Requirements document
M.S.c Informatics
Amazonia Serious Game

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1 Introduction

Within the framework of our project of first year of Master degree in Informatics — which consists in 10 european credits (ECTS) —, we propose to take part in the design process of a global project about **Amazonia**. The aims of this project are numerous, but the first one is **collaboration at a distance**, because the project will be advised by Pr. *Stefano A. Cerri* and a PhD student *Ines DiLoreto* at *LIRMM* in *Montpellier*, but also by Dr. *Tiago Garcia de Senna Carneiro*, researcher in *Ouro Preto* (Brazil). This collaboration will contribute to design a serious game, which could be seen as an educational game to sensitize people to what is happening everyday in Amazone. Moreover, the game will have to simulate the **behaviors** of the main actors responsible for **deforestation** in Amazonia, while letting players evolve with their liking.

2 Objectives, needs and constraints

Actually, we consider *Tiago Garcia de Senna Carneiro* as our client for the needs and the constraints of this project. That is the reason why we really needed a first video conference with him before to be sure to write the right requirements document. This meeting took place on February 4th (a replay of this first meeting is available here : http://fm.ea-tel.eu/fm/e41e22-16142).

The mission is to understand by simulation how brazilian people think about Amazonia occupation, having targets for the potential users at three different levels : local (Amazonian people), national (Brazilian people) and international. There are three major objectives too :

- As we said, collaboration is very important within the participatory design process, especially if the customer works in Brazil while we are in France. To communicate with our client and between us, we will use asynchronous and synchronous communication tools such as *FlashMeeting* (for the video conferences) and *Agora GSD* (for the sharing desktop part). The collaboration process will take an important place in the gameplay too. Indeed, if players want to communicate in order to cooperate, or haggle over their lands and/or services, etc...
- The second objective is to make a list of the main actors who influence the deforestation process in Amazonia. We will be helped by *Tiago*, but also by an anthropologist of his. These actors have different behaviors, and their own way to approach the resources of the forest, respecting it or not, being honest or not... But any action carried out will have a positive or negative consequence on the evolution of the game. So we will try to make a list of rules with ACTORS / ACTIONS / CONSEQUENCES. For instance :
  - The government decides to build a new road, which implies the destruction of a few trees.

  - A farmer sees a new road and decides to install a new farm, which implies the destruction of additional trees.
  - A drug trafficker finds a farm already built accessible with a perfect road, he decides to kill the farmer and take the farm.

- The third objective is to find a way to make those behaviors designable, and to integrate them in a game that we will try to design. This game would allow players to incarnate a kind of character with its own rules, but likely to evolve according to his goodwill.

A first view of objectives two and three are already available in a diagram visibled in the appendix.

3 Possible solution(s)

The solution considered consists in three linked parts about the game design.

- Modeling characters' behavior : the player can choose a character among a list. Every PC (Player Character) will have specific soft and hard skills. The player will obviously be able to make evolve a character apart from his usual behaviors.
  Modeling NPC behavior could be great. To add interesting interactions we could insert NPCs (Non Player Characters) who would evolve in the game and randomly trigger events (we need to implement rules of events for each NPC). This would lengthen the life time of the gameplay because every game session would be different, depending on the events triggered.

- Modeling land changes : studies made by biologists who work with *Tiago* would be very useful. This part would use a database that we could design (using a system possibly based on rules of evolution) and we would have to design/program agents for the modelisation of the environment evolutions.

- Modeling relationships : the modelisation of socialization will be at two levels. First, players could decide to collaborate in the game for making more money which could be very interesting from the gameplay point of view. Secondly, players could use communication tools during the game (synchronous and/or asynchronous). Moreover, interactions between users in the game is obvious, because players can influence the way other players evolve.

For the technical part, we have decided that the graphical part of the game will be in 2D, or probably in 3D isometric. *Flash* was evoked as a possible development platform, almost for the ease of distribution (internet) and compatibility (the only need is a web browser). It will be necessary for us to get more information about this technology. We will also try to find a game engine based on it not to reinvent the wheel.

4 Organization

4.1 Working time organization

The calendar is very short, so we have to be very well organized and not to lose time. Because a Gantt diagram is better than words, we made one to explain more precisely our action plan.

4.2 Human organization

The role of each member of the group has not been really determined yet. But the role of *Tiago* in Brazil will be very important to give us the real point of view of amazonian people, because he knows them and also works with other researchers who study them. Moreover *Ines* is very interested and qualified in the game design, so she will be our guide in this field.

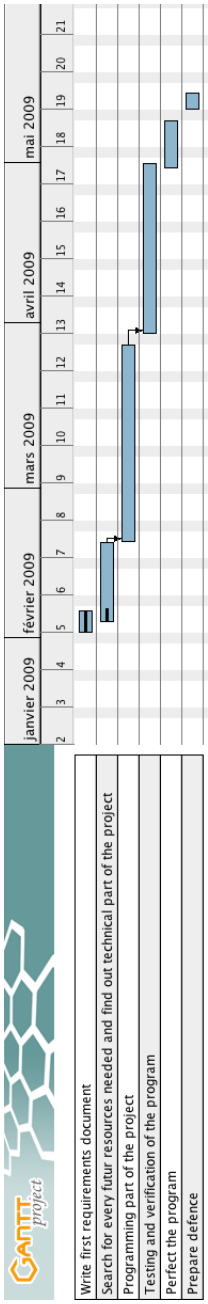

Figure 1: Gantt diagram of our project

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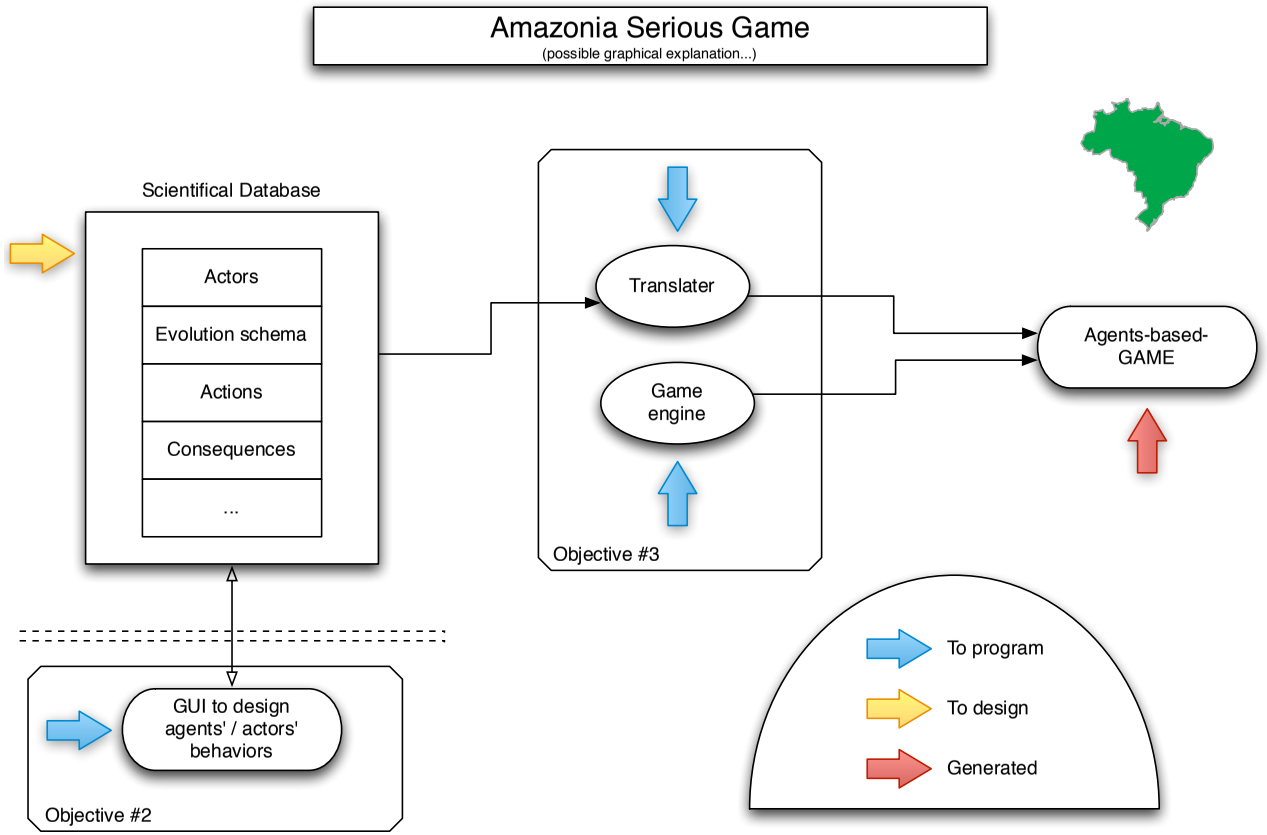
Amazonia Serious Game
(possible graphical explanation...)
Scientifical Database
Actors
Evolution schema
Actions
Consequences
...
Translater
Game engine
Objective #3
Agents-based-GAME
GUI to design agents' / actors' behaviors
Objective #2
To program
To design
Generated