

Software Modelling Case Study – EROGamb Project

1.1 Goal Model

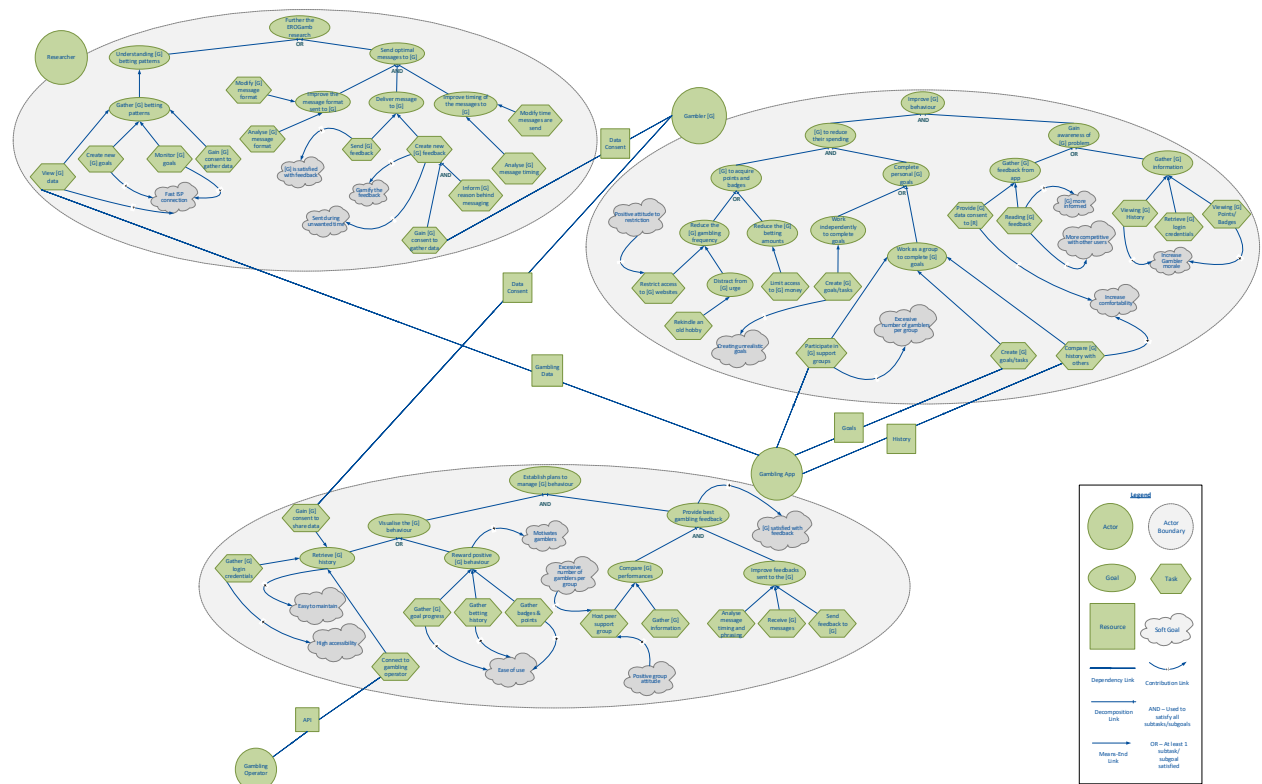


Figure 1: Goal Model of gambling app

Here contains an in-depth goal model showing the relationships between the gambler, gambling application, gambling operators and researchers in the system. Model is portrayed in a tree-like structure for each actor boundary, clearly showing the main goals that each actor wants to achieve. Furthermore, it reveals the dependency links between each actor. This is done to give stakeholders a clear visualisation of how certain goals require certain contributions from other actors for the goal to be completed.

Assumptions

After examining the assignment brief, it became clear that some aspects of the study are deemed ambiguous and undefined. Therefore, assumptions are made during each area of the case. This table is advantageous with providing thorough recognition of each condition in the project.

No.	Assumption	Rationale
1	Therapists to not appear in the system. Only the Researcher provides comments to the Gambler directly.	Therapists don't appear in the assignment brief
2	Compulsory for gamblers to share their data if they want to participate in peer support groups	The requirements specifications states that gamblers agree to share their betting data and work together in groups.
3	Optional for gamblers to share their betting data with researchers to use the application.	Requirements specification doesn't specifically state that the sharing of data is compulsory.

4	In order to be provided with personal feedback from researchers, gamblers will need to share their gambling data.	Following what is stated in the specifications.
5	<i>"Software-assisted mechanisms to assist and reduce gambling problems"</i> is related to the gamification features in the system.	In the specification, it then discussed the badge and points system to it's assumed that both sentences are related.
6	Gambler personal information not included in the betting history.	Requirements specification never states otherwise that personal information is required.
7	Both the application and the researcher examine the gambler's messages to improve the timing and phrasing of future feedbacks.	As stated in the specification, the app should <i>"...get the feedback of the users on the messages sent to them and analyse..."</i> .
8	Researcher using an external application to analyse gambler information and send feedback.	Specification never states that the researcher is using the same app as the gamblers.
9	Sharing of gambling data while participating in peer support groups	Not a manual task, Application automatically shares data with other gamblers.
10	Data consent coverage is more specific to share only relevant data at that moment in time.	Gambler app and Researcher asks for consent for all occasions. One data consent agreement that covers the entire system.
11	Feedback provided by the app and researchers to the gamblers are sent every day .	Specifications describes messages such as <i>"how do you feel today"</i> to be shown.
12	Gamblers are requested to provide consent as soon as they sign in to the app.	Specifications describe many features that rely on data consent provided by the gamblers
13	Researchers are not using the same application that the Gamblers are using. Instead, using a web-based application that connects to the app.	Nothing in the specification notifies that the same application is being used for both applicants.

1.2 Personalised Goal Models

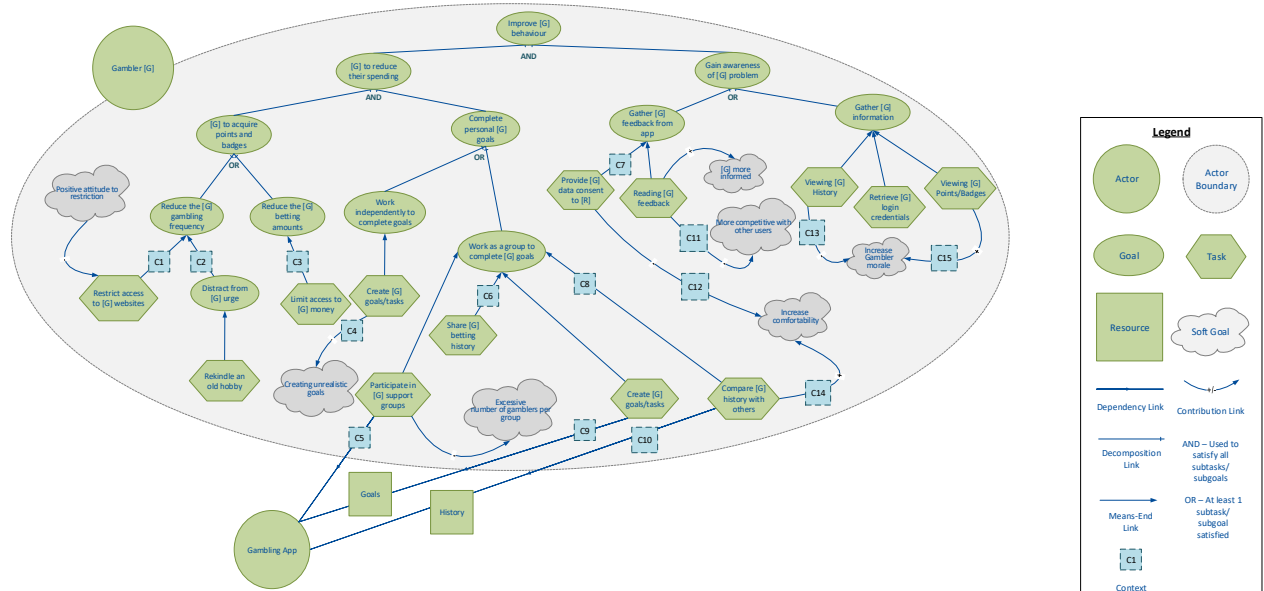


Figure 2: Goal Model – Gambler actor boundary with context

Reveals a more personalised version of the *Figure 1* model previously shown, containing context between specifically chosen links between goals and tasks. This model is concentrating more on the contextual aspects in the gambler actor boundary, which is a necessary model for stakeholders.

Figure 2 provides them a full understanding about each link that is made between tasks, goals and softgoals. Each context has been provided with a unique identifier.

1.2.1 Context Table

Table below contains contexts of specific links shown in Figure 2.

Context ID	Context Type	Variation Points	Description
C1	Required	Means-end	External products will be used in order to restrict access to gambling sites. Product can potentially link with the EROGamb application.
C2	Required	Means-end	Gambler will occupy themselves with external hobbies to distract themselves from gambling.
C3	Activation	Means-end	External features used to limit access to their money. Products can link with the EROGamb application in order to make restrictions more effective.
C4	Quality	Contribution to softgoals	Gamblers creating unrealistic goals will hinder their performance, which ultimately reduces morale. Therefore, having researchers analysing the goals and providing feedback is an important feature.
C5	Activation	Dependency	Dependant on the gambling app for the support groups to be established. Application to make sure that the number of members participating in the support group is not too few/many. Members then notify to the app that they have attended.
C6	Activation	Means-end	Gamblers are required to share their betting history in order to take part in the peer support groups. GDPR consent laws are considered and abided by.
C7	Required	Means-end	Optional for gamblers to share data with the researchers to use the application. However, if they want to receive personal feedback, they will need to share data.
C8	Quality	Means-end	Gamblers to compare their data will improve their chances to completing their goals. Requirement if they want to participate in group sessions.
C9	Activation	Dependency	Dependant on the gambling application for gamblers to create goals/tasks.
C10	Activation	Dependency	Dependant on the gambling application for gamblers to compare their history with other gamblers.
C11	Quality	Contribution to softgoals	Gambler feedback provided is personal and can't be used to compare performances with other gamblers
C12	Quality	Contribution to softgoals	Sharing data with other gamblers with similar addictions as oppose to sharing information with researchers can be a more comfortable experience.
C13	Quality	Contribution to softgoals	Gamblers viewing their betting history could negatively influence them, as it could affect their overall mood.
C14	Quality	Contribution to softgoals	Comparing data history with other gamblers with similar addictions can be a more comfortable experience. As oppose to providing information to the researchers that don't have much sense of gambling understanding.
C15	Quality	Contribution to softgoals	Gamblers viewing their points/badges and what they have achieved on the app can boost their morale.

1.2.2 Risk Model

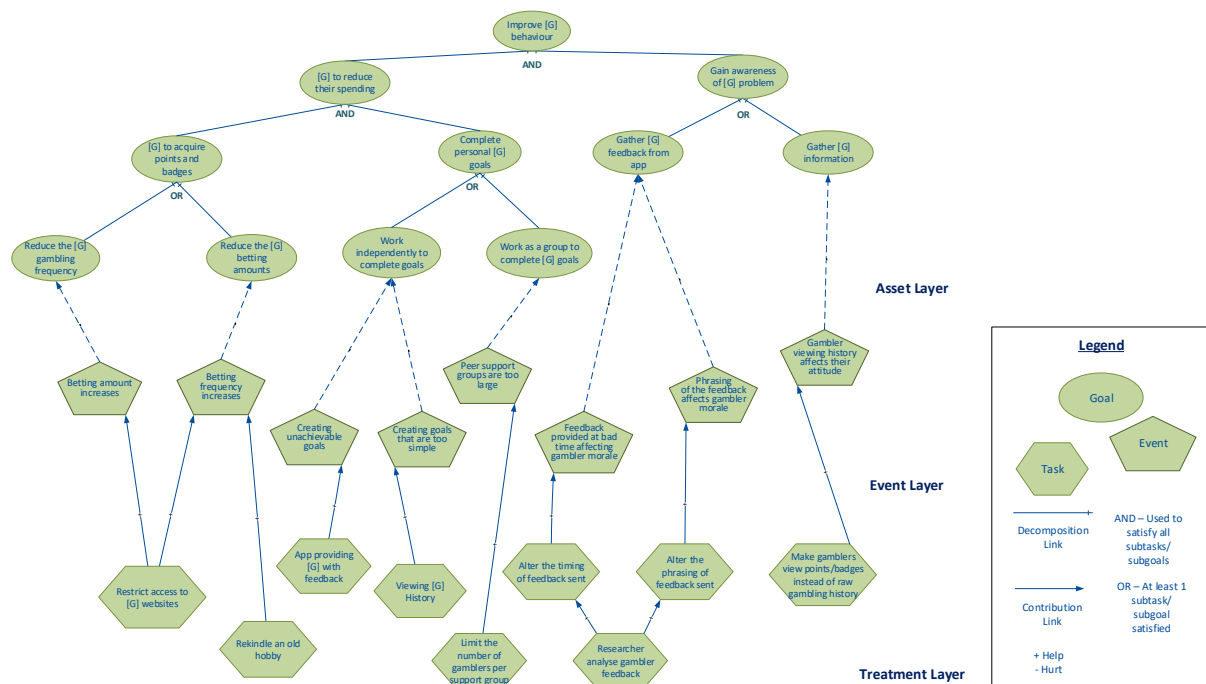


Figure 3: Risk Model of the Gambler actor boundary

Using the models created in Figure 1 and 2, I have developed a risk model that is centred around the gambler actor boundary. The model contains three distinct layers, Asset, Event and Treatment layers. The Asset Layer contains the goals and sub-goals that the gambler wants to achieve while trying to erase their gambling habit. In the Event Layer, it contains specific risks that could potentially affect the goals previously mentioned. Finally, the Treatment Layer reveals solutions to those potential risks involved.

1.3 Goal Modelling Discussion

As shown in Figure 3, with a total of 8 risks found in the gambler actor boundary, it became more evident that there are many areas of the application that the stakeholders should be informed on. Of these risks, most are easily treated with simple solutions that benefit the gambler. One risk found was the size of the peer support groups being established on the app, as too many gamblers will not benefit each as much as expected. So, a solution would be to provide a cap of how many gamblers can participate in a support group.

With the specification having relatively obscure areas, some of the risks have proved to be problematic and can possibly be fixed by the development team. One problematic risk discovered was the gamblers potentially having their attitude affected while viewing their full betting history. This could be solved by giving gamblers restrictions to viewing their whole history and instead use the gamifying features provided in the app.

In terms of improving the quality of the product, one method I would suggest is creating features that will help gamblers reduce the frequency and amount they are betting. At the moment, gamblers will need to seek external help to complete those goals. Therefore, the stakeholders (designers and programmers) can work on implementing features that will distract them from the urge of gambling, or to provide restrictions to gambling sites altogether.

2.1 Use Case Diagram

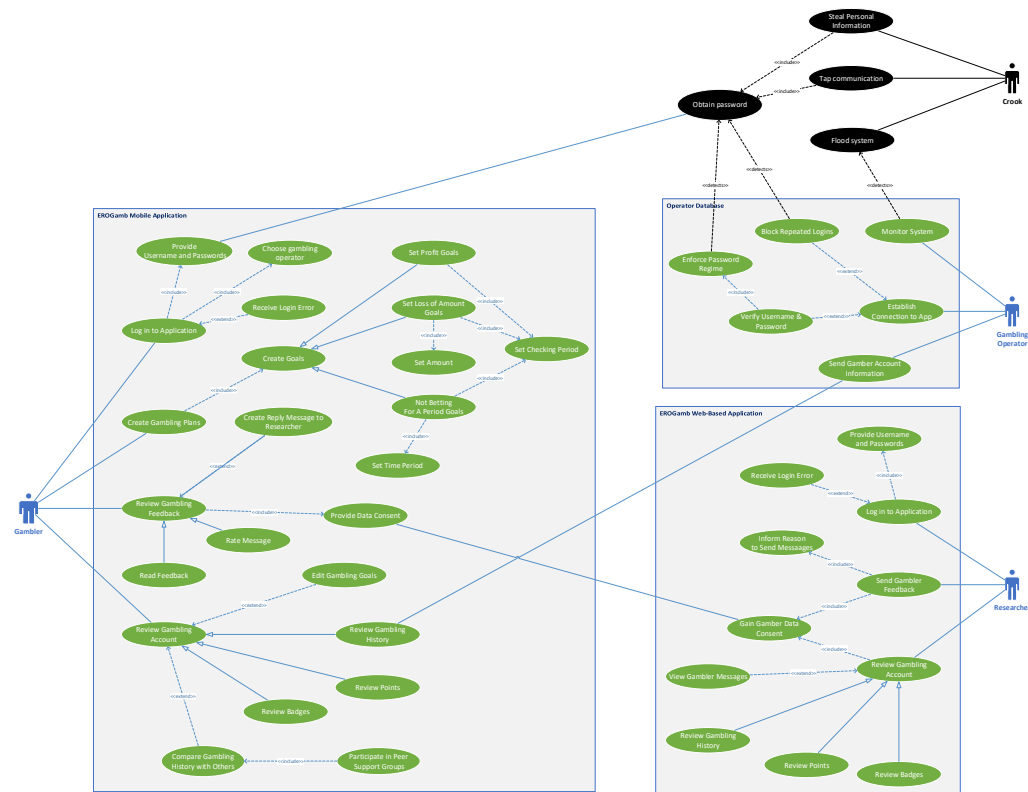


Figure 4: Use Case Diagram

Now that the personalised goal models have been developed, it then came an easier task to produce a use case diagram. In this diagram, it depicts the interactions among the elements in the application. Model contains a primary actors (*gambler*), a supporting actor (*researcher*) an offstage actor (*gambling operator*) and a hostile actor (*crook*). Furthermore, it has a total of three system boundaries, representing the interactions between the actors and the physical system.

2.2 Business Process Model and Notation Diagram

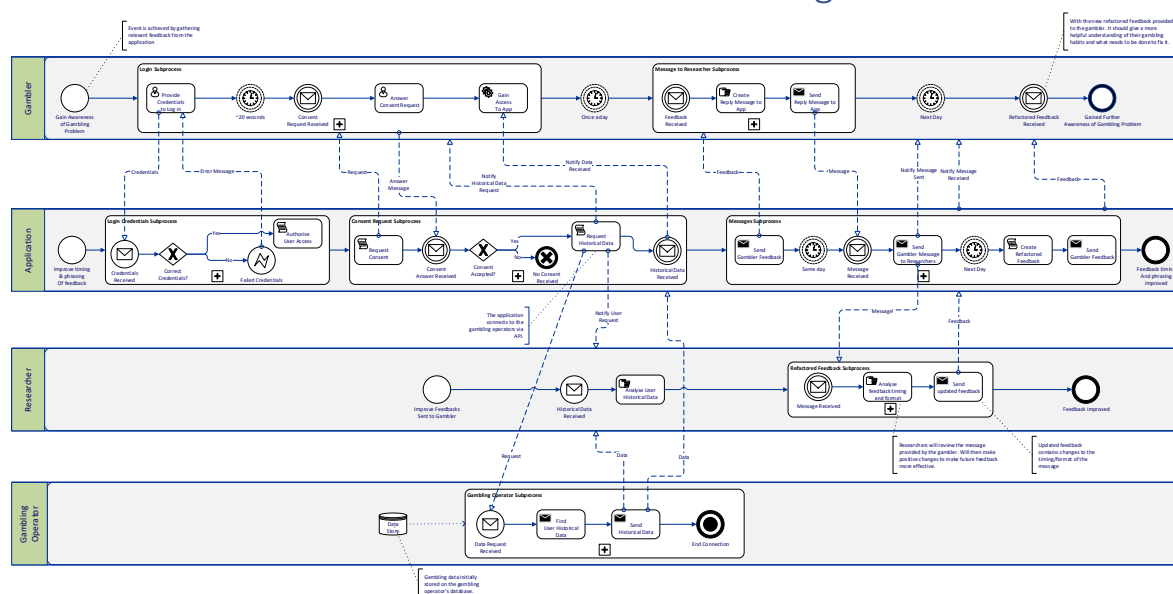


Figure 5: BPMN Diagram

Figure 5 contains a graphical representation of the business activities that takes place in a particular event. More specifically, it's visualising the processes of gamblers sharing their data with researchers, while being provided with helpful feedback from the app and researchers. This is done in order for the gambler to gain further awareness of their gambling problem.

3 Discussion

Risk management describes how the organisation identifies potential risks, assessing all possibilities and threats whilst prioritising which ones to deal with first. It is an important tool to manage effectively each risk before any severe damages occur. Business transparency in all levels of the organisation development process is a requirement. Applying transparency in the organisation allows higher-ranking stakeholders to communicate effectively with all the staffs about important company objectives. Information must be carefully developed so it fits the purpose of the system requirements.

Using the EROGamb system, examples of risks include an increase in competition. This would occur because it is a more common tendency to repeat successful projects instead of producing a brand new one. This risk isn't too severe as workers would tend to gravitate towards more genuine companies.

Another example is the extra scrutiny that can occur when making the business easily visible. When everyone can view your business structure, there can be a tendency to make assumptions without having a full understanding of the project. This can cause stakeholders to have conflicting opinions over how the organisation should proceed with certain development processes. This is a particular severe risk and should be considered before publicly revealing important information to the entire company.

Being fully transparent will have a large effect on everyone working in the organisation. The safe method is to keep all things internal, the bold move is to share it all. It is important to align with members who are fully on board with the philosophy of the organisation. Keeping the right balance in the business can lead to some of the happiest and engaging workplaces around.

Word Count: 1772 *(Includes Tables)*