Replay Project

D4.1
Socio-Organisational & Ethical Assessment Methodology Framework

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Table of Contents

1.-Executive Summary

In this document we set out the framework we will be using to develop, launch and run the socio-organisational and ethical impact assessment of the REPLAY game.

We begin with an analysis of current approaches to the assessment of technology, with particular reference to work done in the area of anti-social behaviour and with a focus on the way in which assessments are run with children. This provides a context and a baseline for our framework.

We then consider the scope of the assessment – what it is, specifically, we are aiming to assess and what questions we are seeking to answer. This section of the document addresses specific definitions around what we mean by 'socio-organisational and ethical'.

Drawing on the baseline presented, and the delineation of the scope described, we then present our chosen methodology – that is how we propose to develop the specific indicators we need to assess, how these indicators will be implemented and how we propose to analyse the results.

Finally, in our Conclusions section, we present the relationship this document has to the other elements of WP4 and, crucially, the interface between the work in WP4 and that which is being carried out in WP3.

2.-Context: Analysis of current approaches

2.1.- Overview

In order to inform the development of our own methodology, we first undertook an extensive study of current approaches to the impact assessment of technology, specifically with reference to its use with young people. This provides us with a research baseline from which we can develop a coherent and methodologically sound framework that will achieve the objectives for WP4 as set out on the Description of Work.

In this section, we first present the methods used to develop this baseline. Then we discuss the specific findings with reference to studies, primary evidence and other relevant material. Finally, we draw some conclusions that will feed into the framework described later in this document.

It is, perhaps, important to point out that during our extensive research, we uncovered very little in terms of an assessment methodology or approach that was entirely comparable to what we are proposing as part of Project REPLAY. As there are no products currently on the market that use gaming technology to address behavioural problems in the way REPLAY does, there are subsequently no accompanying assessment approaches. Therefore, out research has focussed on a number of complimentary areas that will help in informing our approach.

2.2.- Methods Used

In determining what it is we are aiming to assess we are also looking to establish how we are going to assess it, that is to say developing a methodology for capturing and interpreting the secondary user input into our impact assessment. To that end a study of relevant methodologies employed by education experts was made with a view to adaptation to the novel environment of Replay. Given the difficulty of establishing a robust methodology for such a novel project as Replay it wasn't possible to find evidence of and compare methodologies developed for carrying out socio-organisational and ethical impact studies (as defined in gaming projects specifically addressing anti-social behaviour). Therefore, the research carried out in part went into developing an understanding of the socio-organisational and ethical impact of ICT though analysing methodologies for how such assessments are performed within the context of an educational institution. As the impact of the REPLAY technology on individual primary users will be assessed by the methodology developed in WP3, understanding the impact of technology and games on chosen application environments and secondary users rather than directly on children was considered paramount. In terms of socio-organisational considerations then, the impact of technology on children was only considered where the potential to have a

direct, negative impact on secondary users (teachers) and chosen application environments (schools).

Approaches to constructing indicators in relation to ICT were studied, adapted and incorporated into the methodology for impact assessment explained in part 5 of this deliverable. The methodology outlined in the UNESCO guidance document Developing and Using Indicators of ICT Use in Education[1] describes a step by step process for preparing a consolidated set of ICT indicators in education as well as describing the correct use of both quantitative and qualitative data in impact assessments. The School Technology and Readiness Chart[2] a self assessment tool used by many institutions in the US for the tool to be built as part of work carried out in D4.3 of this work package. The School Technology Needs Assessment (STNA)[3] produced by the SERVE Centre at the University of North Carolina was also studied within this context.

Our research into this baseline also focused on studies and approaches that would help us understand the socio-organisational impact of technology in a school setting. In order not to duplicate the analysis developed in WP3, we focussed on the specific requirements ICT imposes on both secondary users and their organisations with a view to better understanding the conditions needed for effective deployment of the REPLAY game. In analysing these requirements we were interested in both organisational factors such as the logistical needs of schools when preparing to institute the technology as well as social factors such as the motivation required of those teachers who would perform a secondary user role. Beyond this it was also necessary to fully understand the ethical implications of deploying such technology in a school setting and the subsequent demands placed upon those institutions using the Replay technology in areas such as parental consent/consultation and data protection. The intention was to develop an holistic understanding of how to accurately measure these requirements.

Due to the novel nature of the Replay project, it proved very difficult to find evidence of a directly related baseline, namely the socio-organisational and ethical impact assessment outlined above directly related to the use of gaming technology for addressing anti-social

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[1] *Developing and Using Indicators of ICT Use in Education,* compiled and published by UNESCO Asia and Pacific Regional Bureau of Education, 2003 (IPS/03/OS/152 – 1500), http://www.unescobkk.org

2 CEO Forum – School Technology and Readiness Chart, Produced by CEO Forum on Education and Technology, CEO Forum website (http://www.ceoforum.org/)

[3] *The School Technology Needs Assessment (STNA)*, SERVE – Improving learning through Research & Development website, http://www.serve.org/

behaviour. Therefore, an extensive literature survey was carried out on the measurement of requirements (outlined above) imposed on educational institutions by the use of ICT in the first instance, with the addition of a limited number of studies found into the impact of the use of gaming technology in a school environment. Teacher Professional ICT Attributes: A Framework[4] gave a great insight into the training and motivational needs for teachers in relation to ICT, The Motivational Effect of ICT on Pupils[5] provided insight into teachers' fears around the use of resources and expectations created by the use of ICT.

Technology Integration Progress Gauge provided examples of key socio-organisational indicators as used in educational institutions[6], Academic computing at Malaysian colleges[7] offered key objectives on measuring ICT Infrastructure and Institutional ICT Support. Computer games, schools, and young people[8] by Ben Williamson at Futurelab provided a key study of the logistical dilemmas and associated indicators around the use of computer games in schools.

Having consulted a number of the relevant impact assessment studies, tools and methodologies available to practitioners in this area, the analysis moved on to gathering evidence on how these approaches are put into practice. At this stage of the research a number of experts who had been directly involved in addressing anti-social behaviour were identified and consulted directly through the running of surveys and where possible telephone interviews. For this purpose an impact questionnaire was produced and distributed to record some of the key learnings from these projects. The Youth Offenders Inclusion Gaming Project[9] run at the Sheffield West City Learning Centre and the Lifting the Weight Project run by the Geese Theatre Company provided some useful insight.

Further to this it was also necessary to understand the effect that instituting REPLAY technology would have on the primary user, the test subject, by consulting experts in the field. Our study does not relate to the REPLAY platform's playability in terms of motivation for the users while

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[4] Newhouse Paul, Trinidad Sue, Clarkson Barney, *Teacher Professional ICT Attributes A Framework,* Published by Specialist Educational Services Perth, Western Australia, 2002, Department of Education and Training website - http://www.det.wa.edu.au/

[5] Passey Don and Rogers Colin, *The Motivational Effect of ICT on Pupils,* University of Lancaster 2004, ISBN 1 84478 204 2, Published on Department for children, schools and families website, http://www.dcsf.gov.uk/

[6] *Technology Integration Progress Gauge,* SERVE – Improving learning through Research & Development website, http://www.serve.org/

[7] *Mokhtar, S., Alias, R., & Abdul Rahman, A. (2007, June 13). Academic computing at Malaysian colleges. International Journal of Education and Development using ICT [Online], 3(2). Available: http://ijedict.dec.uwi.edu/viewarticle.php?id=312.*

[8] Williamson Ben, *Computer games, schools, and young people,* 2009, Futurelab *website (www.futurelab.org.uk)*
9 Telephone Interview with Alex Jones of the Youth Offenders Inclusion Gaming Project, on 14/5/09

playing the game and the possible difficulties that may arise during the testing procedure or an analysis of the preventative and educational worth as this is addressed in WP3. Rather we focus on issues related to how participation in a REPLAY session would impact upon the normal educational timetable and curriculum of a test subject. It needs to be stressed however, that this research was gathered through consultation of relevant experts and not through the involvement of young people (the primary user and test subject).

In order to fully gauge the possible ethical impact of the Replay project a number of areas were researched. Concerns related to data protection, proportionality of data collection and access to data were considered as well. A study of relevant EU directives and the policy and findings of relate projects were studied.

2.3.- Key Findings of the Research

The key findings for the baseline according to the research carried out above are divided between relevant methodologies for impact assessment as laid out in Section 5 and a study of broad assessment objectives to inform the preparation of the assessment handbook to be produced in D4.2 (an overview of which can be seen in Section 4).

In this section we will present a breakdown of some of the key approaches to and methodologies for preparing impact assessments, considered most relevant to the needs of the REPLAY project.

2.3.1   Methodology:

As the basic building block for the impact assessment methodology to be carried out in this deliverable are indicators, it seems logical to begin with a clarification of what constitutes a successful indicator. Some authors insist that indicators in order to record information accurately must be something that is quantifiable, however, others take a much wider view, and cite the importance of descriptive statements within the scope of indicators. Mokhtar, Alias & Rahman cite the latter view as stated by the *International Standards Organisation* which defines a performance indicator as "a numerical, symbolic or verbal expression derived from statistics and data that characterises the performance of a service or facility" (International Standards

Organisation, 1998)[10]. Indicators are refined through the use of rubrics, which "are sets of categories that define and describe the important components of the areas being assessed. Each category contains a gradation of performance levels with a score assigned to each level and a clear description of what criteria need to be met to attain the score at each level."[11]

UNESCO has developed a methodology to develop indicators which help the user to build a clear set of assessment objectives and afterwards collect data in an accurate and faithful way as well as allowing for the measurement of different degrees of compliance with assessment objectives, set out as a rubric. The methodology sets out a clear step by step process concerning the formation of indicators with a particular emphasis on developing and assessing trial indicators with external stakeholders to ensure high face validity. High face validity in ensuring that an indicator is intuitively understood, helps to ensure that assessment data sets are not the result of end users providing different interpretations of an ambiguous indicator. The same methodology outlines a clear set of criteria based on a proper mix of quantitative and qualitative, with objectivity. Qualitative measures have value as long as the indicator is "clearly and consistently defined".[12]

UNESCO encourages the use of a variety of methods for collecting data through response to predetermined indicators. As well as the use of standard survey questionnaires and telephone interviews, the report advocates the use of internet-based surveys as an efficient way of collecting data from institutions where a number of stakeholders are to be consulted. Logically, where only one stakeholder within an institution is to be consulted this is an inefficient way of collecting indicators. Internet-based surveys can be placed internally on an institutions website, where it can easily be accessed by all relevant teaching and administrative staff and data collection coordinated by a head teacher or senior specialist. Furthermore, data entered into a web based survey can be automatically uploaded into a managed central server system. However, this process is largely dependent on the coordination efforts of certain key staff, who need to allocate time to carry out this role.

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[10] Mokhtar, S., Alias, R., & Abdul Rahman, A. (2007, June 13). Academic computing at Malaysian colleges. International Journal of Education and Development using ICT [Online], 3(2). Available: http://ijedict.dec.uwi.edu/viewarticle.php?id=312.

[11] Mokhtar, S., Alias, R., & Abdul Rahman, A. (2007, June 13). Academic computing at Malaysian colleges. International Journal of Education and Development using ICT [Online], 3(2). Available: http://ijedict.dec.uwi.edu/viewarticle.php?id=312.

[12] *Developing and Using Indicators of ICT Use in Education,* compiled and published by UNESCO Asia and Pacific Regional Bureau of Education, 2003 (IPS/03/OS/152 – 1500), http://www.unescobkk.org

The CEO Forum on Education & Technology has developed two School Technology & Readiness (STaR) Charts, which provide an holistic assessment of an "institution's level of readiness in using technology". As well as evaluating the capacity of a school to successfully utilise technology, this report also helps schools to develop "target areas" (p.17)[13] for making improvements and readjustments based on data sourced by a set of indicators that are sufficiently objective to be used by any school. The Charts cover a rubric for the technological capabilities of a school and the level of professional development in teaching and administrative staff as well as consultation of parents.[14] Although, the indicators that will be produced in D4.2 will be more focussed in terms of the use of technology, the assessment of end users' readiness will be no less thorough and all-encompassing. The Star chart system has been tried and tested across the US and has proven a reliable and practical form of data assessment.

2.3.2   Socio-Organisational Factors:

Considerations of the motivational factors around the use of computer games in schools often focus on the need to motivate the primary user, students, to use games correctly. However, in so doing, we forget or rather assume that teachers and other professionals often have considerable difficulties in adapting to advances in technology in the classroom and school as well as often being less computer literate than their students. A survey carried out as part of the Futurelab report, Computer games, schools, and young people has identified a problem with classroom dynamics if a child feels more comfortable (which is often the case) with the use of computer games than the teacher or supervisor. Indeed there is the possibility of a teacher's authority being called into question within the classroom.[15]   Furthermore, additional surveys carried out on teachers have expressed fears that the time spent on preparation can be an additional factor as well as creating "arrogance and unreasonably high expectations" (Pacey& Rogers)[16] in students, which can subsequently impact negatively on the behaviour of a child. Properly measuring the impact of the use of technology on the maintenance of school discipline is a clear objective for REPLAY. Logistical barriers such as lack of technical support are also of concern to educational faculties and make teachers wary of creating additional problems for themselves (Wiliamson).[17] Newhouse, Trinidad & Clarkson[18] offer an excellent 4 part rubric for

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[13] School Technology and Readiness – Year 3 Report , Produced by CEO Forum on Education and Technology, CEO Forum website (http://www.ceoforum.org/)

[14] CEO Forum – School Technology and Readiness Chart, Produced by CEO Forum on Education and Technology, CEO Forum website (http://www.ceoforum.org/)

[15] Williamson Ben, *Computer games, schools, and young people,* , 2009, Futurelab website (www.futurelab.org.uk)

[16] Passey Don and Rogers Colin, *The Motivational Effect of ICT on Pupils,* University of Lancaster 2004, ISBN 1 84478 204 2, Published on Department for children, schools and families website, http://www.dcsf.gov.uk/

[17] Williamson Ben, *Computer games, schools, and young people,* , 2009, Futurelab website (www.futurelab.org.uk)

judging the "capabilities and feelings" around teachers reaction to the use of ICT. This assessment of capabilities and feelings is in turn divided into 6 key measures of a teachers' preparedness for effectively utilizing ICT.[19]

The first conclusion to be drawn from the one to one interviews and surveys carried out is that concerns of socio-organisational impact, as defined in this deliverable, have been largely ignored in the projects studied due to a focus on the learning and behavioural value of such projects. As such it has not been possible to learn too much about the practical difficulties involved. This is largely due to the fact, that the assessment carried out in these projects was done so by the designers of the technology used with a full understanding of the logistical requirements and necessary resources, motivation and commitment to the aims of the project. These advantages however, will not be shared by the secondary user for the Replay project. That said, anecdotal evidence of the unanticipated dilemmas that arose during their implementation is useful. Andy Watson described how his company Geese Theatre built a game in collaboration with a technology company based on their experiences with theatre work.[20] A CD-ROM of interactive role play based on the high risk situations that young offenders encounter was built. Andy explained that no assessment of the impact in terms of use of resources in the Youth Offender Institutions where his team carried out the assessment (in part due to not accurately judging the labour intensive build of the game). However, to improve the longer term impact the Y.O.I.s were supplied with a teaching pack containing 6-7 ideas for continuation of the game/follow up activities and discussions around the issues brought up by game play. Andy also mentioned that the data gathered from the game was shared with behavioural scientists and forensic psychologists without a full review of data protection rules and responsibilities.

2.3.3   Ethics

Alex Jones of Youth Offenders Inclusion Gaming Project in Sheffield, England[21], explained that his project was primarily interested in the student's engagement with the learning process so their ability to focus for prolonged periods, their attendance at sessions and the enthusiasm they expressed for the work were the key indicators, Although the project was delivered by practitioners drawn from other organisations or freelance workers the equipment and the learning space were provided. Alex did say however that a number of unexpected ethical issues

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[18] Newhouse Paul, Trinidad Sue, Clarkson Barney, p.13 *Teacher Professional ICT Attributes A Framework,* Published by Specialist Educational Services Perth, Western Australia, 2002, Department of Education and Training website - http://www.det.wa.edu.au/

[19] Newhouse Paul, Trinidad Sue, Clarkson Barney

[20]   Telephone Interview with Andy Watson - *Lifting the weight Project*, 16/5/09

[21] Telephone Interview with Alex Jones of the *Youth Offenders Inclusion Gaming Project*, on 14/5/09

arose from allowing youth offenders to build the content of a game. On separate occasions two young men added guns into their games; one removed them from his game after a discussion with the session leader and the other removed his before being confronted. This restriction on content was ultimately considered counterproductive and policy on development of the game was subsequently changed. It was decided that gaming was a useful vehicle for opening a discourse about the consequences of carrying weapons. Alex reflected that actions or attitudes that are highly unethical or questionable can be encountered within a game or game design situation if the learner is then asked to reflect critically on these issues. This dialogue should lead to a greater understanding of these ethical concerns. That said, the justification of including potentially offensive or violent material in a game's content is based entirely upon its effectiveness as a catalyst for discussion of key behavioural issues and not any other motivational affects upon the end user.

For the secondary user gathering information through the game the concept of proportionality must be clearly defined as an indicator. There are a number of context specific interpretations of this principle as defined in the EU Data Protection Directive (95/46/EC)[22]. Kuner[23] describes two such interpretations "excessive processing of personal data" and "Processing that goes beyond the purpose for which the data were collected." This implies two important considerations when analyzing the secondary user's collection and treatment of data for processing. Although part of the purpose of the manual to be produced for Deliverable D4.2 is to clearly define the process by which data is collected and processed within strict limits. The key point here is that the game itself is not making any deductions, but rather the professional who works with the child. The game is a tool, used to stimulate debate between child and social worker/teaching professional, the results of this verbal debate/assessment is what constitutes any data collected, not a deduction taken directly from the game play. Within this definition of data collection there is margin for human error. Given that it is of vital importance that those professionals capturing data are aware of their obligations under European law. This concern has been translated into an objective for this deliverable.

The European Data Protection Supervisor emphasizes the right of an individual to be informed about the processing of their personal data.[24] The prelude to Directive (95/46/EC)[25] clearly states the right of a data subject to full knowledge of any processing of his/her personal data

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[22] Directive (EC) 95/46 of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data [1995] OJ L281/31.

[23] C. Kuner, *Privacy & Security Law Report*, Vol. 07, No. 44, 11/10/2008, pp. 1615

[24] European Data Protection Supervisor website, http://www.edps.europa.eu/EDPSWEB/edps/lang/en/pid/1
"The person whose data are processed - the data subject - enjoys a number of **enforceable rights**. This includes, for instance, the right to be informed about the processing and the right to correct data."

and provide with "accurate and full information"[26] on this procedure. Where the data subject in question is a child, a parent as legal guardian must also be kept fully informed of the collection and processing of data related to their dependant. The European Agency for Development in Special Needs Education as part of its three year project Assessment ion Inclusive Settings has developed a set of outline indicators for preconditions for the inclusive assessment of children. In this outline the responsibilities of all stakeholders in regards to consultation is described. Within this report the rights of parents to information and consultation on the assessment of their child is outlined which as preconditions to inclusive assessment also act as indicators to establish the presence of this consultation within a school.[27] Unfortunately, the document lacks a rubric to properly gauge the level of this consultation.

During this pilot phase, the REPLAY game will not store any personal data relating to test subjects or otherwise. Therefore the onus is upon the user organisation to properly ensure full use of anonymization or pseudonymization of data where possible to aid proportionality as well as providing secure data storage based on principles of "confidentiality, integrity and availability".[28] Confidentiality refers to ensuring that the direct access to data is only available to authorized persons though user group identification' authorization lists (who has access to what type of information) and access control policy (relating to the disclosure and modification of data). Integrity protects against unauthorized modification, insertion or deletion of data, that is to say, when an authorized person breaks the rules established in an access control policy. Should surveillance of data transactions highlight an integrity violation availability of data to authorized personnel can be restricted.

It should be noted that the approach we, the project, will take to security and parental consent are laid out in deliverables D3.1 and D3.2. The specifications within these documents will provide us with the basis for the specific indicators we develop in D4.2 in these areas.

2.4   Conclusions

The main conclusion to be drawn from our research is the lack of precedents for the assessment to be carried out in this deliverable. Indeed, from those gaming projects addressing anti-social

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[26] (38) Directive (EC) 95/46 of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data [1995] OJ L281/31.
27 Outline Indicators for Inclusive Assessment, Found under publication at the The European Agency for Development in Special Needs Education website see: http://www.european-agency.org/

[28] Xiaocheng Ge1, Polack1 Fiona, and Laleauz Regine, *Secure Databases: an Analysis of Clark-Wilson Model in a Database Environment,* www-users.cs.york.ac.uk/fiona/PUBS/CAiSE04.pdf

behaviour projects studied, questions of socio–organisational impact of technology (as defined in this deliverable) are generally ignored or given limited importance. However, the study of other less directly related projects has proved very useful in identifying the objectives outlined in Section 4.

3.- Scope of the Assessment

3.1.-Overview

Before delineating the specific objectives for the assessment – which we do in section 4 – it is important to identify the broader scope of the assessment we will run. The is particularly appropriate as the assessment objectives for WP4 need to work in close collaboration with those developed as part of the Testing carried out under WP3.

As our methodology will be implemented alongside the WP3 work, we need to ensure that there is significant synergy between the scope of the assessment across both work packages.

To that end we will define the three specific areas of interest for our assessment in WP4 and provide some description as to the type of variables we propose to assess within each of these three areas. Throughout this process, we will refer to the scope of the assessment to be run in WP3 and make a clear link between the two.

This then provides a solid and consistent basis for the delineation of our framework methodology in the following section.

3.2.-Areas of Assessment

By referring back to the description of work, we can clearly identify three particular – but inter–related – areas for the assessment work to be carried out in WP4. These are the social, the organisational and the ethical.

Broadly speaking, the social refers to the impact the REPLAY technology has on people; the organisational refers to the way in which the technology impacts on the organisation using the REPLAY technology; the ethical refers to any issues of ethics relating to the implementation and use of the REPLAY technology.

In the scope of the activity defined in 3.4 below, we present an overview of what we will be looking to assess. Then, in Section 4, we elaborate on this overview with a series of objectives. These objectives, in many cases, address more than one of the three areas for assessment – it is the interplay between the social, the organisational and the ethical that distinguish the objectives we assess.

3.3.- Relationship between Wp4 and Wp3

It is important at this stage to identify the relationship between WP4 and WP3, particularly in relation to the social aspects. If we consider social as referring to the impact the technology has on people, there is potentially considerable cross-over with the methodology developed for WP3.

During our assessment process, the methodology developed for WP3 will address issues pertaining first to the prototype's **ergonomics**, both for its primary users (children) and its secondary users (experts and professionals). WP3 will also study the REPLAY **platform's playability** in terms of **motivation** for the users while playing the game and the possible difficulties that may arise during the testing procedure, also across the two types of user. Finally, WP3 will analyse the preventative and educational worth that the experts attribute to the platform in its use as a tool by social therapists and professionals. As such, none of these aspects are included in our scope – detailed below – and in the subsequent methodology.

While we will, in the following section, define the three specific areas of scope for the assessment process, it is important to note that, in each instance, there are interrelationships between the three areas.

3.4.- Summary: Scope of the Assessment

It is important to state that our assessment process will focus entirely on gathering data from the 'secondary users' (i.e. the teacher/social care worker). This is because the nature of what we are trying to assess precludes the involvement of the primary users (i.e. young people).

Our assessment and analysis is focussed predominantly on issues relating to the successful implementation of the technology in the chosen application environment, in so doing we are checking the overall preparedness of this environment for this successful implementation, with a view to providing recommendations for take up strategies. The job of assessing the impact of the technology on individual primary users will be assumed by the methodology developed in WP3 and described above.

4.- Assessment Objectives

4.1.-Overview

What follows are an initial list of the primary objectives we will seek to address during the assessment process. These objectives will form the basis for the development of specific indicators in the next deliverable (D4.2). Section 5 explains how we will turn these broad objectives into usable and relevant indicators.

4.1.1   Identify the practical issues relating to the <u>installation of the game</u> including addressing the following:

> - physical space needed to install the unit (size/sound-proofing/privacy etc.)
> - technology/hardware needs and set-up
> - level of understanding/training required for set-up

4.1.2   Identify issues related to the <u>recruitment of players</u> for the game and the <u>effective communication</u> with those players prior to the game including addressing the following:

- how individuals are identified as being appropriate for being part of a session
- how those individuals are approached and how arrangements are made with them
- how those individuals are communicated with prior to the game session – how the session is explained to them

4.1.3   Identify issues relating to the <u>communication with parents</u> both before and after the session including addressing the following:

- issues around parental consent
- how the objectives of the session are communicated to parents
- how the outcomes of the session are communicated to parents
- what type of follow-up needs to take place with parents after the session

4.1.4   Identify the practical issues relating to the <u>running of the game</u> including addressing the following:

- the time required to effectively run the game
- the ability of the teacher to launch and run the game in different modes
- the safety of the game from a users perspective
- the requirement for/effectiveness of support materials

4.1.5 Identify the <u>human resource issues</u> pertaining to the effective completion of a game session including addressing the following:

- the human resources (in terms of staff time) required to run the game effectively
- the human resources (in terms of staff time) required to follow up effectively
- the staff training required to run a game session effectively
- the level of comfort and motivation in staff around the use of the game.
- the ability of the teacher to effectively deal with questions or issues related to the usability of the game

4.1.6 Identify issues related to the <u>safe and efficient storage</u> of the hardware including addressing the following:

- the degree of security needed
- the amount of space needed
- whether the hardware can be moved between different spaces efficiently

4.1.7 Identify the way in which the game could/should integrate with the current behaviouralprogrammes being run in the school or institution including addressing the following:

- the particular timing of the game sessions in relation to current programmes
- the nature of the data captured and its relationship to existing data held
- the allocation of human resources within the context of current programmes

4.1.8 Identify issues related to the <u>ethics of the game as a whole</u> including addressing the following:

- the motivational preparedness of teaching staff
- the level of unreasonable expectation created by the game on the primary user, in terms of their wider education

4.1.9 Identify issues related to the <u>ethics of specific game contents</u> including addressing the following:

- the appropriacy and effectiveness of content to the diagnosis of anti-social behaviour/behavioural problems
- secondary user's awareness of such content and the reasons for its inclusion
- the appropriacy of content in relation to the emotional and psychological problems of primary users

4.1.10 Identify issues around data storage, <u>access to and usage of data</u> including addressing the following:

- Ensuring proportionality in the processing of data

- Establishing principles of and policies "confidentiality, integrity and availability" of data

4.2.-Conclusions

The assessment objectives as defined in the previous section are the result of the known requirements socio–organisational and technological requirements for the REPLAY technology as well as the investigation into current approaches to socio–organisational and ethical research and technology implementation as laid out in Section 2 of this deliverable. The objectives as outlined above are to be considered as first draft and will be refined further after consultation with internal and external stakeholders as part of the work to be carried out in Deliverable 4.2.

5.-Assessment Methodology

5.1.-Overview

An important precursor to the implementation of the Replay impact assessment methodology is a clear understanding of the exact requirements that the REPLAY technology will impose on the chosen application environment which will be the subject of this assessment. The establishment of these exact requirements will provide the basis for converting the objectives outlined in Section 4 into the indicators that will be developed in D4.2 for use in the impact assessment. In this way, the indicators presented in D4.2 will be a refinement, based on a methodology as set out in this section. This refinement will be subject to an internal (within the Replay consortium) and external (consulted stakeholders and advisors outside the consortium) consultation process that will define each and every indicator.

Each indicator within the research will also be attached to a rubric scale. Having established a rubric within the assessment of each indicator, the project consortium will be able to analyze in-depth the socio-organisational impact of technology take-up among the target group as well as identify areas of weakness to feed into the recommendations for REPLAY take up strategies to be produced in Deliverable 4.3.

5.2.-Developing and Assessment Indicators

The following methodology has been adapted from that set out in the UNESCO report *Developing and Using Indicators of ICT Use in Education*[29]. This methodology is intended to describe the process by which the assessment indicators in Task D4.2 – Select and specify the assessment indicators and associated data collection methods – will be chosen.

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[29] *Developing and Using Indicators of ICT Use in Education,* compiled and published by UNESCO Asia and Pacific Regional Bureau of Education, 2003 (IPS/03/OS/152 – 1500), http://www.unescobkk.org

Table 1

Step	Action
Step1: Identify all requirements for implementing REPLAY technology and review and clarify overall objectives	➢ Identify optimal state in terms of all system, logistical, human resources, time, ethical requirements for successful implementation of REPLAY ➢ Check objectives as set out in D4.1 against these requirements and review and clarify these objectives as necessary ➢ Consult as broad an number of external stakeholders and relevant experts, including parents if possible
Step 2: Develop a list of trial indicators	➢ Draw up a list of possible indicators for each objective through an internal brainstorming session ➢ Consult as broad an number of external stakeholders and relevant experts, including parents if possible ➢ Adjust initial set of indicators according to external feedback
Step 3: Check each trial indicator against specified criteria	➢ Check each trial indicator against the criteria laid out in table 2
Step 4: Select a final list of indicators and establish a rubric	➢ Choose indicators which best meet the criteria laid out in table 2 ➢ Ensure an adequate number of indicators to best gauge the conditions for successful implementation of each objective ➢ Select the minimum number of indicators possible ➢ Establish a rubric for each indicator based as described in section 4.2 ➢ Check each level of the rubric scale according to principles of high face validity and objectivity as laid out in table 2.
Step 5: Prioritise final list of indicators	➢ Use of a scale of 1-5 to determine the usefulness of each indicator in terms of successful implementation of REPLAY technology

Table 2

Criterion	Description
High face Validity	➢ Indicator is intuitively understood ➢ Indicator is a direct measurement, rather than a proxy
Objective	➢ Data collected through all surveys must be consistently comparable ➢ Indicator must avoid any ambiguity in terms of measurement
Adequate	➢ Indicator is entirely consistent with the objective it directly relates to and thus the needs of the project ➢ Indicator provides a sufficiently detailed measure of a facet of the associated objective, while still retaining high face validity and avoiding ambiguity
Quantitative	➢ Quantitative indicators should be used where possible, due to their higher objectivity. ➢ All qualitative indicators must be checked for objectivity.

5.3.-Rubric

Survey participants will be asked to rate the level of a given indicator at their institution on a 4 part rubric scale, on a multiple choice basis. In this way data can be easily processed without being overly restrictive in the capturing of data.

Optimal = Chosen application environment exceeds the minimum requirements

Functional = Chosen application environment meets the minimum requirements

Semi-Functional = Chosen application environment shows evidence of a limited though not sufficient level of capacity towards meeting the minimum requirements

Inadequate = Chosen application environment has little or no capacity to meet the minimum requirements

For Qualitative statements, respondents will be presented with a Likert scale to approximate quantitative from qualitative data (see **Table 5**).

Table 3

Rubric level	Objective			
	Indicator 1	*Indicator 2*	*Indicator 3*	*Indicator 4*
Optimal	Evidence	Evidence	Evidence	Evidence
Functional	Evidence	Evidence	Evidence	Evidence
Semi-Functional	Evidence	Evidence	Evidence	Evidence
Inadequate	Evidence	Evidence	Evidence	Evidence

Table 4

Rubric level	Identify the practical issues relating to the <u>installation of the game</u>	Please choose one option
	Physical space available for the installation of REPLAY	
Optimal	A sound proofed room has been reserved for installing the game that can only be accessed by a pin code, which will only been supplied to authorized personnel	
Functional	A sound proofed room has been reserved for installing the game. The room can be locked.	
Semi-Functional	A large dedicated room has been reserved for installing the game. The room **either** can't be locked or discussions held during REPLAY session may be overheard by other students.	
Inadequate	A room has been reserved for installing the game with no locking facility. Discussions held during REPLAY session may be overheard by other students.	

Table 5

Optimal	Teaching staff are highly motivated and experienced in the use of ICT in a classroom environment	1. Strongly Disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly Agree

5.4.-Capturing Inputs

This section is intended as a precursor to a detailed assessment of data collection methods and techniques which will be carried out in deliverable 4.2. The following considerations will be developed in that deliverable:

- Inputs will be captured through traditional surveys and telephone conversations as well as online which will facilitate the analysis and segmentation of data.
- Any online survey data inputs logged on chosen application environment websites will be vetted for security and privacy by the REPLAY Consortium
- Any person charged with the coordination of capturing data at chosen application environment will receive the full support of the REPLAY Consortium.
- The REPLAY project website will be used as a tool for capturing inputs with assessment respondents able to complete a survey within a secure environment.
- Video/images will be used where possible to stimulate responses to indicators, with due consideration for the objective and adequate nature of such material.
- Respondents will be given the opportunity to highlight areas not covered by the indicators established for the assessment.

6.-Conclusions

Work Package 4 is intended to act as a complementary measure to aid the testing and refinement of the REPLAY to be carried out in Work Package 3. As such, it will help to ensure the system, logistical, human resource, time and ethical conditions necessary to maximise the effectiveness of the assessments on **ergonomics**, **platform's playability** and **preventative and educational** worth pertaining to Work Package 3.

The methodology used is intended as an objective measure of these conditions in so far as all data collected will be in response to a fixed set of measurement criteria based directly upon the needs of successfully installing and running the assessment of the game. Furthermore, the REPLAY consortium will leave opportunities for respondents to highlight considerations that may have been overlooked in formation of the objectives and related indicators established for the socio-organisational and ethical assessment. The purpose of measuring the level of these conditions in chosen application environments is not intended in any way as a general assessment of the capabilities of these environments, rather purely as a measure of the specific requirements of the REPLAY project.

The next deliverable from this work package – D4.2 Assessment Protocol And Handbook – will use the objectives as set out in Section 4 of this deliverable as the basis for providing a more specific set of assessment indicators for each objective. The consolidated indicators developed according to the methodology outlined above will provide a controlled and objective basis for the effective running of the assessment and will provide us with the basis of our inputs for the set of recommendations for take up strategies to be presented in D4.3.

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