



**An Immersive Games Approach to Skills Development in
Human Services (Digital_Bridges)**

**Requirements Specification for the Digital_Bridges Platform
(Deliverable O1-A1)**

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Requirements Specification for the Digital_Bridges Platform (Deliverable O1-A1)

This document is the requirements specification for the platform that will be developed for the Digital_Bridges project under Phase O1: Pedagogy & Curriculum for Simulated Practice Learning for Social Workers who Interact with Vulnerable People. The aim of the Digital_Bridges project is to develop an immersive 3D virtual environment, built on gaming architecture and driven by emotional AI, to provide a safe and readily accessible environment where Higher Education and VET students and professional social workers who deal with vulnerable people (nursery children in this project) can learn by interacting with NPCs (Non-Player Characters) in a simulation of a real world service. Trainees will engage with simulations and be required to navigate their way through choices to arrive at the best resolution. Each simulation can be replayed and evaluated by the trainer/mentor and the trainee can use the same simulation as many times as required. We see this as offering a measurable, controlled environment where learners can gain a command of the basics of the job role they are training for with minimal resource requirements and zero risk to the public, thus providing a sound basis from which to progress to real work practice placement.

It is envisaged that the Digital_Bridges platform will consist (at a logical level if not at a physical level), of two main components:

- a 3D game environment
- a more traditional virtual learning environment (VLE) such as Moodle.

The VLE will store traditional learning content and will run the game, passing data to the game (such as username) and storing data received from the game (such as score).

High Level Objectives

The high level objectives of the simulated practice environment are in line with a set of specified standards that have generic applicability across children's development and learning and which can therefore be matched to a range of curricula across Europe. In this project the practice area that the simulated practice game is focused on is pre-school service and education and includes the following standards:

- Promote the development of children and young people.
- Plan and organise environments for children.
- Promote health and physical development of children.
- Promote children's well-being and resilience.
- Support early interventions for the benefit of children and families.
- Promote children's early learning in a school environment.
- Engage with families in ways that encourage them to be involved with their children's learning and development.
- Promote healthy living for children and families.

Other stakeholder requirements that have emerged from an initial analysis are provided in Appendix A.

Pedagogy and Curriculum

The game will support the pedagogy and curriculum defined in O1-A2 - Develop Pedagogy for Simulated Practice Learning for Social Workers who Interact with Vulnerable People and O1-A3 - Develop Curriculum for Simulated Practice Learning for Social Workers who Interact with Vulnerable People.

The Game

Mini-Scenarios and Learning Outcomes

The game has to be capable of running a number of mini-scenarios with associated learning outcomes. While it is envisaged that some mini-scenarios will be generic and be applicable to all partner countries, some mini-scenarios will be adapted to suit customs and practices in partner countries. Learning outcomes for some of the mini-scenarios include:

a) Communication

- know how to adapt the way you communicate
- understand ways in which children may use play to communicate
- know how to support children to cope with their feelings
- know how to communicate properly with parents/carers

b) Well-being and Resilience

- understand ways to encourage emotional well-being, confidence and resilience
- understand ways of encouraging children to make choices, whilst at the same time making them aware of how their actions can affect others
- know how to adapt your practice to ensure that all children, can take part equally

c) Health and Safety

- understand different kinds of incidents and emergencies that might arise in a childcare setting
- understand how to support children during an emergency
- understand how to summon assistance appropriate to the emergency.

Game Environment and Gameplay

From the stakeholder analysis, a list of general activities was formulated for the 3D practice learning environment, which focuses on a session at a nursery (eg. from 8.30 am to 12.00pm). This includes children arriving with parents/carers, taking part in a number of activities and being collected by a parent/carer. Activities to be modelled may include:

- painting area – table top painting, painting easel;
- messy play area – sand tray, water tray;
- activity table – glueing, modelling, clay and play dough;
- construction area;
- home corner;

- role play area;
- reading corner;
- music area;
- imaginative play – puppet theatre;
- investigation area;
- activity table – board games, jigsaw puzzles, small world play;
- snack preparation area - plus chairs and tables for children to sit at to eat snack; and a computer area.

The environment will be populated with a number of children and one or more practitioners/student practitioners.

The gameplay will involve the player taking on the role of a childhood practitioner and navigating the 3D nursery environment to deal with the some of the scenarios running concurrently to give a realistic representation of what childhood practitioners have to cope with their professions. The childhood practitioners will be able to replay scenarios and be assessed on the handling of scenarios and the outcomes of those scenarios in a risk free environment.

Beyond Mini-Scenarios and Learning Outcomes

Even when there are no mini-scenarios running, the game must still provide opportunities that support learning. This could include activities such as:

- talking to the children;
- reading to the children;
- replenishing supplies that have run out (eg. paints, paper).

Emotional AI

One of the key requirements of the simulated practice environment is the realistic depiction of emotions within the game characters. Depicting emotions allow players to add layers of contextual meaning to the information they observe, thereby increasing the complexity and sophistication of these observations, as happens in the real world. This allows game characters to convey additional information such as mood that can significantly shape the nature of the gameplay. Affective features such as facial expressions, gestures, movements, gazes, posture and behaviour all deliver emotional cues that extend more direct communication channels such as speech and text.

Speech

NPCs (children, parents/carers and practitioners in the game) should be able to speak with lip synching supported, but for those environments where sound is inappropriate, subtitles should be provided. Lip synching need only be provided for English speech, however, subtitles must be supported in all the partner languages (English, Italian, Bulgarian, Finnish and Lithuanian).

Journal

The game has to provide a journaling facility that allows a player to make notes during gameplay. This will allow players to record observations or to record reasons for some of the decisions they have made in the game. The journal should be available to the player after the game has finished.

Additional Game Requirements

1. The game has to be playable by learners with a low technology capability.
2. The game will have a tutorial level that will allow the players/practitioners to familiarise themselves with the game controls.
3. The environment should support multiplayer and even for scenarios that will be played by a single individual, the environment should allow a facilitator to observe the learner's progress during the game and thus should also have 'multiplayer' support.
4. The game should run on the Web but should also have the capability to run on other platforms (eg. PC/Mac, mobile and games console).
5. The game should include user tracking. This might be done with SCORM 2.1 or just by keeping track of "milestones" users reach like completing a mini game or passing a small test in each of the episodes of the narrative.
6. The game should support both in-game and out-of-game assessment. Players should be provided with feedback during the game and should be given detailed feedback on completion of the game.
7. All resources and the game have to be available in all partner languages (English, Italian, Bulgarian, Finnish and Lithuanian).

The Virtual Learning Environment (VLE)

As noted at the start, the Digital_Bridges platform will consist of a VLE as well as the 3D simulated practice environment. The VLE will be the main entry point for learners and will also host the teacher training course. As with the game, the platform and all resources in the platform have to be available in all partner languages (English, Italian, Bulgarian, Finnish and Lithuanian).

The VLE must support, as a minimum, the following features:

- **Single sign-on**, so that the learner signs on once to the VLE and can also access the game without signing on to the game separately.
- **Courses**, at least one for the teacher training and one for the pilot that will launch the game. Courses must be capable of storing learning materials (such a PDF documents) and Forums, to support student/teacher discussions.
- **Students and Enrolling** Students in Courses.
- **Scores**, to record the learner's progress through the game (and other forms of assessment that exists).



- **Open Badges** (optional), that teachers and students can collect on completion of certain activities.

Appendix A – Initial Stakeholder Requirements

Stakeholder requirements will initially be based upon three categories of (partly overlapping) requirements; i.e. one for learners, one for teacher/facilitators and one for learning organisations. However these initial requirements may change if subsequent stakeholder requirements analysis and surveys indicate additional or supplementary requirements.

Learners:

Access & software:

- web-access preferably without installation
- data should be saved between sessions

Workload:

- Flexible

Teachers/facilitators:

Access & software:

- web-access preferably without installation
- data should be saved between sessions

Data:

- Full & flexible logging with standard reports and possibilities to adjust
- Data link to VLE locally in use

Adaptation

- Flexible to adjust to level of student (setting the level; selecting cases, etc.)

Integration:

- Flexible to adjust to curriculum demands

Workload:

- Flexible

Learning organisations:

Access & software:

- manage their own learners, see their progress and grades
- run the game on medium-spec PCs (although this does not mean that the graphics/functionality will be exactly the same as on high-spec PCs).