



ENTREPRENEURSHIP COMPETITION

Mission
JDG2020



Engineering Games of Québec

Mission JDG 2020: Changing the world

Entrepreneurship

École de Technologie Supérieure

Creation:

Eduard Paraschivescu

Philippe Daneau

VP Competition:

François Pelletier

Presented by:



Centech: official presenter of the entrepreneurship competition



MISSION JDG2020

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1. Introduction

For the second consecutive year, the organizing committee of the Engineering Games presents the Entrepreneurship competition. During this event, participants must find a concrete solution to a problem of their choice while proving the viability of their solution at the commercial level. This competition is a recent initiative of the organizing committees in order to showcase the qualities and assets of the future Quebec engineers in emerging companies while promoting collaboration between the different fields of engineering.

In this competition, participants will be asked to analyze a predetermined economic sector and to find a situation allowing the creation of a new product. The future engineers will then have the task of exploring the field in order to see if a business can be profitable in that sector while ensuring that their new product is feasible by producing a functional prototype. The exercise will conclude in a final presentation at the Engineering Games in front of judges who will be able to attest to the creativity of the future engineers.

The first edition having been a success despite a few imperfections, the 2020 edition of the competition will take place over a longer period to allow participants to deliver smaller increments of work. The deliverables were further refined and subdivided into logical milestones within the process of creating a business plan. Deliverables for each stage of the competition have been clarified to eliminate a maximum number of ambiguities and to provide participants with clearer guidelines regarding the expectations for every required document.

This edition is also distinguished by the active participation of Centech, official presenter of the entrepreneurship competition. Centech is a technology startup accelerator that offers programs which guide entrepreneurs towards their company's success. Their participation will not only be characterized by their presence at the Engineering Games, but also by the production of short videos that will be available throughout the challenge. The themes explored by these videos will be adapted to the different deliverables of the competition in order to give the participants tools to better understand and define the important elements to be presented.



2. From Farm to Table

For this year's Engineering Games, the entrepreneurship competition's theme is inspired by the Mission: JDG2020 scenario.

The food industry is one of the primarily sources for greenhouse gas emissions that have caused the destruction of ecosystems, the increase in natural disasters, and the overall deterioration of our planet in recent years. The industrial food system that Humanity has known is now more than obsolete.

BIPCOM scientists agree that one of the most efficient solutions to this problem is the reduction of meat consumption as well as other bovine proteins such as milk and cheese. As this initiative has already been implemented for the MISSION:JDG2020, additional intervention is required from Québec future engineers.

*Therefore, Centech, an accelerator of technologic start-up companies, is interested in possible new innovations that could reverse current trends and **change the world**.*

Overview

The food industry is at the heart of our planet's food system, and therefore one of the main sectors of the global economy. From the extraction of raw resources to the final stages of their processing, several parties are responsible for ensuring product quality. In addition, these companies must maximize their performance while maintaining the highest environmental and ethical standards.

Considering that human activities related to food have a huge environmental footprint and that the growing global need for food, the efficiency of the processes of the industry and the machinery used cannot stop evolving. There is no clear indication that this progress will slow down in the upcoming years.

The issue targeted by the 2020 edition of the Entrepreneurship Competition of the Engineering Games is the reduction of the environmental footprint of a component of the food industry. The product will therefore have to address a problem related to this industry by finding a unique and innovative solution that can be easily integrated into existing companies in Quebec.



3. Deliverables

Initial submissions

This deliverable is intended to give judges a brief overview of the issues chosen by each of the teams. It will allow the judges to give feedback on each idea even before the delegations invest a lot of time.

Market research

This should clearly demonstrate that the product has a place in the industry and that it can have a positive impact on the environment. This deliverable also specifies the different segments of the market as well as the actors already operating within it

Design document

This document is a deliverable dedicated to the presentation of the product and its technical specifications. It also makes it possible to clarify the various aspects of the design and components in order to have a better view of the production cost.

Business plan

This is a deliverable that consolidates information from previous reports and clarifies it by adding new elements in order to prove the economic viability of the product. It is therefore the most important component that allows the evaluation of the company as a whole.

Prototype

The prototype represents the physical aspect of the created product. This element can be a complete prototype or simply a proof of concept depending on the particularities of the product.

Presentation

The presentation consists of a slideshow in a pitch deck format as well as a product demo. This presentation will take place at the Engineering Games in front of a panel of judges whose composition will only be unveiled at the competition.

Leaflet

The information leaflet is a deliverable intended for the judges during the pitch - and especially during deliberations. This leaflet is a summary of your presentation and your business plan.



4. Initial submissions

The first deliverable is a document presenting, briefly, the problem as well as the product chosen by the team for this competition. The content is divided into three parts: the theme, the chosen problem, and the description of the solution.

1. First, the theme shall be a long title to the project. This sentence, which serves as an introduction, can be used to summarize the project.
2. Secondly, it shall contain the problem which the team decided to tackle. This must be sufficiently clear and complete so that it leaves no room for interpretation. It must also provide enough leads for judges and evaluators to understand the problem in its entirety.
3. Finally, most of the document shall be allocated to the description of the solution. The aim is to present, concisely, the solution to the chosen problem and to give a brief description of the product and business model.

Each team may submit more than one initial idea and will receive feedback from judges for each of the submitted ideas. A panel of judges will analyze these initial submissions and will provide recommendations to the teams in relation to the solution, the chosen problem, and / or the envisioned business model.

The presence of at least one submission within norms guarantees a maximum score for this part. Any other submission will not improve the score of the team.

Expectations are to have a maximum of one page per idea, single-sided - devoid of any image or appendix.

Teams will be required to develop the idea that was submitted during this deliverable, or one of the ideas they presented if there was more than one submission. All the submissions will remain eligible products for the team until the submission of the second deliverable.



5. Market research

Market research helps identify a segment of buyers as well as competitors who work in the same field in order to better define the product as well as the marketing strategy. This analysis should make it possible to ensure the existence of an adequate product-market fit. The market study is divided into three parts: the problem, potential customers, and potential competitors.

1. The first part shall be a complete and thorough description of the problem. It must be linked to an initial submission made by the team. This description should allow the evaluators to understand the issues and the proposed solution. Also, it must highlight the link that unites them.
2. In the second part, the team shall present the different segments that make up potential customers. To do this, it is necessary to extract and present data to demonstrate the existence of the market. In addition, it is imperative to conduct and analyze a survey and / or a series of interviews with individuals working in the industry to demonstrate the applicability of the solution. This part will help in making a prediction regarding potential sales volume. All the parts of this analysis should be added as an appendix to the document (statistics, survey, interview guide, results, etc.).
3. In the third part there shall be an analysis of the direct competitors (who sell a similar product) and indirect competitors (who produce a different solution that tackles the same problem). These competitors will have to be evaluated according to their expertise as well as their price. Also, it will be necessary to complete an overall analysis of their offer and their current market. This part of the report must demonstrate the hurdles (technological, financial, etc.) that a new competitor will encounter upon their arrival on the market and any regulations that could prevent or otherwise limit the company from developing.

To conclude this deliverable, we must find in appendix a first draft of the Business Model Canvas (see Appendix A) and the Value Proposition Canvas (see Appendix B). These two matrices will help refine the product and structure of the company.

Expectations are to have about 6 to 10 pages excluding appendices. These appendices must contain among others a first draft of each matrix, the methodology for data collection and the data used for the statistical analysis.

It is the responsibility of each team to adapt the deliverable and its content to their style and their project.



6. Design document

The design document is used to structure the manufacturing project in order to facilitate the understanding of the product for both the team and the evaluators. This deliverable will allow for multi-faceted product analysis to reduce manufacturing costs or improve the product design itself. The design document is divided into three major parts: the functional description, the limitations, and the components.

1. The first part shall be a functional description of the product. This is a complete guide to the product and all interactions between the different components of the system. It must convey to the evaluators sufficient information about the expected results when using it.
2. The second part of the deliverable shall explore the limitations of the product as to its use. It is necessary to list the prerequisites for the client to use the product. Finally, it is important to make a complete technical risk analysis with respect to the manufacturing and use of the product.
3. In the third part, all the parts that make up the product shall be clearly enumerated. In other words, all the different components of the final product should be listed in name and in number. This list allows you to iterate through the critical elements within the supply chain of the company during the next deliverable. In addition, a complete estimate of the prototyping cost is necessary, even if the team does not intend to make a functional prototype. In addition to the different components, transportation and the manufacturing cost must be included in this part. The listed prices must not have been reduced by any economies of scale.

To conclude this deliverable, we must find as an appendix a second iteration of the Business Model Canvas and Value Proposition Canvas. The state of these two matrices will have to approach the vision of the final product and the final business model.

Also in appendix, technical plans and three-dimensional renderings of the product shall be provided.

Expectations are to have about 6 to 10 pages excluding any appendices. These appendices must contain a copy of each matrix - in second revision, as well as the technical plans and three-dimensional renderings.

It is the responsibility of each team to adapt the deliverable and its content to their style and their project.



7. Business plan

The business plan is one of the most important components of the Entrepreneurship competition. This document must contain all the necessary details for the evaluation of a company by investors and the evaluators of the competition. To do this, data related to several functions of a company must be present. This deliverable is divided into three main parts: the product, the plan, and the roadmap.

Product

The product section shall be, in fact, a polished summary of the two preliminary reports. This section recalls the problem, now crystallized, then rediscover the solution, now explored, simplified and improved. It will be important to present in the appendix of the document any improvement to the product or any precision made following the submission of the preliminary reports and the business plan.

Business plan

The second section shall be entirely allocated to the business plan. This plan gives visibility as to how the company will be able to achieve a specific goal: to become a sustainable business. This section is therefore dedicated to the operations of the company. More specifically, a financial analysis of the activities taking place within the firm must be presented.

- Having already built a complete bill of materials of the product, it is possible to execute an analysis of the company's supply chain. Following this, it is important to determine, among other things, the lead time and ship time, any parts that are at risk of becoming out-of-stock and alternative suppliers, etc. Additionally, each company will have to submit an analysis of its distribution logistics: from the warehouse to the customer.
- It is also important to know the financial statements of the company. Firstly, fixed costs include, but are not limited to, the equipment, the tools, the building, and any energy consumed. In addition, an analysis of production costs will be required, considering parts, labor, and other items related to the product. Finally, it will be necessary to perform a cost of sales analysis regarding the time consumed by sales staff, the cost of implementation, delivery costs, etc. This entire subsection will allow teams to calculate the breakeven point.
- The last subsection of this business plan is dedicated to the strengthening of the business model. It will be important to explore any secondary services that the company might provide to enhance its revenue. It will be even more important to do a commercial risk analysis of the business and find mitigating factors.



Roadmap

The last part of the deliverable shall be reserved for the company's roadmap. This section should demonstrate the company's expected growth over the short and long term.

- The first part is allocated to business strategies. This is in reference to the **marketing** function of the company. It is therefore a marketing plan, more explicitly, the development of new customers for a given product.
- The second part concerns the **human resources** structure of the company. It will therefore be necessary to elaborate on the hiring plan, the growth or degrowth forecast, as well as on the expertise necessary for the success of the project. Each element must be duly justified.
- The third part is devoted to **research and development** plans. It is therefore a question of elaborating the envisioned plans in order to either evolve the current product or to develop related products. Without necessarily exploring the solutions, it is important to identify any issues in the product that deserve the attention of the company in order to find a possible improvement.

This is only a bare minimum for the roadmap section. Any other details that can be a differentiating factor can therefore be included as well. These elements can be, among others, of a legal nature (patents, partners, etc.) or related to business development, depending on the depth of the analysis.

Expectations are to have about 10 to 15 pages excluding appendices. These appendices must contain a copy of each matrix - in final revision.

It is the responsibility of each team to adapt the deliverable and its content to their style and their project.



8. Prototype

One of the distinguishing factors of this entrepreneurship competition is the creation of a physical product. The prototype aims to offer a representation of the final product. It will be shown to the judges during the presentations and will allow the team to perform a demonstration of its features and its usability. The physical product can take one of the following three forms depending on your projects.

Proof of concept

A presentation in the form of a proof of concept has the sole purpose of dissipating any possible doubts concerning the technological risks of the solution. It must demonstrate beyond any doubt that your product will be able to solve the problem. A proof of concept is therefore suitable for projects involving new technologies that are the main source of risk for your company. A proof of concept should not require complex handling to use. The presentation of a proof of concept must also be accompanied by a 3D model (virtual or physical) in order to get an idea of the visual of the final product.

Model

A presentation in the form of a model is intended to present a project that has a high complexity in terms of manipulation or interaction between internal parts. A good model must therefore demonstrate beyond any doubt the role of each component of the system as well as the interactions between parts and the ways to use the product. Without fully having the functionalities demonstrated, judges will have to be able to understand the operation of the product through explanations that must accompany the model. The model is therefore suitable for simple products that do not display any technological doubt and whose use or interactions between components may seem abstract with a simple plan.

Prototype

A presentation in the form of a prototype aims to present a complex product that raises doubts about its effectiveness and functionality. A good prototype must therefore be similar to the end product of your business and demonstrate beyond any doubt that your product can be effective in solving the problem it is tackling. Without having to look like the product that will be in service, it will have to prove that it is fully functional. It is therefore a complete physical solution that resolves technological doubts and allows judges to understand how the different components interact with one another. The prototype is therefore suitable for complex projects that have risks in terms of performance and the usability thereof.



Evaluation

The evaluation of the physical product will be carried out according to the form chosen by the team. If the chosen form does not dispel the different risks, a significant penalty could be applied.

- A **proof of concept** therefore demonstrates the technological feasibility of the product and removes any technological doubt, but it does not represent the final appearance of the product.
- A **model** visually resembles the final product and dispels doubts about the roles of the different components and their interactions, but the functionality is not included in the presentation.
- A **prototype** visually resembles the final product, demonstrates various features of the prototype, demonstrates product efficiency, leaves no doubt about the technology, and clearly demonstrates the feasibility and potential of the product.

An ideal presentation would have a high-quality model / prototype / proof of concept, accompanied by a visual support. The presentation of this object leaves no room for interpretation regarding the functionality, the final appearance, or the technological feasibility.

Access to the prototype will be provided to the judges during your presentation and at any time during the presentation day. The evaluation of the prototype will be based mainly on the use of it during your pitch.

A video cannot replace the prototype, even if it is too big. It may, however, serve as an auxiliary feature of the presentation, without being considered a prototype in and of itself. Regarding the volume of the prototype, it is possible to present a reduced version of a model whilst respecting realistic proportions.



9. Presentation

Upon arrival at the Engineering Games, each delegation will submit to the organizing committee a presentation in the form of a USB key with a PDF file. The file should have the name of the delegation. The USB key should be identified in the name of the delegation and the Entrepreneurship competition. This presentation will be started when the team enters the presentation room.

The presentation must contain a complete pitch deck and aim for a duration of 7 to 10 minutes. This must include, regardless of the order:

- **Introduction:** this part of the pitch deck serves to put the jury in context with the company, the team and the purpose of the presentation.
- **Problem and solution:** This second part is used to present the chosen problem as a whole and an in-depth reflection on it. Also, it serves as an introduction to the subject: the product.
- **Product:** The heart of the company is the product. In this part the product and its features shall be presented to the judges.
- **Market and competition:** This part serves to present the current market as a whole, be it potential buyers, or direct or indirect competitors. It is important to give a complete overview.
- **Business model:** This section outlines the essentials of the business plan and helps explain to judges why the business is viable and resilient to different risks. It is therefore important to convince the judges that this is a company that will succeed.

A second presentation will be made to all the participants of the Engineering Games by a limited selection of teams chosen by the directors. Therefore, it is not a second step in the competition, but a showcase of the best pitches, products, and business plans. In addition, this presentation will take place using the same PDF as the presentation before the judges.

For the presentation before the judges, as well as for the second presentation, business attire will be required.



10. Leaflet

In order to help the audience during the presentation, a one-sided letter-size sheet (8½ "x 11"), will have to be printed by the delegations and be given to the judges during the presentation.

This leaflet may be of any form and may contain any information deemed necessary to properly represent the highlights of the business plan. Any information found on the page will have to be drawn from the deliverables since this sheet will serve as a reminder for the judges during the presentation and the deliberations.

Please note that the leaflet and its contents will not be directly evaluated, but the absence of it will be penalized. Moreover, this leaflet is the only documentation can be given to the judges. Any other form of documentation is strictly prohibited.



11. Evaluation grid

Initial submissions	5%
Market research	10%
Design document	10%
Business plan	25%
Prototype	20%
Presentation	25%
Leaflet	5%

The evaluation grid is present to give delegations an idea of the value of the different deliverables of the competition. The evaluation of each individual deliverable can not be precisely detailed for each criterion, considering that each product will be different, and that each delegation has free choice as to how to present their documents.

During the correction, a significant part of the points will be attributed to the impact that the product may have on the environment. It is therefore important that the theme of competition is one of the pillars of the business and that every decision made reflects a desire to improve the environmental footprint of the agri-food industry.

The correction of documents will be based on the quality of the content delivered. It will be evaluated regarding the rigor applied in the completion of the task as well as the ability of the deliverable to transmit all information in a verifiable, clear, justified and consistent manner. In this sense, ambiguities and weakly justified and / or unverifiable information will be penalized during the correction. In particular, the absence of references for key information will be strongly penalized.

For fairness purposes, all delegations will be assessed by the same team of judges for a given deliverable. The presentation and the product will be evaluated at the discretion of the judges during the deliberations following the pitch.



12. Team composition

As guidelines for a team's structure, we propose the following roles and positions in the company. Please note that these roles are only given as a reference point and that each company is free to organize itself according to the needs and specificities of their product.

Product designer

This person is in charge of the design and manufacturing of the product. In fact, this person becomes responsible for the planning of the prototype, the execution, as well as the preparation of a relevant demonstration in front of the judges. They will also be the resource person when questions are asked about the product itself as well as the challenges involved in manufacturing it.

Pitch leader

The role of this person is to ensure the smooth running of the sales pitch by preparing its structure. During the presentation, this person will have the role of presenting his team and ensuring that the communication is clear between the audience and the team. They will broadly present the team before deferring to the subject matter experts for the financial and technical aspects.

Business architect

This person is in charge of writing the business plan. Accordingly, coherence, realism, and commercial innovation rest on their shoulders. They will also be required to know the financial framework in order to easily justify the figures presented.

Beyond these roles, it is possible to use the help of any other person deemed relevant to the creation of the company. In order to respect the framework of the competition, any active and continuing participation by a non-registered member of an engineering program at your own university may result in disqualification.



13. Milestones

- 25th of September, 11:59 PM – due date of the initial submissions
- 20th of October, 11:59 PM – due date of the market research
- 24th of November, 11:59 PM – due date of the design document
- 31st of December, 11:59 PM – due date of the business plan
- 3rd of January 2020 – beginning of the Engineering Games
 - o Submit the prototype
 - o Submit the presentation slides (PDF on a USB key)
 - o Submit the leaflet (5 paper copies)



14. Varia

Questions

All questions must be sent to the email address of the Entrepreneurship competition directors. The answers will be sent via a mailing list once a week in order to maintain a high level of equity and transparency towards all delegations. The questions will be anonymized in order to maintain a competitive advantage.

Rules and regulations

The organizing committee reserves the right to adapt sections of this booklet throughout the competition. Such changes will be announced to the designated representatives of each delegation and will always be made with the intent of maintaining a healthy and high-quality competition.

Use of pre-existing patents

The organizing committee reserves the right to refuse any project that is a commercialization of a research project or an unused patent with or without the explicit agreement of the holder. This rule is added in order to preserve fairness for universities that do not have research chairs working on the theme of competition.

Service companies and software applications

Although a service company or a software application could significantly help to reduce the environmental footprint of the agri-food industry, the creation of a physical and concrete product is mandatory for this competition. This decision was taken in order to standardize the correction criteria for every project and to ensure a similar workload between delegations regarding prototype design as well as certain sections of the business plan such as the supply chain.

Cost or size limitations

For this edition, no cost or size limit will be imposed on the concept to be developed. It is up to the participants to prove that the product is accessible to the industry and profitable for the customers who decide to acquire it.



15. Conclusion

It is with great pleasure and ambition that the organizing committee has developed this second edition of the Entrepreneurship competition. Through time you will be investing in this competition, you will have the chance to showcase the assets that an engineer can bring to a new company. You will also be able to learn a little more about the different stages of starting a business. Certainly, this experience will be rewarding for participants, spectators and judges alike. The organizing committee and the co-directors wish you the best of luck!

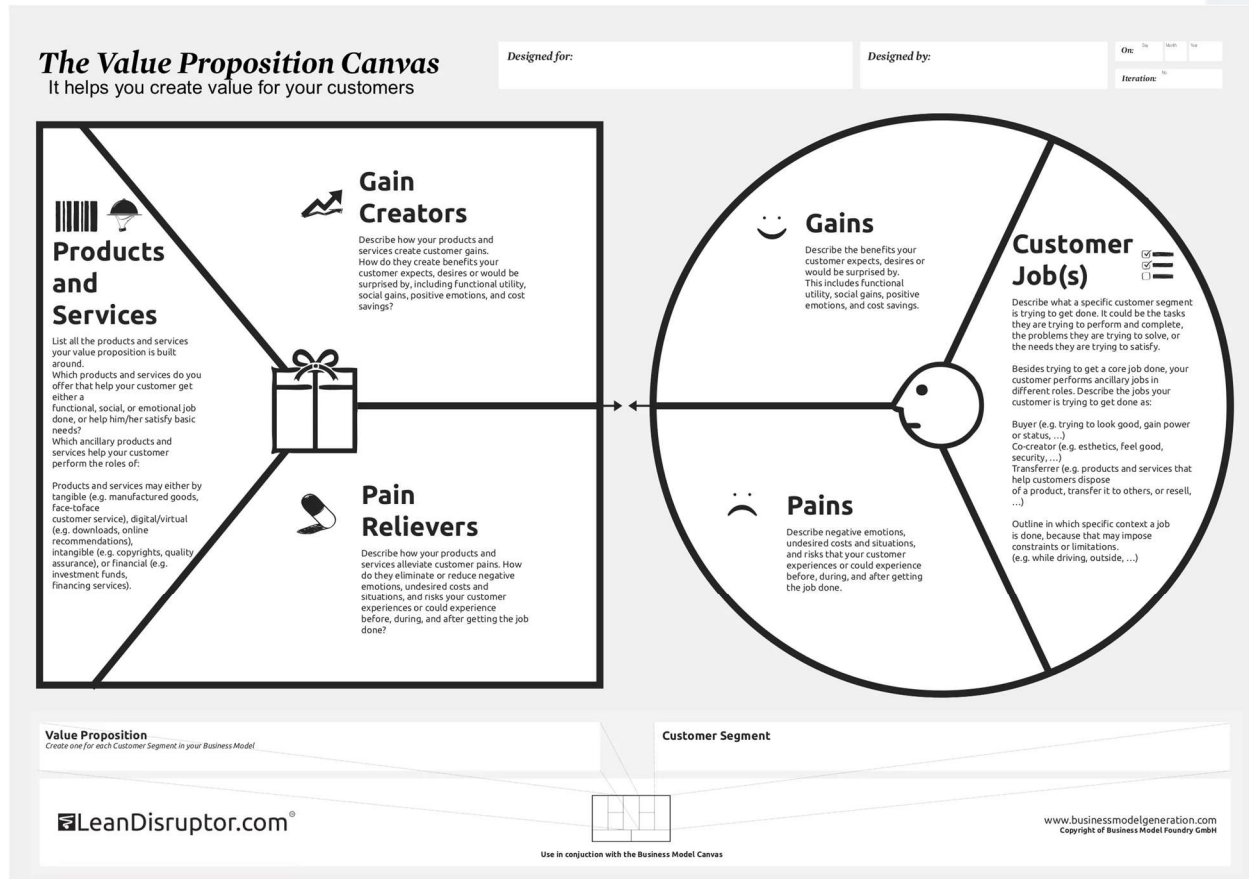


APPENDIX A



17. Appendix B:

Value Proposition Canvas



[<https://designabetterbusiness.com/2017/10/12/how-to-really-understand-your-customer-with-the-value-proposition-canvas/>]

