

## ENTREPRENEURIAL GAME SIMULATION E-PLATFORM FOR SUPBIOENT ERASMUS PLUS PROJECT

Eugen-Gabriel GARAIȘ<sup>1\*</sup>

George CĂRUȚAȘU<sup>2</sup>

### ABSTRACT

*Business Models are often sustained by computerized software applications that are a great tool needed to organize complex economic business data. An entrepreneurial Game Simulation E-Platform is the Intellectual Output for the O5 Activity of the SupBioEnt Erasmus Plus Project. This article describes the need, opportunity and structure of the e-platform that will be used in teaching students that study in Universities with Biotech profile. The E-Platform stands as a tool for students in learning how to become entrepreneurs in Biotech to begin an economic-social Start-Up company.*

**KEYWORDS:** *E-platform, business model, biotech, Erasmus Plus, Start-Up*

### 1. INTRODUCTION

The e-platform that has to be designed and used by the Biotech students is part of the SupBioEnt project supported by the Erasmus+ Strategic Partnerships project 2017-1-RO01-KA203-037304 which has as general objective to decrease the unemployment of European higher education graduates by increasing the level of successful Biotechnology graduates following an entrepreneurial pathway. The project target is for short and medium/long terms metrics affecting Biotech and Economics higher education, Biotech business and other Biotech stakeholders, partner organizations, policy makers and general public.

Computerized Information Technology is needed nowadays to accompany every social and economic activity. The use of IT offers tremendous support in conducting processes of data analysis and data management. Well organized data and optimized automated data processing is a basic need and demand for any activity that comes in relation with other activities. By defining the relationship that is established between different levels and categories of data generates lists and reports that offers support to any decision making for the decisional apparatus of a social-economic entity.

---

<sup>1\*</sup> corresponding author, PhD Lecturer Faculty of Computer Science for Business Management, Romanian-American University, 1B, Expozitiei Blvd., district 1, code 012101, Bucharest, Romania, E-mail: garais.gabriel.eugen@profesor.rau.ro

<sup>2</sup> PhD Hab, Professor Faculty of Computer Science for Business Management, Romanian-American University, 1B, Expozitiei Blvd., district 1, code 012101, Bucharest, Romania, E-mail: carutasu.george@profesor.rau.ro

## **2. THE NEED OF AN E-PLATFORM**

E-platforms are now not only an important tool but also indispensable. The main purpose of an E-platform is to store and manage all the information that a company or an individual need to handle at its activities. E-platforms can, from a technical point of view, be as application or as web-based application. Desktop application has now not so many uses anymore because they function in an off-line environment and the need of information and access to collaborative features must be done in Realtime with online connectivity to the Internet. Given this, most of the E-platforms are now using web-based technology. The designed E-Platform will be used in a summer school with students from all the projects partners. The project has 6 partners from which 4 universities providing Biotechnology education as USAMV, one university providing Economics and IT education as URA and a Biotech professional Association as NGO.

The use of Internet as main transport utility for needed data structures has brought and maximized the efficiency in information management and access. Web-based application offer a real-time access to updated versions of information through advanced data management and data mining tools.

For students and entrepreneurs who want to learn and test economic interactions activity, a protected and simulated economic environment can be used by using special designed E-Platforms that can function through the concept of gamification. In such a way an online platform for even new startups can be used to better understand economic interaction between entities and its key activities.

Such a tool gives the advantage of engaging in virtual data optimizations and a large spectrum of analysis over tasks and actions that must be taken in parallel in a real social and economic entity through a simulated E-platform environment that gathers in a game or play type interactions of many simulates competitors economic.

## **3. STRUCTURE AND TECHNOLOGY**

Such online Platforms that simulate economic interactions need the following structure as necessary sections and functionalities:

- Database structure design must suite the data flexibility for generating complex reports
- Platform general technical sections:
  - Responsive Web Interface design adaptive for different displays
  - User management with different complex user roles
  - Forms with flexible and versatile design
  - Lists design with multiple filter possibilities
  - Designing internal forms for storing specific simulated Entrepreneurial documents to upload: Setting up the Start-up; Recruiting and hiring employees; Business Plan; Quality Assurance and Marketing; Commercial activities; Research and development; Periodic evaluation of employees; Financial reporting and accounting

- Security modules for preventing IT attacks
- Import / Export data for backup of data
- Multilingual capabilities of the platform

The needed elements of innovation expected impact and transferability potential that must be included in the E-platform are related to the active and joined interoperability among the following elements:

- Connecting start-up accounts to communicate and evaluate each other's uploaded documents
- Filtering information based on accounts roles from within
  - o one start-up
  - o or comparing documents uploaded by multiple start-ups
- Joining users from different countries to work as a team to operate a start-up



[Home](#)

## Game Simulation Valencia - 16 April 2019

[View](#) [Edit](#)

Submitted by [g.garais](#) on Thu, 04/11/2019 - 11:01

This is a Simulations Business Game for Companies that compete other Companies using a Business Model Canvas

### **Date of creation:**

Thursday, April 11, 2019

### **Company for Business Model Canvas:**

[SC Garais Graphics Serv SRL](#)

[SC Aleaz Consult SRL...](#)

[SC Albalact Universal SRL](#)

Figure 1 – E-platform Game Simulation sample

The platform must provide an interactive framework for all users involved in the simulated project on all legal and linguistic peculiarities to all procedures implemented. In this regard adopt a spiral development cycle specific to IT projects with the following steps.

After sizing the number of potential users and identify the hardware infrastructure available the platform administrator references architecture for the client / server application type having following levels. Database level, prior studies showing the use of SQL, followed by the interrogating to be achieved through web programming language interface by assuring low cost of developing the application using Open Source Tools. In the design phase the formats will be described in detail and their relationship will

influence the forming of the relational database system and tools necessary for load processing.

The Database structure has two main data types called: Simulation Business Game and Company for The Business Model Canvas.

Each of the “Simulation Business Game” have many possible “Company for The Business Model Canvas”. Each main structure has specific database fields presented in the next figures.

| LABEL                               | MACHINE NAME                     | FIELD TYPE            | WIDGET                   | OPERATIONS  |
|-------------------------------------|----------------------------------|-----------------------|--------------------------|-------------|
| + Title                             | title                            | Node module element   |                          |             |
| + Body                              | body                             | Long text and summary | Text area with a summary | edit delete |
| + Date of creation                  | field_date_of_creation           | Date                  | Pop-up calendar          | edit delete |
| + Company for Business Model Canvas | field_company_for_business_model | Node reference        | Autocomplete text field  | edit delete |

Figure 2 – Structure of “Simulation Business Game”

The last field in the database has a relationship with the structure of the “Company for The Business Model Canvas” table. In this case each simulation game can have many Companies added for the simulation.

| LABEL                    | MACHINE NAME                 | FIELD TYPE            | WIDGET                   | OPERATIONS  |
|--------------------------|------------------------------|-----------------------|--------------------------|-------------|
| + Company Name           | title                        | Node module element   |                          |             |
| + Description            | body                         | Long text and summary | Text area with a summary | edit delete |
| + Date of creation       | field_fill_date              | Date                  | Pop-up calendar          | edit delete |
| + Members                | field_members                | Field collection      | Embedded                 | edit delete |
| + Key Partners           | field_key_partners           | Field collection      | Embedded                 | edit delete |
| + Key Activities         | field_key_activities         | Field collection      | Embedded                 | edit delete |
| + Key Resources          | field_key_resources          | Field collection      | Embedded                 | edit delete |
| + Value Propositions     | field_value_propositions_    | Field collection      | Embedded                 | edit delete |
| + Customer Relationships | field_customer_relationships | Field collection      | Embedded                 | edit delete |
| + Channels               | field_channels_              | Field collection      | Embedded                 | edit delete |
| + Customer Segments      | field_customer_segments_     | Field collection      | Embedded                 | edit delete |
| + Cost Structure         | field_cost_structure         | Field collection      | Embedded                 | edit delete |
| + Revenue Streams        | field_revenue_streams        | Field collection      | Embedded                 | edit delete |

Figure 3 – Structure of “Company for The Business Model Canvas”

Each of the fields listed in fig 3 can have many individual records. There are types of fields in the table structure called *Field collection*. Each of this type of fields have an independent substructure with specific fields. For each field there can be one ore many records added for the main record. In this case the structure is hierarchical in which each record has one to many relationships with other sub records. Each of the sub structure is presented as follows in the next figures.

The members field type collection has referenced user type which can enter a personal curriculum vitae.

| LABEL         | MACHINE NAME      | FIELD TYPE       | WIDGET       | OPERATIONS  |
|---------------|-------------------|------------------|--------------|-------------|
| + Position    | field_position    | Term reference   | Select list  | edit delete |
| + Member Name | field_member_name | Entity Reference | Autocomplete | edit delete |

Figure 4 – members field type collection

The key partners filed type contains fields for description of partner companies that are in relation with the company that takes part of the simulation.

| LABEL                 | MACHINE NAME                     | FIELD TYPE     | WIDGET                    | OPERATIONS  |
|-----------------------|----------------------------------|----------------|---------------------------|-------------|
| + Company Name        | field_company_name               | Text           | Text field                | edit delete |
| + Type of Key Partner | field_type_of_key_partners       | Term reference | Select list               | edit delete |
| + Details             | field_details_about_the_key_part | Long text      | Text area (multiple rows) | edit delete |
| + Responsible         | field_responsible                | Node reference | Autocomplete text field   | edit delete |

Figure 5 – key partners field type collection

The key activities field type hosts fields for specific activities characterized through title, description and actual dates of happening.

| LABEL            | MACHINE NAME         | FIELD TYPE | WIDGET          | OPERATIONS  |
|------------------|----------------------|------------|-----------------|-------------|
| + Title          | field_title          | Text       | Text field      | edit delete |
| + Description    | field_description    | Text       | Text field      | edit delete |
| + Activity Dates | field_activity_dates | Date       | Pop-up calendar | edit delete |

Figure 6 – key activities field type collection

The key resources field type is structured in independent subfields for the description of the main resources described in the Business Canvas Model.

| LABEL          | MACHINE NAME     | FIELD TYPE     | WIDGET                             | OPERATIONS  |
|----------------|------------------|----------------|------------------------------------|-------------|
| + title        | field_title      | Text           | Text field                         | edit delete |
| + Type         | field_type       | Term reference | Autocomplete term widget (tagging) | edit delete |
| + Quantity     | field_quantity   | Integer        | Text field                         | edit delete |
| + Price / Unit | field_price_unit | Float          | Text field                         | edit delete |

Figure 7 – key resources field type collection

In the Business Model Canvas the value propositions entry must contain the description of added value that will be delivered to the customer through a specific problem is solved.

| LABEL   | MACHINE NAME                     | FIELD TYPE | WIDGET     | OPERATIONS  |
|---|----------------------------------|------------|------------|-------------|
| + Quantitative - price and efficiency                   | field_quantitative_price_and_eff | Text       | Text field | edit delete |
| + Qualitative - overall customer experience and outcome | field_qualitative_overall_custom | Text       | Text field | edit delete |

Figure 8 – value propositions type collection

The Customer relationships field type contains fields for the users in the platform to describe business connections that integrate with the rest of the model.

| LABEL     | MACHINE NAME  | FIELD TYPE     | WIDGET                             | OPERATIONS  |
|-----------|---------------|----------------|------------------------------------|-------------|
| + Type CR | field_type_cr | Term reference | Autocomplete term widget (tagging) | edit delete |
| + Details | field_details | Long text      | Text area (multiple rows)          | edit delete |

Figure 9 – customer relationships type collection

The Channels position in the Business Model Canvas describe the channels through which the customer segments are reached.

| LABEL   | MACHINE NAME      | FIELD TYPE     | WIDGET                    | OPERATIONS  |
|---------|-------------------|----------------|---------------------------|-------------|
| + Phase | field_phase       | Term reference | Select list               | edit delete |
| + Type  | field_channeltype | Term reference | Select list               | edit delete |
| + Get   | field_get_        | Long text      | Text area (multiple rows) | edit delete |
| + Keep  | field_keep        | Long text      | Text area (multiple rows) | edit delete |
| + Grow  | field_grow        | Long text      | Text area (multiple rows) | edit delete |

Figure 10 – Channels type collection

The Customer Segments are described as for whom the values are created and the most important customers from mass and niche market.

| LABEL            | MACHINE NAME         | FIELD TYPE     | WIDGET                    | OPERATIONS  |
|------------------|----------------------|----------------|---------------------------|-------------|
| + Type C Segment | field_type_c_segment | Term reference | Select list               | edit delete |
| + Description CS | field_descriptioncs  | Long text      | Text area (multiple rows) | edit delete |

Figure 11 – Customer segments type collection

The cost structure has the aim of determining the most expensive key resources and key activities. This structure has a type field and a descriptive field in which the simulated company members will add cost fields results like salaries, facilities and variable costs.

| LABEL                 | MACHINE NAME                  | FIELD TYPE     | WIDGET                       | OPERATIONS  |
|-----------------------|-------------------------------|----------------|------------------------------|-------------|
| + Cost Structure Type | field_cost_structure_type     | Term reference | Select list                  | edit delete |
| + Description         | field_description_cost_struct | Long text      | Text area<br>(multiple rows) | edit delete |

Figure 12 – Cost structure type collection

#### 4. FUNCTIONALITIES

Implementation of the system will consist on developing effective software product in accordance with the requirements of the detailed design resulting in functional modules of the system based on the standard Business Model Canvas. In terms of functionalities the platform includes the following modules:

- General registration required to access the private content of the application being used as identification in all activities of users on the platform managed by the system administrator;
- Module for managing of roles through which registered users can assign different permissions in the platform such as tutors, entrepreneurs in simulated enterprises, entrepreneurs and startups simulated enterprise employees. The Module for simulated enterprises and startups will support the general description of the business areas and the associative component, simulated enterprises or start-up managed system;
- The administration of specific activities undertaken by companies aiming start-up simulated and providing access to reference documents in the field, patterns of achievement the business plan and various other documents depending on the specific legislation of each partner. Management module for business recruitment and hiring consultants for simulated enterprises that will support specific activity by providing access to reference documents and templates localized for each partner regarding the evaluation of professional work experience and employment;
- Module for employees and individual projects being used for highlighting activities of each employee of a company or simulated startup by conducting technical-economic documentation in the following areas: production and services, acquisitions, sales, human resources, financial reporting and accounting and research / development;
- A Financial Reporting Module that provides support and access to key reference documents on financial reporting methods and localized examples in line with national partners. Individual assessment module is needed which will centralize the evaluation forms that can be used for each activity, specific reference documents and managing results obtained by the participants in the platform.

SC Alcaz Consult SRL... .

View Edit

Submitted by [g garais](#) on Fri, 04/12/2019 - 14:45

Date of creation: Friday, April 12, 2019 - 14:45

Members:

Position: [Manager](#)

Member [Daniela ZIRRA](#)

Name: [Delete](#) [Edit](#)

Position: [Manager assistant](#)

Member [Eugen Gabriel GARAIS](#)

Name: [Delete](#) [Edit](#)

Position: [Financial Officer](#)

Member [Cristian CHEN](#)

Name: [Delete](#) [Edit](#)

[+ Add](#)

Key Partners:

Company Name: [KoKa Kola](#)

Type of Key Partner: [Buyer-Supplier Relationships](#)

Details: [A long lasting relationship](#)

Responsible: [Cristian CHEN](#)  
[Daniela ZIRRA](#)

[Delete](#) [Edit](#)

Company Name: [Lauritzen Hagebuten](#)

Type of Key Partner: [Strategic Alliances Between Competitors or Non-Competitors](#)

Details: [Strategic Marketing Alliance](#)

[Delete](#) [Edit](#)

[+ Add](#)

Figure 13 – Company snapshot details from the E-Platform

It emphasizes that the platform offers a centralized knowledge management in innovation and entrepreneurship containing reference documents that can be used in specific activities related to enterprise simulated and startups giving also access to located resources according to the national character and specific legislation for each of the users.

4. CONCLUSION

The innovative character of the E-Platform is emphasized through central management of system resources knowledge management providing a fully rating system for individual activity and task of a simulated enterprises and startup with possibility of interaction between entrepreneurs and tutors and providing selective access to documents depending by activity and country in which it operates.



## 5. REFERENCES

- [1] Henrekson, Magnus; Sanandaji, Tino (June 29 2018), Schumpeterian Entrepreneurship in Europe Compared to Other Industrialized Regions, IFN Working Paper No. 1170, 2017, Research Institute of Industrial Economics, Stockholm, Sweden Forthcoming in the *International Review of Entrepreneurship*, <http://www.ifn.se/wfiles/wp/wp1170.pdf>
- [2] Shane, Scott; Locke, Edwin. A.; Collins, Christopher J. (2003), Entrepreneurial motivation, in *Human Resource Management Review*, Vol 13, pp. 257–279, Elsevier, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.681.7239&rep=rep1&type=pdf>
- [3] Wennberg, Karl; Delmar, Frédéric (2011), *Evolutionary Views on Entrepreneurial Processes: Managerial and Policy Implications*, Working Paper 2011: 04, Research Network Debate, Swedish Entrepreneurship Forum, [https://entreprenorskapsforum.se/wp-content/uploads/2013/03/WP\\_04.pdf](https://entreprenorskapsforum.se/wp-content/uploads/2013/03/WP_04.pdf)
- [4] Dorobăț, Carmen Elena (2014), Jean–Baptiste Say: Revolutionary, Entrepreneur, Economist, in *The Quarterly Journal of Austrian Economics*, Vol. 17, No. 1, Spring 2014, pp. 112-116,