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## **WP6 - D6.1 - Functional and non-functional requirements**

### **LEARN2LEAD (L2Lead)**

Action LEONARDO DA VINCI

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## **D6.1 - Functional and non-functional requirements**

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## **Abstract**

This document specifies the functional and non-functional requirements to be met by the learn2lead software, taking account of the needs of different categories of user such as learners, tutors and facilitators. Functional requirements specify functions to be performed by the software such as allowing the user to perform a specific action. Non-functional specifications specify other aspects such as the number of simultaneous users to be supported, the technical requirements of the game.

## Functional requirements

Learn2Lead is essentially a puzzle game. Therefore, it seems appropriate to adopt the type of teaching structures and playful themes that are prevalent in puzzle games. As puzzle games typically teach players to perform complex tasks and understand complex systems, but do so in a very easy to understand manner. Each necessary new skill is introduced clearly and players are allowed to experiment with using that skill in easier levels before applying it to more difficult levels.

In each level of the Learn2Lead game there is an identical game structure and game mechanics. This is consistent with how puzzle games work. This core structure will be varied across levels by simply changing the values of a number of relevant variables, such as the challenges facing the player, the resources at their disposal and the complexity of the team of followers.

The task of gaining success will become more complex as levels increase, primarily through the increasing complexity of the connectionist model of follower behaviour that will underlie the different levels. As the model becomes more complex across levels, the skill of analysing the situation and performing the appropriate behaviour will require better knowledge of the Full Range Leadership Model. Thus, as players progress across levels they will be presented with incrementally increasing levels of difficulty and more precise examinations of their knowledge of the underlying Full Range Leadership Model.

1. Each level involve the presentation of 2 or 3 initial short 'bonus' levels.
2. These bonus levels are followed by a longer 'full' level.
3. Within each level, the action is organised into a turn structure so that players actions can be recorded and reviewed in a very controlled manner.
4. Within each level and each bonus level, challenges will be posed, which the player must solve through actions deemed appropriate according to the FRL model.
5. Players have a finite number of actions available to them per each turn.
6. These actions are posed in the form of words, so that players will focus on the content of the sentences rather than simply looking at any appropriate symbols or numbers.

In each level the player will first be presented with a scenario describing the challenges posed in that level. They also have some resources at their disposal. They will then take a limited number of actions. When these actions have been taken, they will press an 'end turn' button. At this point, the connectionist model will take the players' actions as input and calculate the consequences of those actions. This basic structure will be implemented across all game levels, including bonus levels.

In the learn2lead game, the action will not be live. Rather, as mentioned above,

the game will be based on a turn structure. This is necessary due to the constraint that the game must be playable both asynchronously online and standalone.

It allows players sufficient time to contemplate the consequences of actions when taking complex decisions. Crucially, the turn structure also allows for the game state to provide very immediate and specific feedback to the player. Using this type of structure, players' actions can be recorded and reviewed later in a very controlled manner either automatically or in consultation with a tutor.

In each level of the learn2Lead game the player will be presented with challenges and will have a number of options of how to solve those challenges. The efficiency with which the player solves the challenges presented will determine their score, and whether they move on to the next level. Specifically, in each level the player will be presented with a number of tasks, each of which must be completed within a specified number of turns. Each task will take a certain amount of energy or effort in order to complete.

There is a number of actions available to players at each turn. Some actions may take more than one day, while others may take less time. Thus, the player must choose a balance between the number of actions taken and the usefulness of those actions.

Some actions may have a good short-term impact (transactional leadership) while others may have a poor short term impact but good long term impact (transformational leadership). In order to achieve this balance, it will be important to ensure a method for followers' ability to increase over time as more and more transformational activities are engaged in. Conversely, transactional activities should boost short-term motivation, but have very little long-term effect.

Each level will have 2 or 3 short bonus levels that will be presented before the main game level. The bonus levels will each be designed for a very small but specific purpose. Function of short bonus levels are to emphasise the new challenges presented by the new level, to ensure that skills are generalised to a number of different setting including the players personal life, and to require the performance of specific skills/behaviours that have been deemed necessary.

The tutor or the facilitator can reviewing the game in a specific way, and he/she will be able to better analyze the performance of the players and to do debriefing.

In the online feature there will be the possibility to compare players' outcomes in the same game scenario.

## **Non-functional requirements**

The learn2lead game provide a standalone game in which the player is able to perform the entire game, with in-game feedbacks and learning outcomes, in free-session and in a session designed and managed by a tutor or a facilitator.

The game is designed to be asynchronously for an easiest use. In this way the tutor can manage all his/her players' results with the possibility to give them a very punctual debriefing report.

The online module of the learn2lead game is organized as a dashboard that shows and compares all the players' outcomes achieved playing it.

In this feature there is the possibility for the player to match his/her experience of the game with other players' experiences to implicitly understand his/her way to act in the game and the possible other ways to play in a so dynamical system of game mechanics.

## Technical Requirements

Check that your system meets the minimum technical requirements:

7. Operating system: Windows: XP SP2 or later; Mac OS X: Intel CPU & "Leopard" 10.5 or later
8. Cpu: 1,5 GHz.
9. Ram 512 MB.
10. 3D video card:  $\geq 128$  MB video memo
11. All browsers, including IE, Firefox, Safari, and Chrome, among others.

For a perfect use we recommend the following configuration:

1. Windows 7 or Mac OS X "Snow Leopard"
2. Cpu: 2,4 GHz
3. RAM: 2048 MB.
4. 3D video card: 256 MB video memory.
5. Firefox