars- och arbetsfördelning

## Grading

The project is graded pass or fail (G/IG) based on the content and quality of the report and the oral presentation (based on equal contribution from all project members), and on individual active participation in the seminars related to the project and completion of peer reviews.

To pass all graded aspects must meet the criteria for G, and individual active participation in the seminars and completed peer review must be achieved. The peer review must be of substantial quality and provide constructive and timely feedback to the authors.

**All authors are jointly responsible** for the assignment and for contributing to the course project with an **equal amount of time and effort**. Include a contribution statement in the appendix, where each author describes their contribution, i.e. what they have worked on and contributed to the project.

If you have **problems with un-equal contribution** in your group that you can not resolve yourselves, all group members are responsible for **highlighting the problem to the course responsible** as soon as possible. Examples of issues include uncommunicative group members, members failing to attend group meetings or performing the agreed work in a timely fashion etc. There are often understandable explanations for these issues, e.g. personal situations. The course responsible can help the group resolve collaboration issues and thereby avoid delays or problems in approving the assignment. So, **ask for help early on**, if you need it, ideally during the first few weeks!

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# Project Grading Grid

| Aspect | G | IG *examples* |
|---|---|---|
| *Sales pitch* | - **Presentation structure** in-line with *classical rhetorical model* including a *logical presentation of information* and *clear conclusions* . | One or more parts of the rhetorical model are missing, e.g. relevant background info, clear conclusions. |
| *Business model* | **- Good business model description** using lean canvas and including *customer segment and early adopters , problem, solution, unique value proposition, revenue streams and channels.*<br>- **MOM testing** used to m*otivate problem.*<br>- **Prototyping** used to validate product-market fit. | - Vague and generic description of customer segments, e.g. all smartphone users in the world.<br>- Unclear description of how MOM testing was used to motive the problem.<br>- Unclear description of how Prototyping was used to validate the business model. |
| *Market analysis* | **- Good description** of *targetted market* including products and *competitors* relevant to your business idea.<br>- **SWOT analysis** (strengths, weakness, opportunities, threates) performed to describe the market potential for your business plan. | - Vague / generic description of competitors<br>- No SWOT analysis provided |
| *Project planning: Implementation plan* | - **Good implementation plan** providing information on total lead time, cost, and resources required for the implementation project for developing the product or service.<br>- The **tasks** included in the plan cover *all main activities* and are *detailed enough* to support well-motivated effort and resource estimates.<br>- The implementation plan includes a ***visualised time plan*** , ***resource list*** & ***system anatomy*** . | - the plan consists of a few generic tasks such as implement application, implement server etc.<br>- dependencies between tasks are not visualised in the time plan<br>- the tasks are not planned in time, i.e. lack start and end date. |
| *Project planning: Risk assessment* | **- Project-specific development risks** and **business risks** are *identified* and *prioritised,* and their impact on the project is *discussed* . | - only generic risks are identified and/or weakly described, e.g. only by name and in generic term such as unrealistic expectations, lack of resources, inccorect effort estimates.<br>- the risks are not prioritized and/or not clearly motivated. |
| *Form - writing style* | **- Readable language with good flow** through use of *top-down writing structure* and *topic sentences* . | - lack of opening paragraphs/sentences that summarise/introduce the section/paragraph that follows. |

‘Discuss’ by going beyond simply stating facts and also add your own thoughts and conclusions.

## Work tasks

The following tasks provide a way of working and are intended as a support in performing the project assignment (described above). You will be assessed on your final oral presentation and on the final version of your report according to the criteria in the *grading grid* (previous page).

- Task 1: Form project group and Select idea
- Task 2: Sketch your business model and Perform MOM test
- Task 3: Draft 1
- Task 4: Review business plan (individual reviews)
- Task 5: Validate product-market fit through prototyping
- Task 6: Implementation Plan
- Task 7: Risk Management
- Task 8: Market Analysis using SWOT
- Task 9: Draft 2
- Task 10: Final report
- Task 11: Send report to discussant group
- Task 12: Pitch your business plan
- Task 13: Query and discuss another business plan

**Submit** each version of your report (in particular, drafts 1 and 2) **on time even if** you have not completed all the work described in each work task. For drafts 1 and 2 you will receive *formative feedback*, i.e. feedback intended to further improve on your work that will not impact the final grading. Only the final submitted version will be assessed according to the grading criteria (*summative feedback*).

### Task 1: Form project group and Select idea

Create a project group and identify an idea for a new software-based business. The idea must be for a new product or service where **software is a key component**. For example: *Skype*, which is a service that relies on software to deliver music to its customers; *MS Word* provided by Microsoft targeted at consumers and business organisations; *iPhone models* sold to consumers by Apple.

Ensure that you have knowledge of the technical area of your idea and access to potential customers and/or users. This will help you develop and validate your idea with customers/users, and to identify the various software building blocks needed to realise your envisioned solution (needed to make an implementation plan of the software components in Task 6).

## Task 2: Sketch your business model and Perform MOM test

Start designing your **business model** by filling out a Lean Canvas for your idea. Use the checklist by Khalimonchuk 2021 for creating your Lean Canvas. Then explore & learn more about the problem domain and customer/user needs with a **MOM test** (Fitzpatrick 2013). Revise your business model based on learnings from this testing.

As you work through your business model, identify aspects related to your customer/user problem that you need to explore further. Prepare a **MOM test** to explore these aspects. For example, what are the users' actual needs/problems, how happy are they with the solutions they use today, what channels do they prefer?

Prepare a set of main questions for your MOM test (*Tip*: include these questions in Draft 1 to get feedback on them) and talk to 3-5 people that are a good representation of your customer segment using the MOM test approach. Make notes of your main learnings, share them within your group, and revise your business model to better fit the current market and problem domain.

> Validation and exploration of the problem and customers are the main purposes of a **MOM test**. Use the obtained information to improve on your business model, and to motivate your business venture. Explicitly describe (in your report) how MOM test was used to validate your targeted problem! Such motivation is required to fulfil the grading criteria for the Business model aspects of the grading grid, see page 4.

## Task 3: Draft 1

A first draft of the report is to be submitted, describing your idea, and including a full draft of your business plan. Draft 1 shall consist of a first *outline* of all parts of the report (see Task description above), i.e. including Sections 1-7. For Draft 1, a *full draft* of the following is required: Sections 1-4, and *Contribution statements* per author. For Sections 5 & 6 (*Implementation Plan* & *Risk Assessment*) include at least the Section headings for this version.

> An *outline* means sketched structure and content. The purpose is to give an initial idea of what the (later) full text will describe, e.g. with headings / subheadings, bullet lists.
>
> A *full draft* means that there is a complete version with structured and readable, but not perfect or finalised text. Focus on the structure and the content of each section and paragraph, rather than on finding the perfect wording in this draft. A draft is an iteration, not the final version.

Draft 1 should cover the following parts:

- **Front page** with
  - title that captures the essence of your idea and strength of your business model
  - authors with contact information, including group name/number
  - possibly artwork or image of your business offer or your prototype
- **Section 1: Executive summary** - Pitch of business idea including overview of context. Describe the essence of your business idea with a few sentences, so that the reader quickly gets an overview and understanding of what your business model is about. A pitch is a

short presentation of your product or service, with the aim of persuading the receiver of something. In this case, motivate that your team has a *unique solution* to a specific *problem* around which you want to start a business. Point to your *main strengths*, and why your proposition is a winning one, e.g. unique aspects of your business model, strengths in team composition, market potential, validated product-market fit etc.

- **Section 2: Management team**
  Describe the team members behind the business plan, their competences, experiences, connections etc. Highlight why your team will successfully build and execute the proposed business plan. Also, describe needs/plans to extend the team with missing competence.

- **Section 3: Business model**

  Describe your business model according to the components of the Lean Business Canvas. In Draft 1, focus on describing (at least) the following: Customer segment, Early adopters, Problem, Solution, Unique value proposition, Revenue streams, Channels, and Key metrics. Primarily, focus on your early adopters and the aspects related to the initial steps of your venture! Ideas for future expansion could be mentioned, but should not be the main focus.

  Describe and motivate (e.g. with insights gained from MOM test) each part of the canvas, and be specific! For example,
  · Which problem are you aiming to solve? How sure our you that this is indeed a problem for your targeted customers? Motivate!
  · What is unique with your model?
  · What characterises the early adopter in your customer segments (e.g. age, language, geographical region, consumer patterns, income, interests, personality)?
  · How do you intend to bootstrap your business venture, i.e. obtain first customers? Align Customer segment with Market (below).
  · How do you intend to reach your customers?
  · How are you going to make money?
  · How much will you charge for your product / service? Motivate!

- **Section 4: Market analysis** (initial version, to be completed later!)
  Describe the market that you are targeting including similar products and competitors (existing alternatives). How do you compare to the competitors; why should the customer buy your product/service? Describe your initial market, size etc. Try to quantify in numbers, but do not forget to motivate and present your assumptions, e.g. with insights gained from your MOM test. Are your early adopters a realistic starting point for your business venture? For example, it is more realistic to start by targeting customers/users in a limited geographical region, e.g. Lund, rather than the whole world.

**Remember,** to also provide information on who did what, in a **contribution statement** in the appendix; one paragraph per group member.

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## Task 4: Review business plan (individual reviews)

In the *Contribution statements,* each group member should describe specifically what they have worked on and to which extent. These statements are important to demonstrate equal contribution to the group assignment.

Each student should individually review one other report using the criteria in the checklist in Table 1. Note your comments for each question, e.g. in a text file and then submit your feedback through Canvas. **See specific Canvas task for reviewing project draft 1** (Återkoppling på projektutkast 1) **for further instructions on how to perform and submit your review.**

| **Overall** |
|---|
| General impression of report: professional, organised, confidence inspiring etc? |
| Language: clarity, ease of understanding, e.g. what is the problem & the solution? |
| **Business model** |
| Consider the description of the business model. Does it describe the user/customer perspective? How is MOM test (planned or performed) used to motivate the targeted problem? |
| Consider the motivation of the product-market fit. What aspects need to be validated, e.g. through prototyping or further MOM tests? |
| Consider the novelty of the business idea. Is the product/service new or are you aware of comparable solutions? |
| Consider the competitiveness of the product/service. How superior is the solution compared to other alternatives? How easy is it for others to copy the business model (and thereby further increase competition)? |
| How will money be earned on the product/service? Is the revenue model realistic? |
| How well does the business model fit the product/service? |
| How clearly is the source of venture capital described? Realistic? |
| Consider the team behind the business. How well is the competence and strengths of the team described? Are any vital competences missing (that ought to be recruited)? |
| What are the chances that this team will succeed? |
| **Market analysis** |
| Is it clear which customers that are likely to buy the product/service? |
| How realistic are the estimates of the market size and share? |
| Is the initially targeted market (early adopters) realistic? |
| How trustworthy is the market channel (distribution, customer reach out)? |

**Table 1.** *Review criteria for Draft 1.*

Review comments should be **helpful, objective, and detailed** enough to enable improving the report. If everything is good, state what is good, e.g. "the opening text clearly describes a relevant problem". For weaknesses, be objective and helpful. For example, "It was hard to grasp the essence of your idea. Improve this by introducing the problem and envisioned solution earlier in the text."

The purpose of the review is two-fold, that

1) *authors* get constructive comments that help them to improve their report.
2) *reviewer* gains a deeper understanding of what constitutes a good report by actively working with the criteria. This supports the reviewer in gaining experience and learnings about the topics. The review criteria are designed to support learning and are part of the course material.

## Task 5: Prototyping

Continue refining your business idea by developing a simple prototype in the shape of a sketch or a mock-up, and validate the product-market fit through showing this prototype to potential customers/users. Prototyping allows you to explore the solution domain internally within your project group and to concretise the software product/service in preparation for making an implementation plan (see Task 6). Prototyping also enables you to assess and validate the product-market fit of your business plan by showing your solution to potential users/customers. Use your prototype with at least 3-5 people that represent your customer segment (excluding project members), describe this in your report and use the obtained information to further motivate your business model.

Use the insights from the prototyping to improve on and motivate your business plan. Also, use images of your prototype in your report and in your oral presentation to illustrate and communicate your idea.

> *Prototyping* is a method for exploring uncertainties, e.g. related to customer segments, solution options, technical feasibility, and can be used to improve product-market fit. Prototyping can be used to learn by showing it to customers and users, but also by using a prototype internally, e.g. within a development team to explore technical possibilities and design options. The scope of a prototype can range from a simple sketch to an early version of production software, from shallow with a low degree of refinement to a deep and highly refined prototype scope. For this assignment, **a simple prototype scope (shallow and low degree of refinement) is sufficient.** This could be a sketch (on paper, or in PowerPoint or similar) of some initial user scenarios.

## Task 6: Implementation Plan

*Plan for the development* of the software needed for the product or service of your business idea. For a good implementation plan, you need to "*go under the hood*" and consider what different software parts (functionality, components) that the software should consist of, the dependencies between these, how the software should be designed, tested etc. Identifying specific tasks and activities, increases the chances of making realistic estimates of the cost, resources and lead time needed to develop the software, and thus reduce the risk of unpleasant surprises.

The report is to contain

- a description of your implementation plan (in Section 5),
- the underlying *system anatomy* (Taxén),
- a *resource list*, i.e. an overview of the needed human resources per resource category and time period (*resursbehovsplan* Tonnquist), and
- a *visualised time plan* / *tidsplan*, e.g. as a Gantt chart that shows all necessary activities (what is to be done), resourced (who does what) and placed in time (when are things done; start/end

date). The visualised plan must show the dependencies between task/activities (to enable later analysis of the impact of changes to the plan.)

The report shall also include a brief description of how your implementation plan was made, in particular what assumptions that were made and why. Consider the reader's perspective; what information is interesting and necessary to understand and be confident about your implementation plan. You may provide additional background material used to produce your time plan and risk assessment, e.g. precedence network, activity list, in an appendix.

Perform the following to produce your implementation plan:

**a. Prepare for Activity planning: System anatomy**
Produce a system anatomy of your software component(s), see Taxén chapter 2. Your system anatomy should have at least 15-20 different capabilities / anatoms (represented as boxes) including ones for services to users ("money-making") and for system support such as start-up, configuration, supervision, and error handling. Identify the technical relationships between the capabilities. Include the final version of the system anatomy in your report.

b. **Activity planning**
Identify the activities/tasks needed to develop your software based on the system anatomy, and the dependencies between these. Consider which function groups in the anatomy that should be split into several activities, see Taxén chapter 5. The activities should be detailed enough to enable realistic and reliable cost estimates for the project. If helpful, produce a network-based activity plan (logisk nätplan, Thonnqvist p.160-167).

c. **Effort estimation**
Estimate the *effort* and *resource categories* required for each activity using a suitable estimation technique. The estimates are to be realistic. Use, e.g. PERT or poker planning when estimating effort. Include information on how estimates were done in report. Numbers, e.g. for PERT may be included in the appendix.

d. **Resource allocation**
Identify your resource needs and produce a *resource list* (*resursbehovsplan*) that show how many resources are needed for each resource type/category for different time periods of the implementation project. Make realistic assumptions about the set of available resources (e.g. based on cost) and allocated these resources to the activities. Does this introduce new dependencies?

e. **Produce visualised plan**
Create your time plan, and ensure that it provides a good visual representation of your implementation project. For example, activities must be placed in time (with start and finish dates) and dependencies between activities shown.

## Task 7: Risk Management

*Perform risk management* for your implementation project. Describe the project-specific development and business risks and their relative priority, and discuss their impact. Also, provide a brief description of how the risk analysis was performed.

a. **Identify** risks.
   Perform a brainstorming based on Boehm's checklist in Table 1 and use the following as input to your risk analysis:
   - *potentially critical activities*, i.e. critical and near-critical paths. This can be done by sketching a *precedence network* of the identified activities (Tonnquist, Ch 7, Resurs o tidsbedömning)
   - *spiders in the system/project anatomy* (Taxen, p. 55) represent work with many dependencies, and are more susceptible to be affected by delays.
   - *risks related to resources* by comparing the resource list with available resources

b. **Analyze and prioritize** the risks.
   Assess the risk exposure for each risk and map them in a probability impact matrix. Select the risks that should be mitigated.

## Task 8: Market Analysis using SWOT

Perform a market analysis for your business plan including identifying who your main competitors are and what revenue streams there could be for each customer segment. Identify the market potential and business risks/threats for your business plan by performing a SWOT analysis (Tonnquist, Ch5, Nulägesanalys, Osterwalder 2010b).

## Task 9: Draft 2

A full draft of the report is to be submitted for review. Draft 2 should contain a full draft of all sections of the report including picture(s) of your prototype (as illustration of your business idea/solution), a correctly formatted reference list, and contribution statements.

## Task 10: Final report

Update your report based on feedback received and using the writing techniques taught in the course, in particular the use of top-down writing including topic sentence to provide an introductory summary of each section and paragraph. Also, do an internal review and consider the review criteria used for Draft 1 and the assessment criteria in the grading grid (page 4). Complete the report and submit it.

## Task 11: Send report to discussant group

Send the current version of your report to the project group who will act as your discussant at the final seminar. Group N2 sends their report to Group N1, N3 to N2 etc, N1 to N5 (or last group in class). For example, Group B3 sends to Group B2, Group B1 to B5.

## Task 12: Pitch your business plan

Prepare a 6-8 minute presentation of your business idea and plan, including how and what you need to realise the idea. The (fictive) aim of the presentation is to obtain venture capital from potential investors. Use the classical rhetorical model for your pitch (part of Presentation & Writing) and include your prototype as an illustration of your idea and product solution. You may choice one or more group members to present. All group members are expected to participate in preparing the pitch and be prepared to answer questions regarding your business idea.

## Task 13: Query and discuss another business plan

Act as potential investors for one other business plan. Prepare by reading the latest version of their report and by formulating questions. After listening to their sales pitch, query & discuss the business plan including the potential market and business model – approx. 5 minutes. For example, what is the viability of the business plan? what are the strengths and weaknesses, risks and possibilities? All group members are expected to ask questions and be active in these discussions.