ARETE – DELIVERABLE (D2.2)

WP 2- 2.2 Project Plan; Quality Plan; Ethical Procedures

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Version	Date	Description
0.1	03/01/2020	(NUID UCD) Management reports (Contractual, Financial and Technical)
0.2	08/01/2020	Review (all ARETE partners)
0.3	20/01/2020	Final draft review from NUID NUID UCD

[1] Nature:
R = Report, P = Prototype, D = Demonstrator, O = Other
Dissemination level
PU = Public
PP = Restricted to other programme participants (including the Commission Services)
RE = Restricted to a group specified by the consortium (including the Commission Services)
CO = Confidential, only for members of the consortium (including the Commission Services)
Restraint UE = Classified with the classification level "Restraint UE" according to Commission Decision 2001/844 and amendments
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Disclaimer

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Executive Summary

This Deliverable presents the Project plan, Quality plan and Ethical procedures of the ARETE project.

This document is based on several key documents/meetings including:

- The ARETE Grant Agreement – GA Number 856533
- The ARETE Consortium Agreement -based on the DESCA-Horizon 2020 Model Consortium Agreement, Version 1.2.4, October 2017.
- ARETE project kick-off meeting 28-29 November 2019, University College Dublin, Ireland

This report is intended to be a live document and although no significant changes to this document are envisioned, some sections will be updated in M14 and M26 based on the decisions of the General Assembly (GA).

The D2.2 Project Plan, Quality Plan and Ethical procedures report, accompanies the ARETE Deliverable D2.1 which describes in detail the management reports (project contractual, financial and technical management), the ARETE Deliverable D2.3 (M6), which describes in detail the Data Management Plan and Deliverables D1.1 and D1.2 Ethics Requirements.

1. Introduction

This report describes the project and quality plan and ethical procedures that the ARETE partners will have to comply with during the execution of the project. This will ensure that the project will meet the relevant quality and ethical requirements set by the European Commission (EC). This document has been prepared as part of ARETE Work Package (WP) 2, Project Management.

The present document gives a practical guidance to all the partners for checking the process of the project and assuring the quality of its outputs.

The D2.2 aims to complement the project information provided in the Grant Agreement Description of Action by describing the planning, organization of the consortium, management procedures, risk assessment and mitigation, quality assurance, communication and dissemination activities, and ethics requirements at a level of detail suitable for the project.

1.1 Project Background

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 856533. The consortium consists of 10 partners from 7 European countries (Ireland, Belgium, Germany, Italy, Netherlands, Spain and UK) comprising of seven academic and research partners, two industry partners and one non-profit organization.

Table 1: Consortium Members

Participant No	Participant organisation name	Acronym	Type	Country
1	University College Dublin, National University of Ireland, Dublin, NUID NUID UCD	NUID UCD	Higher Education	IE
2	CleverBooks Limited	CLB	SME	IE
3	Wordsworth Learning Limited	WWL	SME	IE
4	Stichting VU	SVU	Higher Education	NL
5	University of Leicester	ULE	Higher Education	UK
6	EUN Partnernship AISBL	EUN	Non-profit/private entity	BE
7	Consiglio Nazionale Delle Ricerche	CNR	Research Organisation	IT
8	Julius-Maximilians-Universitat Wurzburg	UNW	Higher Education	DE
9	Fundacion Centro de Tecnologias de Interaccion visual Y comunicaciones Vicomtech	VIC	Research Organisation	ES
10	Oxford Brookes University	OBU	Higher Education	UK

ARETE starts from 1st of November 2019 with a 36-months duration. The ARETE project aims to support the pan-European interactive technologies effort both in industry and academia, through the multi-user interactions within AR technologies evaluated in education in both professional and private contexts. The authoring tools used within ARETE and the provision of access of the AR content developed for the broader community of users within the EU, will increase the European innovation capacity in AR. Through systematic application of human-centred design approaches, ARETE will deliver highly usable, useful and desirable AR technologies and contents, leading to a wider uptake and further stimulate their creative usage.

In particular, the objectives of ARETE project are:

1. To develop and evaluate the effectiveness of an interactive AR content toolkit;
2. To apply human-centred interaction design for ARETE ecosystem;
3. To pilot and evaluate the effectiveness of AR interactive technologies;
4. To communicate, disseminate and exploit the project results.

2. Project Plan

The project plan describes the main project descriptions, the governance and decision making structure of the ARETE project, the project communication strategy, deliverables and document management, reporting management and it will also describe the project management processes and documentation which will be created and maintained throughout the ARETE project.

2.1 Project Description

Broadly the project is divided into 7 work packages, listed below. It comprises of ethic requirements, management and market outreach WPs (WP1, WP2 & WP7) as well as research innovation and technical work packages (WP3 through to WP6).

WP1: Ethics Requirements
Leader: Eleni Mangina (UCD)
Objectives: To ensure compliance with the 'ethics requirements' set out in this work package
in the ARETE project, it underpins our research in three ways, by: enabling better research design; translating fundamental commitments into research practice; *and,* enhancing debate and building platforms and guidelines to increase public trust and acceptance.

WP2: Project Management
Leader: Eleni Mangina (UCD)

Objectives: Management aims to ensure that the planned project activities are effectively performed, pursuing the project objectives in line with time schedule, budget the establishment of standards for quality, risk mitigation, innovation management, conflict resolution, ethical and data protection. UCD is responsible for all typical reporting and financial management activities required by the European Commission and will pro-activity lead, by pursuing:

- Encourage and facilitate meaningful interaction between all partners;
- Coordinate at management level of all technical activities of the project;
- Prepare and manage the consortium agreements amongst the partners;
- Contractual, legal, financial, ethical aspects and administrative management;
- Collect audit certificates from the participants, where relevant.

WP3: Interactive Augmented Reality Toolkit
Leader: David Ross (WWL)
Objectives: Interactive AR Content toolkit ensures that 3D objects will be developed based on AR standards, global curriculum guidelines with a focus on English language literacy and STEM subjects, which are an important aspect of the development of the 21st century skills alongside digital literacy skills, including the important IEEE ARLEM 2.0 and IEEE VR/AR Augmented Reality. The activities involved will be in line with the overall project objectives. WWL is responsible for all AR 3D learning objects' implementation required for the English language remedial apps to provide effective and interesting learning interactivity for the users, while CLB is responsible for the AR apps for STEM subjects. UCD, CLB, WWL and OBU will work together on the technical development of the content based on the AR authoring toolkit provided from OBU. Thus, the main objectives of this work package are:

- Design and development of interactive 3D learning content;
- Design and Development of AR app for both IOS and Android;
- Design and development of 3D augmentation as well as AR learning experience model digital repository;
- Documentation of 3D interactive objects' standards for AR, contribution to IEEE ARLEM 2.0.

WP4: User-centred Interactive Design
Leader: Effie Law (ULE)
Objectives: The underlying objective of WP4 is to identify, update and integrate, on an ongoing basis, user-based insights into designing and developing the ARETE project, rendering it to be highly useful, usable, desirable and pleasurable. The work of WP4 will help realize a vision of ARETE: enabling different stakeholders to use the AR technology with ease and positive experience for meeting their educational needs, preferences and goals. Methodologically, WP4 will adopt the well-established Human-centred Design (HcD) and User Experience (UX) methods in the field of Human-Computer Interaction (HCI) and adapt them for addressing the particularities of AR. **Iterative design and evaluation** processes with a high level of user engagement will be undertaken in parallel with the three version release of the ARETE ecosystem (α, β, γ). In the first cycle, WP4 will collect baseline data in terms of user needs and educative practices in situ to inform the scope of pedagogical

content (WP2), and of technical implementation of the CLB and WWL content within ARETE project (WP3).
Moreover, iterative design and evaluation process will be applied in the integration of AR in the educational process for promoting Positive Behavior in school and classroom settings (WP5). In the second and third cycle, we will conduct formative **usability** and **user experience** evaluation of the ARETE toolkit prototype of increasing maturity, analyzing how users interact, appropriate and perceive different components of the ARETE project as well as its entirety. Evaluation feedback on the usability and user experience of the prototypes will facilitate their redesign to attain the highest possible quality. This feedback will be collected from gender-balanced samples of the target groups and can be of different formats, such as verbal comments (written/oral), log data, and sketches captured by questionnaire, interview, focus group and online tools with both digital and paper-based media. The progressive, highly focused and intensive participatory design activities of the three cycles of WP4 will complement the extensive larger-scale validation and evaluation work in Pilots (WP6). Thus, the implementation objectives of WP4 are to:

- construct viable use scenarios for the ARETE project, informing the content and technical development as well as pilots;
- elicit and analyze user needs, requirements and visionary use cases for the ARETE project, enhancing the quality of its features;
- conduct formative usability and user experience analysis of the early prototypes of the ARETE project for its iterative refinements;
- conduct summative usability and user experience analysis of the advanced prototypes of ARETE project to assess their quality and potential adoption and acceptance, informing the dissemination and exploitation work.

WP5: Interactive AR for PBIS
Leader: Giuseppe Chiazzese (CNR)
Objectives: WP5 aims to develop and evaluate the multi-user interaction through augmenting the human interaction with different groups. It is of vital importance for ARETE to realize whether augmented interactions provide Positive Behaviour Intervention & Support, abbreviated as PBIS (Sugai & Horner, 2009), which was developed in the USA, to guide schools and educational professionals in creating these school systems for addressing behavioural challenges based on shared values (e.g., school-wide establishment of school values and a PBIS leadership team). PBIS provides schools with accurate systematic implementation and use of evidence-based practices related to behaviour management in a multi-tiered system of behaviour support. There is sound and growing evidence for the effectiveness of PBIS in diverse settings and contexts across the USA (Benedict, Horner, & Squires, 2007). Usually when an initial school-wide PBIS system is implemented within a school, the team of teachers teach the values and behavioural expectations and acknowledge positive behaviour. This means establishing clear expectations, the use of positive reinforcement, and systematically teaching the behaviour. WP5 will implement the PBIS theory within AR multi user interaction context. Within WP5 across school personnel and leadership teams of European schools already implementing PBIS for 2-3 years (these schools are part of the PBS-Europe network) will be asked to join the end users of ARETE

and evaluate the effect of the integration of AR embedded in PBIS interventions within classroom settings. **ARETE will enrich the current PBIS practices with Experience API** (xAPI - formerly known as TinCan) for behaviour tracking and logging, complemented with a cloud-based learning record store and PBIS analytics. Design and development will be done in a collaborative team via the method of Lesson Study, a well-known professional development approach in which small teams of teachers collaboratively design an instructional lesson, teach the lesson for a selected group of students or class, observe the enacted behaviour of the students, and reflect on this process, with the goal of refining the lesson. In this case the lesson is a lesson targeting behavioural management. This will be done during live transnational meetings and via webinars. After and in between the meetings and webinars in each school leadership team selects a class of students to use the AR with during a period of three months. We will measure the target behaviour of the students prior and after the intervention period in order to assess a change in the behaviour of the students due to AR interactivity and developed innovative pedagogical method implementing the AR within the lesson series. Thus, the implementation objectives are to:

- Capture and define requirements for the development of AR for a PBIS system of teaching values and expectations;
- Work with leadership PBIS teams in order to develop pedagogical methods;
- Set up and implement all PBIS pilot-specific components;
- Conduct the training process with pilot operatives (leadership teams) from European member states;
- Conduct the pilots on a phase introduction basis to ensure the effective operationalization and management;
- Capture and analyse the AR PBIS pilots' performance (i.e. via user [teachers and students] quantitative and qualitative feedback).
- The Augmented Reality functionalities of the system for PBIS will be evaluated in Task 6.3: Deployment and Performance Evaluation. The training contents for using the interactive AR PBIS component will be delivered in ARETE training platform.

WP6: Pilots' Implementation, Deployment and Evaluation
Leader: Agueda Gras-Velazquez (EUN)
Objectives: WP6 aims to pilot studies across Europe (Pilot 1, 2, 3) to be executed. The implementation of the interactive AR technologies within ARETE, which will primarily focus on the examination and implementation of both CLB and WWL platforms, will be conducted in this WP. The Pilots Manager will conduct the planning, preparation of the pilots in advance of execution. This process includes training the trainer (i.e. local teachers at primary schools that participate within the pilots). This task involves the Pilots Manager regularly engaging with the participating trained teachers and monitors the progress of the effective execution of ARETE live across each pilot for each study group in different languages. Quantitative and qualitative feedback will be obtained through the ARETE project data collection process involving regular feedback from the users through purposely-designed questionnaires. The Pilots Manager will work closely and engage with the Project Coordinator and the Innovation Manager in particular. In light of the undertaken Pilot work, at M25 to accelerate proceedings, a well published and dedicated 'Hackathon Week' will be

implemented by UCD and will involve each of these 3 Managers focusing on tasks related to the implementation of effective AR interactivity. It is anticipated that the outcome of the hackathon will strengthen the ongoing activities in the Pilots and project interest. The creator of AR.js (Jerome Etienne) will be invited to lead the hackathon, as he is the Principal Engineer at Amazon Sumerian, author of Learning Three.js blog, 8th most active user on GitHub and he has been CTO and has led the core apps team of AR Smart Helmet. Thus, the implementation objectives are to

- Capture and define requirements for the execution of pilots;
- Set up and implement all pilot-specific components;
- Integrate and validate the operation of the pilots within the ARETE project;
- Conduct the training process with pilot operatives (teachers) from European member states;
- Conduct the Pilots on a phase introduction basis to ensure the effective operationalization and management;
- Capture and analyse the pilots' performance (i.e. via user quantitative and qualitative feedback);
- Determine AR interactive technologies' next generation functionality and priorities.

WP7: Dissemination, Exploitation & Communication
Leader: Darya Yegorina (CLB)
Objectives of this work package are to:

- efficiently disseminate and communicate the details of the project activities to society and the targeted community, promoting awareness including via engagement with individual stakeholder dissemination activities as well as via external parties including the targeted market influencers and with the support of the external Advisory Board;
- prepare communication channels (including website, social media, etc.), develop and promote dissemination materials (e.g. brochures, blogs, papers, press releases, etc.) as part of the preliminary planning and undertaking for the market outreach of the project results;
- investigate, analyse and prove that the AR interactive technologies within ARETE are well positioned and suitable for market take up beyond the life of the project and showcase the results of the project by hosting 2 international workshops in line with the interactive AR technologies application roadmap;
- exploit the intellectual property developed within the project;
- deliver the AR Learning Objects standards based on the effectiveness of the AR interactive technologies from WWL and CLB.

During WP7, we will analyse the opportunities for building links with other research and innovation projects and related activities. This WP will be undertaken with contributions from all partners throughout the project. *Google Analytics and Hootsuite/Klout* will be used to measure/monitor dissemination and communication impact. Obtaining No. 1 position on *Google engine searches* for 'Augmented Educational *Interactive Technologies'* is a target. The WP Leader will report to the Project Coordinator details of an assessment of

dissemination and communication achievement against targets and, if needed, will propose remedial actions for Project Coordinator approval.

2.2 Project Governance Structure

The Governance structure of the ARETE project shall comprise the following consortium bodies:

1. General Assembly (GA) as the ultimate decision-making body of the consortium;
2. Project Steering Committee (PSC) as the supervisory body for the execution of the Project which shall report to and be accountable to the General Assembly;
3. The Coordinator is the legal entity acting as an intermediary between the Parties and the Funding Authority. The Coordinator shall, in addition to its responsibilities as a Party, perform the tasks assigned to it as described in the Grant Agreement and this Consortium Agreement;
4. The Project Manager assists the Project Steering Committee and the Coordinator;

General Assembly: (GA)

Involved Parties. The GA consists of one representative of each Beneficiary with authority to vote and all other non-voting researchers and graduate students working for ARETE.

Role: The GA is the ultimate decision-making Body of the Consortium. It decides upon all issues involving changes to the content of the project, finances and intellectual property rights. It shall be in charge of making decisions of major and strategic relevance, either on its own initiative or as proposed by any of the partners or the PSC. Some decisions of the GA are subject to the approval of the European Commission and may involve an amendment of the Grant Agreement. Decisions of the GA, which are subject to the approval of the European Commission and include, e.g., proposals to the European Commission for changes to Annex 1 (Description of the Action) or Annex 2 (Estimated of budget) of the Grant Agreement, for entry or withdrawal of a Beneficiary, for the termination of a Defaulting Party's participation in the Consortium and measures relating thereto, for a change of the Project Coordinator, for suspension of all or part of the Project and for termination of the Project. Other decisions relate to, e.g., amendments to the Consortium Agreement, the declaration of a Party to be a Defaulting Party and suggestions for remedies and Standard Operating Procedures for routine tasks in ARETE.

Meetings and Decisions.

Frequency: The GA meets twice a year. Extraordinary meetings can be organised at any time upon written request of the Project Steering Committee or of one third of the Beneficiaries. In exceptional cases, meetings of the GA may also be held by teleconference or by alternative telecommunication means.

Chair: GA meetings are chaired by the Project Coordinator.

Agenda: The chair shall prepare and send each Beneficiary a written agenda no later than three weeks before the meeting. Any agenda item requiring a decision by the GA must be identified as such on the agenda.

Voting rules and quorum: The GA shall not decide validly unless two-thirds (2/3) of its members are present or represented. Each Beneficiary present or represented in the meeting shall have one vote. Defaulting Parties may not vote. Decisions shall be taken by simple majority, except decisions on the addition or exclusion of a party, which shall be taken by a majority of two-thirds (2/3) of the votes. **Veto rights**: A party which can show that its work in the project, time for performance, costs, liabilities, intellectual property rights or other legitimate interests would be severely affected by a decision of the GA may exercise a veto. In this case, the members of the GA shall make every effort to resolve the matter to the general satisfaction of all its members at the same meeting. In the event of an equality of votes, the Manager shall have the casting vote.

Minutes: The Project Manager shall be responsible for the minutes of each meeting, which is the formal record of all decisions taken. The minutes shall be drafted and sent to all members within two weeks after the conclusion of the meeting. The minutes shall be deemed accepted if no member has objected in writing to the Project Manager within one week of issue.

Decision-making power: Decisions of the GA shall be legally binding to all Beneficiaries, if they are ratified by the authorized representatives of the Beneficiaries and, if necessary, by the European Commission.

Project Steering Committee: (PSC)

Involved parties. The PSC is composed of one representative from each partner.

Role: The PSC is the Body where all technical details of the work are discussed. It is responsible for the successful implementation of the project regarding its schedule, budget and expected scientific quality. The PSC is also in charge of the preparation and execution of the decisions of the General Assembly. Further, the PSC is expected to:

- coordinate, collect and manage items that impact on the contractual terms fixed at the outset of the project;
- manage project knowledge, intellectual property and assess new/additional innovation capacity deemed appropriate by the Innovation Manager;
- if necessary, make proposals to the General Assembly to rearrange tasks and budgets or to modify the GA in any other way;
- prepare the content and timing of press releases and joint publications by the Consortium in respect of the procedures of the GA.

Each PSC representative will be responsible for mobilising and coordinating the active and coherent participation of their project team and will ensure that their individual reporting and cost statements are submitted on time and correctly. Additionally, meetings with the external engagement boards (i.e. Advisory and Industry Capacity) will take place to coincide with planned PSC and General Assembly meetings.

Project Coordinator: The Project Coordinator is the legal entity acting as an intermediary between the parties and the European Commission.

In particular, the Project Coordinator shall be responsible for:

- monitoring compliance by the Parties with their obligations
- keeping the address list of Members and other contact persons updated and available
- collecting, reviewing to verify consistency and submitting reports, other deliverables (including financial statements and related certifications) and specific requested documents to the Funding Authority
- transmitting documents and information connected with the Project to any other Parties concerned
- administering the financial contribution of the Funding Authority and fulfilling the financial tasks
- providing, upon request, the Parties with official copies or originals of documents that are in the sole possession of the Coordinator when such copies or originals are necessary for the Parties to present claims.

If one or more of the Parties is late in submission of any project deliverable, the Coordinator may nevertheless submit the other 'Parties' project deliverables and all other documents required by the Grant Agreement to the Funding Authority in time.

Project Management Office (PMO): consists of the Project Coordinator and the Project Manager who shall obtain project management support. The PMO is responsible for the day-to-day management of the project. The PMO shall act as a help-desk for all Beneficiaries and will enable the Project Coordinator, the General Assembly and the Project Steering Committee to function effectively to fulfil their tasks and execute decisions. Specifically, the tasks of the PMO includes to:

- be the central node of communication and to foster collaboration among all project partners in order to bring the project forward;
- manage the periodic reporting and to support the consortium members to deliver the required documents timely, completely and error-free;
- organise regular meetings of the General Assembly and Project Steering Committee and to supervise the participation of all required members of that consortium body in the meetings;
- provide the Parties with copies of any relevant documents or information upon request;
- keep the project website up-to-date and to populate the project's intranet with relevant data and files.

External Advisory Board (EAB)

The External Advisory Board (EAB) will be appointed and steered by the Project Steering Committee. The EAB shall assist and facilitate the decisions made by the General Assembly. The Coordinator will ensure that a non-disclosure agreement is executed between all Parties and each EAB member. Its terms shall be not less stringent than those stipulated in this

Consortium Agreement, and it shall be concluded no later than 30 calendar days after their nomination or before any confidential information will be exchanged, whichever date is earlier. The Coordinator shall write the minutes of the EAB meetings and prepare the implementation of the EAB's suggestions. The EAB members shall be allowed to participate in General Assembly meetings upon invitation but have not any voting rights. The PSC will consult with the EAB. Meetings will be chaired by the Project Coordinator. The EAB members will obtain project reports, deliverables and updates before meeting with the PSC.

Industry Capacity Board (ICB)

The Industry Capacity Board (ICB) will be appointed and steered by the Project Steering Committee. The ICB shall assist the Innovation Manager with a view for the engagement to help the Consortium to deliver an advanced Ecosystem in line with the target community and industry expectations. The Coordinator will ensure that a non-disclosure agreement is executed between all Parties and each ICB member. Its terms shall be not less stringent than those stipulated in this Consortium Agreement, and it shall be concluded no later than 30 calendar days after their nomination or before any confidential information will be exchanged, whichever date is earlier. The Coordinator shall write the minutes of the ICB meetings and prepare the implementation of the ICB's suggestions. The ICB members shall be allowed to participate in General Assembly meetings upon invitation but have not any voting rights. The PSC will consult with the ICB. Meetings will be chaired by the Innovation Manager. The ICB members will obtain project reports, deliverables and updates before meeting with the PSC.

2.2.1 Governance meetings

Frequency: Meetings will be held in accordance with the following scheduled table. The Project Coordinator will be the chair of all the PSC and GA meetings.

Table 2 - List of PSC and General Meetings

PSC & General Assembly Meeting	Month – from project start	Host Partner	Advisory Board Participation	Industry Capacity Board Participation
Project kick off meeting	Month 1	UCD	**Yes**	**Yes**
2nd General Assembly meeting	Month 10	VIC	No	No
3rd General Assembly meeting	Month 13	ULE	**Yes**	**Yes**
4th General Assembly and Commission review meeting	Month 19	EUN	No	No
5th General Assembly meeting & Hackathon week	Month 25	UCD	**Yes**	**Yes**
6th General Assembly meeting and CEN CWA workshop.	Month 31	VIC	No	No
General Assembly and Final Review meeting with the Commission	Month 36	EUN	**Yes**	**Yes**

Notice of a meeting: The Project Coordinator will give notice in writing of a meeting to each Member of the Consortium Body as soon as possible and no later than the minimum number of days preceding the meeting as indicated in Table 3.

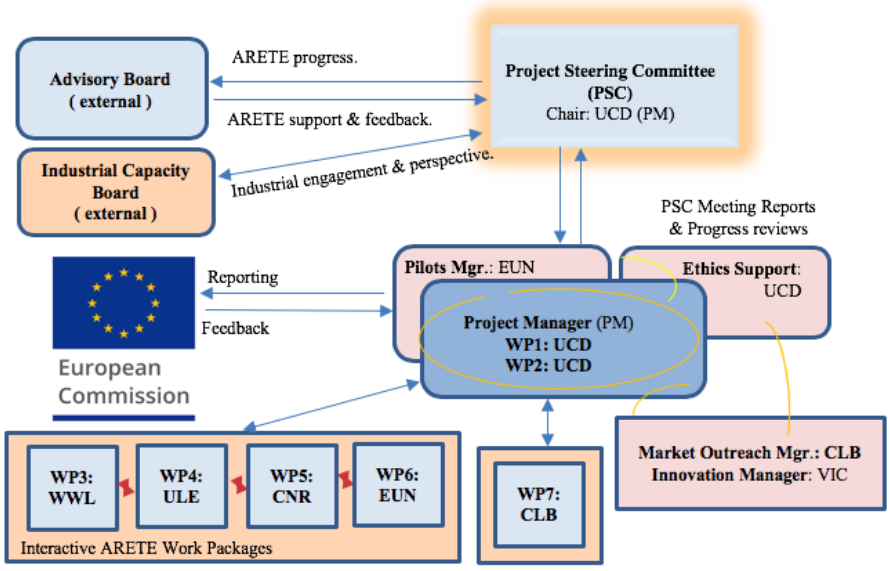
Table 3: Notice of a meeting

	Ordinary meeting	Extraordinary meeting
General Assembly	45 calendar days	15 calendar days
Project Steering Committee	14 calendar days	7 calendar days

2.3 Project Control and Monitoring

The work plan is structured to enable two lines of project activities to co-exist. That is (1) Ethics, Management, Dissemination and Outreach (WP1, WP2 and WP7) and (2) Interactive ARETE Research (i.e. WP3 through to WP6). The latter WPs focus on the realisation of the ARETE ecosystem and encompass the individual WPs for interactive AR reality toolkits, user experimentation, AR technology as well as pilot deployment and evaluation activities. WP1 and WP2 are project management specific with WP7 designed for the facilitation of targeted communications, dissemination, standardization, market outreach and sustainability beyond the life of the project. Figure 1 depicts the management and work breakdown structure for the project. Figure 2 and 3 present the project PERT chart and GANTT chart.

Figure 1: ARETE Work Breakdown Structure presented under the light of Project Management



Work Package Leaders (WPL): Each work package has a WPL

Role: Each WPL shall primarily perform the following tasks, to:

- coordinate the work of the partners and individual team members collaborating on their respective work package;
- ensure that the deliverables are peer reviewed, of high quality and produced on time and within the budget; and
- convene meetings with the collaborating partners.

Meetings may be held either 1-on-1 or on a collective basis. WPLs will make use of VoIP conference whenever possible to minimise travel costs. Meetings related to each WP are chaired by the respective WPL, who also arranges for decision/action records to be collected and distributed. During the execution of each work package, the WPL ensures a proper exchange of information with the other partners not participating in the same WP to keep the whole consortium updated on the other partners' activities within the project. WP tasks will also have a leader. Each Task Leader reports to the relevant WPL.

Figure 2: ARETE Project PERT Chart

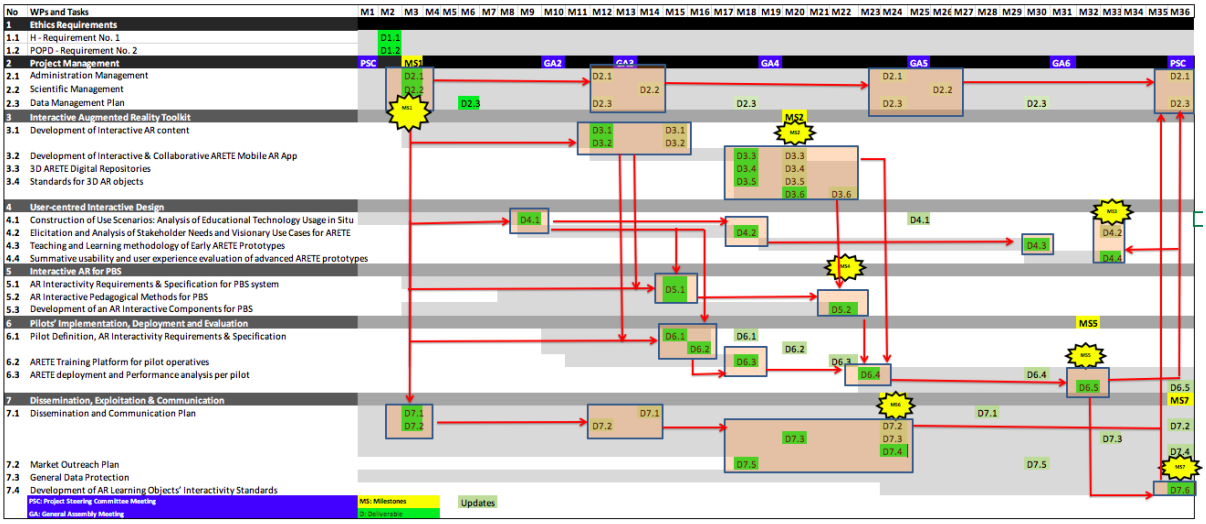
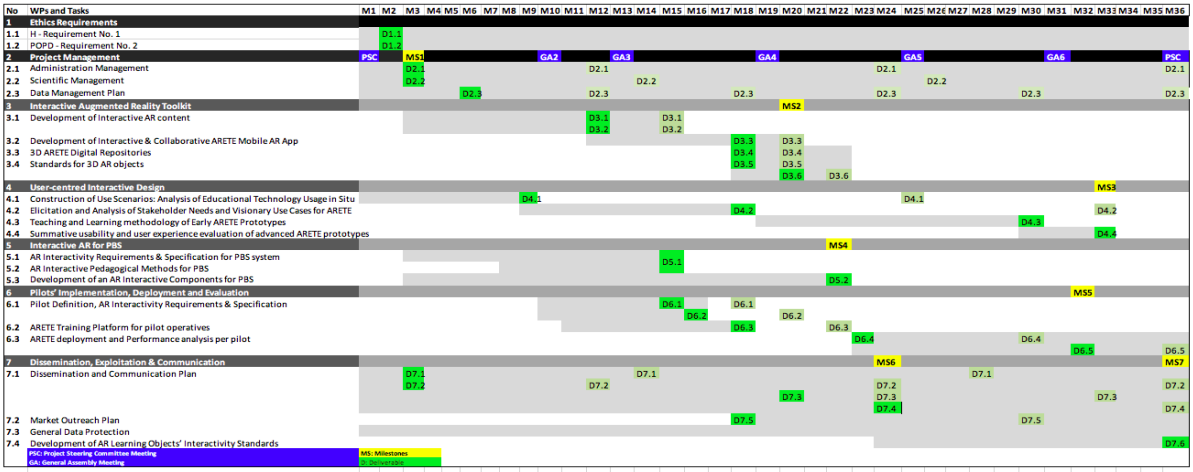


Figure 3: ARETE Project Gantt Chart



Milestones: are summarized in Table 4. They provide a clear picture of the accomplishment of the project intermediate goals and represent the passage from one phase of the project to the next.

Table 4: List of milestones

Milestone	Milestone name	Related WP(s)	Est. date	Means of verification
MS1	Project Plan; Quality Plan; ethical procedures	WP2	M3	Task 2.1 finalised. Approved by Project Coordinator.
MS2	IEEE Standards for AR Objects' content ratings and descriptors	WP3	M20	Task 3.4 finalised. Approved by Project Coordinator
MS3	Report on Summative usability and user experience evaluation of advanced ARETE prototypes	WP4	M33	Task 4.4 finalised. Approved by Market Outreach Manager.
MS4	Interactive AR PBIS component	WP5	M22	Task 5.2 finalised. Approved by Market Outreach Manager.
MS5	Pilots Performance Analysis	WP6	M32	Task 6.5 finalised. Approved by Pilots Manager.
MS6	Showcase workshop & Hackathon	WP7	M24	Task 7.4 finalised. Approved by Project Coordinator.
MS7	Draft CEN workshop Agreement	WP7	M36	Task 7.7 finalised. Approved by CEN/CENELEC.

2.4 Project Development Methodology

A Waterfall methodology will be adapted and an Agile iterative approach[2] will be applied for the software development, training implementation and pilot testing (i.e. α, β and γ versions) as described in D2.1 (Section 5.6.1: Code Management). During the Agile phase, a Scrum based approach[3] will be applied to maximise both the engagement of and delivery to the users in the project. Furthermore, engagement with the target community is pertinent and well-integrated into proceedings through the *Foresight Engagement process* (Foresight engagement workflow listed in Section 2.5) and a solid involvement of industrialist and academia through the external Industry Capacity Board and separately the Advisory Board.

2.5 Innovation Management

The innovation management approach adopted by ARETE can be characterized as a comprehensive multi-stakeholder engagement approach. The applicability of results is appropriate for assessment in many other areas (e.g. training on-line, interactive augmented retail, AR Interactive hardware, AR interactive software implementation) and research communities, which complement high-tech creative Europe and will be defined in detail in D7.5 – Market Outreach Plan. Innovation management in ARETE is led by partner Vicomtech (Competitiveness and Innovation Manager, Mrs. Esther Novo). The undertaking includes Foresight engagement with the targeted community, technical and market watch analyses as well as engagement with the external Industry Capacity Board, pilot engagement with stakeholders and policy decision makers. Innovation watch and further needs identification is to the forefront of the engagement process with the individual technical work package leaders and the Market Outreach Manager in particular.

Foresight engagement workflow:

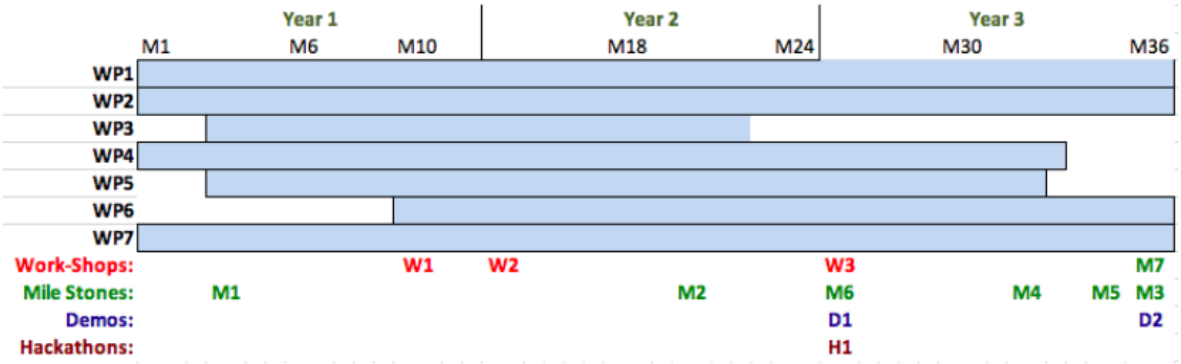
The project runs for 36 months including 3 Pilots (Pilot 1: Using Augmented Reality to facilitate Teaching English Literacy Skills; Pilot 2: Augmented Reality as an Efficient Tool for STEM Information Retention; Pilot 3: Augmented Reality for promoting Positive Behaviour Intervention and Support (PBIS)). There are many significant and meaningful engagements with the targeted community, which are vital for project outcome. The project embraces a solid mechanism to ensure an efficient, integrated and coherent engagement is established with each of the 3 pilots. Each pilot plays a pivotal role during the engagement proceedings. The upfront and foresight engagement exercises throughout the project have significant importance. The engagement process boosts community confidence and trust. The establishment of the Industry Capacity Board and the engagement process helps to ensure that the ecosystem is market driven, which is needed for market positioning and post project take-up thereafter. This process involves a series of workshops, a dedicated hackathon week, demonstrations and pilots and the obtainment of consensual feedback/interview forms (includes KPIs and 50/50 gender feedback). The workflow of the engagement exercises revolves around three major version releases (i.e. "α-β-γ" releases),

[2] http://agilemethodology.org

[3] XBSoftware, (2015), Software development lifecycle: Scrum model step by step, https://xbsoftware.com/blog/software-development-life-cycle-sdlc-scrum-step-step/

the outcomes of which will be assessed by the measurable objectives. Each exercise will have a specific focus of the ecosystem. Figure 4 below depicts and illustrates the foresight engagement workflow and details of the individual engagement events are specified.

Figure 4: ARETE Foresight Engagement Workflow



To be organized by UCD and held in Dublin, Ireland (M1): The kick off meeting has been directed towards current Augmented Reality solutions from the partners of the consortium (CLB, WWL, OBU) as well as on the scope of the advancement of current state of the art based on the objectives set within ARETE.

To be organized by VICOMTECH and held in San Sebastián, Spain (M10): Workshop 1: - foresight exercise at M10 organised through VIC, with a focus on the aspects of the multi-language interactive AR functionality of each of the ARETE pilot studies. The workshop will precede α-development of the project.

To be organized by the University of Leicester and held in Leicester, United Kingdom (M13): Workshop 2: - foresight exercise at M13 organised by the University of Leicester, with a focus on the aspects of HCI for AR interactive technologies. The workshop will precede β-development of the project.

To be organized by UCD and held in Dublin, Ireland (M25): Workshop 3: - foresight exercise at M25 organised by NUID UCD, with focus directed towards innovation and exploitation of the ARETE project. Demonstration 1 at M25: - led by CLB and based on the release of the ARETE ecosystem at Milestone 2. Progress verified by the external Advisory Board as well as the Industry Capacity Board.

Demonstration will include products and their features, user experience and guidance for educators on how to integrate the solutions in the teaching/learning process with multi user interaction and single user interaction options.

Hackathon Week at M25: - organised by UCD. Focus will be on Augmented Reality interactive objects as well as standards based on feedback from the IEEE ARLEM 2.0 and IEEE VR/AR Augmented Reality Standards group, of which the partners of the consortium are members of.

To be organized by EUN and held in Brussels, Belgium (M36): Final Demonstration at M36: - led by CLB supported by WWL and based on the release of the γ-version of ARETE platform (@TRL6). Project results will be presented to the external Advisory Board and the Industry Capacity Board. Final demonstration will provide additional features and educators' guidance for showcasing, single user engagement and multi user interaction with Augmented Reality solutions.

Innovation Manager (IM): Esther Novo (Competitiveness and Innovation, VIC).

Role: involves engaging in the theoretical research and technical development work packages (WP3-WP6) for the development of the innovation capacity pipeline. The role involves bi-directional engagement and feedback from the pilot end users, exchanges received from the *Foresight engagement community* with KPI feedback analysed, as well as meetings with both the Advisory Board and in particular the Industry Capacity Board. Specifically, the IM shall perform the following tasks:

- articulating fresh ideas in compelling thought-pieces with clear recommendations;
- preparing for and facilitating project workshops, the hackathon week and the demonstrations;
- meeting with the external Industry Capacity Board to ensure that ARETE is innovatively well positioned for market take up – beyond the end of the project;
- capturing and distributing meeting outputs;
- participate in early test as well as pilot validation, deployment and evaluations;
- providing innovative and technical recommendations to the PSC for decision-making;
- Sign-off technical deliverables for PSC approval.

Frequency: The IM will routinely meet the WP leaders and the Project Coordinator to discuss innovation aspects of ARETE, progress and project achievements as well as further ideas from the WP leaders and the Project Coordinator. This process also involves a review of project research and innovations with a view to agreeing the need to have Invention Disclosure Forms completed (IDFs) from their team members. Formal IDFs can be submitted by any member of the Consortium and this will be encouraged. Review discussion are held as part of the General Assembly Meetings. At the GA meetings, decisions will be made on the most appropriate process to protect the IP on the most promising disclosures to allow for appropriate dissemination and future exploitation.

2.6 Project Review Plan

The ARETE project is split into two reporting periods:

- P1: Month 1 – Month 18 (M1-M18)
- P2: Month 19 – Month 36 (M19 – M36)

At the end of each period a Project Review Meeting will be held with the participation of the EC Project Officer and independent reviewers appointed by the EC.

Table 5: Project review Plan

Review Number	Month	Planned Venue
RV1	M19	Brussels
RV2	M36	Brussels

3. Quality Plan

Quality Assurance procedures will be applied to all activities and will be the joint responsibility of all partners until complete discharge of their obligations under the EC contract. The main goals of the Quality Assurance procedures are:

- Establishing documentation, reporting and communication procedures;
- Producing high quality deliverables on time;
- Identifying technical and commercial risks, or deviations at an early stage;
- Realising any necessary remedial actions as soon as possible;

3.1 Deliverables

A total 28 deliverables need to be submitted to the European Commission (EC) over the whole project lifecycle. According to GA, deliverables should be completed on time and submitted to the EC via the Participant Portal within due date. The procedures are presented below to ensure the efficient, timely and high-quality delivery of all the deliverable reports.

Table 6: List of Deliverables

No.	Deliverable Name	WP	Lead	Type	Dissemination level	Delivery date (in months)
D1.1	H-Requirement No.1	WP1	UCD	R	CO	1
D1.2	POPD – Requirement No.2	WP1	UCD	R	CO	1
D2.1	Management reports (Contractual, Financial and Technical)	WP2	UCD	R	CO	3
D2.2	Project Plan; Quality Plan; Ethical procedures **MS1**	WP2	UCD	R	PU	3
D2.3	Data Management Plan (DMP)	WP2	UCD	R	CO	6
D3.1	Interactive AR objects and scenarios for ARETE.	WP3	CLB	R	CO	12

D3.2	Developed tangible content (books, maps, flashcards, building blocks, puzzles) to use together with AR software.	WP3	CLB	OTHER	PU	12
D3.3	Interactive collaborative ARETE Mobile app (IOS & Android).	WP3	CLB	OTHER	PU	18
D3.4	ARETE 3D digital repository.	WP3	UCD	OTHER	CO	18
D3.5	Design & ontologies for 3D AR interactive objects.	WP3	CLB	R	CO	18
D3.6	IEEE Standards for AR Objects' content ratings and descriptors **MS2**	WP3	UCD	R	PU	20

D4.1	ARETE Use Scenarios: Analysis of Educational Technologies Usage in Situ	WP4	ULE	R	PU	9
D4.2	Analysis of User Requirements, Needs and Visionary User Cases for ARETE	WP4	ULE	R	PU	18
D4.3	Report on teaching and learning methodology of early ARETE prototypes	WP4	ULE	R	PU	30
D4.4	Report on Summative & Formative usability and user experience evaluation of advanced ARETE prototypes. **MS3**	WP4	ULE	R	PU	33

D5.1	Analysis of PBIS Requirements for ARETE	WP 5	ULE	R	PU	15
D5.2	Interactive AR PBIS component **MS4**	WP 5	SVU	OTHER	PU	22

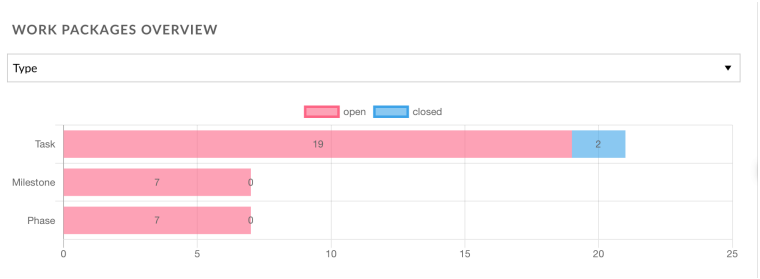
D6.1	Pilots Deployment Plan.	WP6	EUN	R	PU	15
D6.2	Pilots Requirements, Design & Data Management Plan.	WP6	UCD	R	PU	16
D6.3	ARETE Training Platform	WP6	CLB	OTHER	CO	18
D6.4	Pilots Deployment.	WP6	EUN	DEM	CO	23
D6.5	Pilots Performance Analysis. **MS5**	WP6	UNW	R	PU	32

D7.1	Dissemination Plan.	WP7	UCD	R	PU	3
D7.2	Website and social media	WP7	UCD	DEC	PU	3
D7.3	Showcase Mobile App	WP7	UCD	OTHER	PU	20
D7.4	Showcase workshop & Hackathon **MS6**	WP7	UCD	OTHER	PU	24
D7.5	Market Outreach Plan	WP7	CLB	R	CO	18

3.1.1 Monitoring Process

Progress on deliverables is monitored on a monthly basis by the WP leaders and Management Team through the team OpenProject project management which is created to track all the deliverables and tasks (an example is shown in Figure 5). It lists the project deliverable's name, description, due date, responsible partner and status. Any problems or expected delays should be flagged immediately providing an explanation, any planned mitigation action and the anticipated completion date.

Figure 5: Snapshot of ARETE WP Overview on OpenProject



3.1.2 Deliverable Process

The Management Team will inform the Consortium of the upcoming deliverables that are due within 3 months from communication.

Table 7: Timeline for preparing deliverables

Time	Action	Actor
3 months before the due date	Reminder to the partners of upcoming deliverable	The Management Team
2 months before the due date	Second reminder to the partners of upcoming deliverable	The Management Team
1 months before the due date	First Draft Review	Task Leaders
3 weeks before the due date	Second Draft Review	WP Leaders
2 weeks before the due date	Final Review	The Project Coordinator
Due date	Submit	The Management Team

3.1.3 Quality Control

A review process is a key step in the preparation of a deliverable in order to guarantee for the deliverable reports to meet the appropriate standards. All the partners should meet a

set of quality criteria as listed below to ensure that the deliverable is completed in time with the desired/expected quality.

- Completeness: content included in the deliverable report must be completed and reliable.
- Accuracy: information used in the deliverable report should be focused on the key issues and be written in a fashion that takes into consideration the scope of the specific research work and its target audience.
- Relevance: all information used should be provided to the depth needed for the purpose of the reports, according to the project and programme objectives.
- Appearance and structure: although deliverable reports will be authored by different partners, it is important that reports are prepared with uniform appearance and structure. The deliverable report template has been described in D2.1 Management reports.

Every deliverable should be reviewed by the relevant task leaders, then by the WP leaders and finally by the Project Coordinator. The reviewers should perform proofreading and grammar checks and may make minor corrections and format adjustments directly on the text. Any comments or modification should be provided using the track-changes features and adding the reference to the authors.

3.2 Internal Communication

3.2.1 Emails

Day-to-day communication will be based on e-mails. In order to rapid e-mailing, the mail list: ARETE@listserv.heanet.ie has been created which includes all project participants, both technical and administrative staff.

3.2.2 Project Meetings

Project meetings will serve as the main forum for interactions among consortium. In order to minimize travel cost and time, the project meeting will be more use of VoIP conference software instead of physical meetings.
General Assembly and Project Steering Meetings as mentioned in Table 2 will be held twice a year.

WP meetings will be held at least every two months. WP Meeting will be held either 1-on-1 or on a collective basis. Meetings related to each WP are chaired by the respective WPL, who also arrange for decision/action records to be collected and distributed.

Integration meetings will be held between WP3 to WP6 in the development, test and integration cycles.

Management Team Meeting will be held at least two times per month.

Innovation Management Meeting will be held as required. Innovation Manager will routinely meet the WP leaders and the Project Coordinator to discuss innovation aspects of ARETE, progress and project achievements as well as further ideas from the WP leaders and the Project Coordinator.

Intellectual Property Meeting will be held at least once per year.

3.2.3 Project Management Software

In order to facilitate efficient internal communication among partners an electronic project management facility, OpenProject project management software will be used for managing the ARETE project. OpenProject allows the team to organize the meetings, track the deliverables and update the actions.

3.2.4 File Share and store

In order to have efficient document management processes that allow partners to locate and identify relevant files and to ensure version control, ARETE Google Drive team folder has been created to store and archive all project documents.

3.3 Intellectual Property Management

The management of intellectual property within the project will be set out in detail within the consortium agreement. However, partners have already agreed common rules for Confidentiality, background IP, foreground IP, Access rights and use, Ownership and Protection. These key principles apply:

Knowledge Management: Acquirement of scientific and technical knowledge is a core objective of ARETE and its sharing and archiving is a basic requirement to keep track of the project advances and progress. In the ARETE project, this will be achieved via the setup and regular maintenance and update of the project repository, located on a "members' only area" of the project website; this will be available to researchers active on the project. This knowledge database will contain key project documents and presentations, reports, deliverables, agreed standards and publications.

Intellectual Property Management: It will be handled per the provisions of the DESCA 2020 Model Grant Agreement (v1.2.4) March 2017, as well as per the clauses further defined within the ARETE Consortium Agreement, which has been prepared by **UCD** and negotiated with the project partners, prior to the signature and the accession to the Grant Agreement. The Consortium Agreement specifies the project organisation and the governing bodies as well as the decision-making process within the project. It defines the rights and obligations of the Parties and will supplement the provisions of the Grant Agreement within the specific

context of the ARETE project, especially for strategic issues, such as the consortium rules for allocating Commission financial contribution, for confidential issues, as well as for regulating the issue of Intellectual Property and Access Rights.

Foreground Property Rights: It is applied policy that each partner owns the Foreground IP that is solely developed by its researchers within the 'Programme of Research' and may take such steps as it may decide and at its own expense, to register and maintain any protection for the Foreground IP, including filing and prosecuting patent applications for any of the Foreground IP. Access to Foreground IP to all partners is permitted with confidentiality. Further, in situations whereby Foreground IP is jointly developed by two or more partners, then this Foreground IP will be jointly owned by the partners (Joint IP). The Parties agree to address the issues listed in the Consortium Agreement under a joint ownership scenario. Specifically, the Parties agree to nominate a lead partner for responsibilities of negotiating any license to Joint IP granted hereunder. Lead partner will be that party whose researchers made the greatest intellectual contribution to the Joint IP.

Access rights to background: As defined in DESCA 2020 Model Grant Agreement (version 1.2.4), is thoroughly detailed in the ARETE Consortium Agreement: the partners define the background needed for the project in this written agreement. Background remains the property of the partner that has created it. All requests for Access Rights shall be made in writing. The granting of Access Rights may be made conditional on the acceptance of specific conditions aimed at ensuring that these rights will be used only for the intended purpose and that appropriate confidentiality obligations are in place. Access Rights to Results and Background Needed for the performance of the work of a partner under the Project shall be granted on a royalty-free basis, unless otherwise agreed. Affiliated Entities which obtain Access Rights in return fulfil all confidentiality and other obligations accepted by the partners under the Grant Agreement.

Open Source Strategy: The consortium intends to release the interoperable component of the main platform of the ARETE ecosystem as open source. It is the intention to grow the ecosystem to be the best in class. The project will establish an open source repository, either independently or in conjunction with other open source initiatives (European Association for Virtual Reality and Augmented Reality (EuroVR)). As software is developed for the interoperable component, it will be uploaded frequently. The exact model will be based upon the technology and standard choices that the consortium will make and an assessment will be made on the suitability of merging with existing open source initiatives. Guidelines will be placed on the open source site to explain the external contribution process.

Publication versus Intellectual Property Rights protection: Because of involvement of different types of organisations including industry as well as university and research organisations, care will be taken that publication of scientific results and intellectual property rights protection are done in a well-balanced manner, so that future exploitation by developers is not impaired (e.g. by premature publication). The handling of intellectual

property rights including detailed procedures are covered in the consortium agreement, but includes a mechanism whereby any intended publication based on ARETE results must be notified to the consortium in advance for review and agreement. Furthermore, the consortium will provide "gold" open access to public reports from the evaluation of the platform and those peer-reviewed scientific publications with open access publishing. Any other reports and publication will follow the "green" open access from all consortium partners.

Participation in the EC's Pilot on Open Research Data: It is intended that ARETE will participate in the EC's Pilot on Open Research Data, and to this end it would deposit the relevant data (as foreseen by the related Horizon 2020 documents) in a research data repository, and to the maximum extent possible implement provisions for third parties to access, mine, exploit, reproduce and disseminate this data. Accompanying these measures, it is intended that ARETE will provide the information necessary for validating the project's results. The exact provisions of ARETE concerning the Pilot on Open Research Data will be documented in detail in the ARETE Data Management Plan (D2.3).

Management of research data beyond the life of the project: The Consortium has actively considered the importance of data management, particularly with respect to the twin responsibilities of support for open access to heterogeneous data while also adhering to legal and ethical guidance for handling data on the platforms of the ecosystem. Under the auspice of **the Industry Capacity Board,** market watch activities will account for possible future regulatory initiatives by the EU and for next generation development and commercialisation beyond the life of the project will align us with the latest developments.

3.4 Data Management

The ARETE project Data Management Plan will describe the data management life cycle for the data to be collected, processed and/or generated by the ARETE project.
Information about handling the research data during and after the end of project, what data will be collected, processed and/or generated, which methodology and standards will be applied, whether data will be shared/made open access and how data will be curated and preserved (including after the end of the project) will be described in the D2.3 Data Management Plan due in M6 (April 2020).

3.5 Risk Management

The Project Coordinator is responsible for continuous risk management including maintenance of the risk register and chairing regular risk assessment sessions during PSC meetings. The major implementation risks (technological, scientific, societal, dissemination and outreach) and related contingency plans are declared in Table 9. The acceptability of the individual risks is determined by their evaluation in relation to the criteria established in Table 8.

Table 8- Risks acceptability

	Probability (P)		
Impact (I)	1 (Low)	2 (Medium)	3 (High)
1 (Low)	**Acceptable Risk**	**Acceptable Risk**	**Acceptable Risk**
2 (Medium)	**Unacceptable Risk**	**Unacceptable Risk**	**Unacceptable Risk**
3 (High)	**Unacceptable Risk**	**Unacceptable Risk**	**Unacceptable Risk**

Table 9: ARETE implementation risks and contingency plans

Risk Description	WPs involved	Proposed risk-mitigation measures
Ownership of emergent Intellectual Property Rights (IPR) contested by member of consortium. P=1 and I=3	WP2	Ownership of IPR that emerges over the duration of the ARETE project will be addressed through the regular assessment of project outputs from an IPR perspective. This assessment will take place as part of the internal QA process that will be applied to all deliverables prior to submission to the commission. Should there be disagreement, the relevant provisions of the Grant Agreement (GA) will be applied.
Insufficient recruitment of teachers and students. P=2 and I=1	WP4	Usability and user experience evaluations are typically performed with a small number of participants. However, it would still be desirable to test the prototypes with a wide variety of end users from the target groups. Ideally the evaluation activities would be spread equally across institutions and countries, but in case some partners are more successful than others for some reason, the more successful partners can compensate for the less successful ones.
Insufficient technological infrastructure for pilot testing and prototype evaluations. P = 1 and I = 3	WP4, WP5, W6	Case by case issue will be analysed by the Pilots Manager and through the engagement with the Innovation Manager, alternative arrangements will be sought. Project Coordinator and PSC to approve, given the importance of human interaction during the project within both professional and private contexts.
The technologies, design and development prove insufficient or not easy to use during the pilots. P = 2 and I = 2	WP4, WP5, WP6	Pilots Manager gives early warning. The PMO and the IM will collectively re-evaluate the available alternatives and the cost/benefits of their adoption changing the development strategy already decided. The PMO and the IM report the analysis to PM and PSC for actions approval.

Target uptake for pilots does not meet expectations. P = 1 and I =2	WP6	Pilots Manager gives early warning and partner, EUN, utilises the network of available users for the pilots. PM and PSC to approve, given the importance of human interaction during the project within both professional and private contexts.
Health and safety issue occurring during pilots. P = 1 and I =2	WP6	With the unlikely occurrence of a health and safety event occurring, all due care and diligence will be given to the participants. Health and Safety procedures will be followed. All members of PSC will be informed immediately. Both the Pilots Manager and Project Manager will liaise and work in collaboration in the best interest of the participants. In terms of legality, legal liability will be protected through the detailed consent documents, which must be signed prior to the commencement of the pilots. Lessons learnt from the experience will be documented and recommendations will be provided to EU policy.
Ownership of emergent Intellectual Property Rights (IPR) for published works contested by member of consortium. P=1 and I=3	WP7	Ownership of IPR that emerges over the duration of ARETE will be addressed through the regular assessment of project outputs from an IPR perspective. This assessment will take place as part of the internal QA process that will be applied to all deliverables prior to submission for publication or to conferences. Should there be disagreement, the relevant provisions of the Grant Agreement (GA) will be applied. Each partner, before externally submitting a publication must notify by email to the consortium the title, authors and destination.
Consortium member drops out P = 1 and I = 3	All WPs	With a large consortium over a three-year period, there is a risk that a partner may drop out or be unable to continue its role in the project due to unforeseen, external circumstances. On receiving notification of such an eventuality, the project board will collectively decide, in consultation with the EU, the most appropriate way forward, with due consideration of the role and contribution of the partner, the time of their leaving and the net effect on project objectives.

3.6 Conflict Resolutions

As a general rule, the approach to project management in ARETE will aim at a consensus building and promoting in order to ensure the maximum cooperation with all partners. In the unlikely event that consensus cannot be reached, and a decision is necessary to ensure proper project progress, a simple majority vote may take place. In this case, each partner will have one vote. If the issue could not be resolved at the WP level than the issue will be reported to the GA with appropriate supporting evidence, which may include a full report or a presentation of the main issue of contention. The GA will review the issue and report back with a final decision, which will be taken by majority vote, within one month from receipt of report or presentation. In the unlikely event that the GA cannot resolve a dispute within the consortium on a legal matter, the consortium agreement will be provided for the use of a court of arbitration in a neutral country.

4. ARETE Ethical procedures

4.1 ARETE Ethics Framework

The Ethics Appraisal Steps in H2020 projects include:

- Ethics self-assessment
- Ethics pre-screening/screening
- Ethics assessment
- Ethics Checks/Audit

During the proposal stage, ARETE consortium followed recommendations from Ethics Self-Assessment, which was the basis for Section 5 of the proposal. Ethics is a vital part of the research for ARETE project, which will carry out research involving work with human participants and will generate data, therefore ethical procedures need to be set and followed (D1.1 and D1.2) and a data management plan (DMP) needs to be developed (D2.3). The three pilot studies carried out in ARETE are presented in detail in D1.1 (H Requirement No.1, submitted in December 2019). Below we provide a short summary for the reader's reference:

Pilot 1: Using Augmented Reality to Facilitate Teaching English Literacy Skills

- **Lead partner**: WWL
- **Primary and Secondary target sector/groups:** Primary sector: Primary School Education (Teachers, students, parents) / Secondary sector: AR technology developers for educational systems; Disruptive Education
- **KPI targets:** Pilot delivered to in excess of 120 students in four countries: Ireland, UK, Malta & Cyprus. These students should be between the ages of 9 to 12 years by January 2021 and be in 4th to 6th class, or equivalent, in primary school.

Pilot 2: Augmented Reality as an Efficient Tool for STEM Information Retention

- **Lead partner:** CLB
- **Primary and Secondary target sector/groups:** Primary sector: Primary School Education (Teachers, students, parents) / Secondary sector: AR technology developers for educational systems; Disruptive Education
- **KPI targets**: Pilot delivered to 7-10 EU countries (170 kits, one kit per primary school classroom – student ages 7-11 - at an average size of 20 students per classroom) and in different languages.

Pilot 3: Augmented Reality for promoting behavior management and self-management within the framework of Positive Behaviour Intervention and Support (PBIS)

- **Lead partner**: CNR
- **Primary and Secondary target sector/groups:** Primary School Education (Teachers, students, parents) / Secondary sector: AR technology developers for educational systems; Disruptive Education
- **KPI targets:** pilot delivered to 500+ fifth- and sixth-grade primary school students aged 10 to 12 years across the Netherlands and Italy within classes

of primary schools who already implement and apply school-wide PBIS for more than one year. With an average classroom size of 20-25 students per classroom, a minimum of 20-26 classrooms will be recruited (experimental and control condition equally divided).

Special care needs to be taken when dealing with ethical considerations and data management in ARETE, due to the fact that the project deals with:

- Augmented Reality emerging applications, in which individuals are exposed to information and objects that are not part of the real physical environment.
- Human participants, from vulnerable groups, who will participate in the three different pilots. They will be volunteers from primary schools around Europe, which doesn't involve physical interventions on studying the participants.

The need to protect the data follows the latest EU directives (GDPR) since the test, pilots and its results are mainly performed with and gathered from vulnerable groups. ARETE research will comply with ethical principles and will guarantee that the rights of the research participants are ensured and that research methodologies do not result in discriminatory practices or unfair treatment. Special attention will be paid to privacy, data protection, data management and health and safety of the participants. Every project pilot manager needs to plan in advance every action that needs to be performed in order to develop an ethically correct and integral research in all aspects of the process. An ethical approach must be adopted from a legal point of view, research and excellence. As described in D1.2 (POPD Requirement), ARETE has appointed NUID UCD DPO to oversee all pilots, who will liaise with EUN Data protection coordinator and the Pilot's manager DPO for proper management of all ethics procedures and most specifically of:

1. Ensuring the proper management of all ethics procedures
2. Supervising all actions related to stakeholders
3. Provide advice and recommendations on ethics to all Parties and the Coordinator.

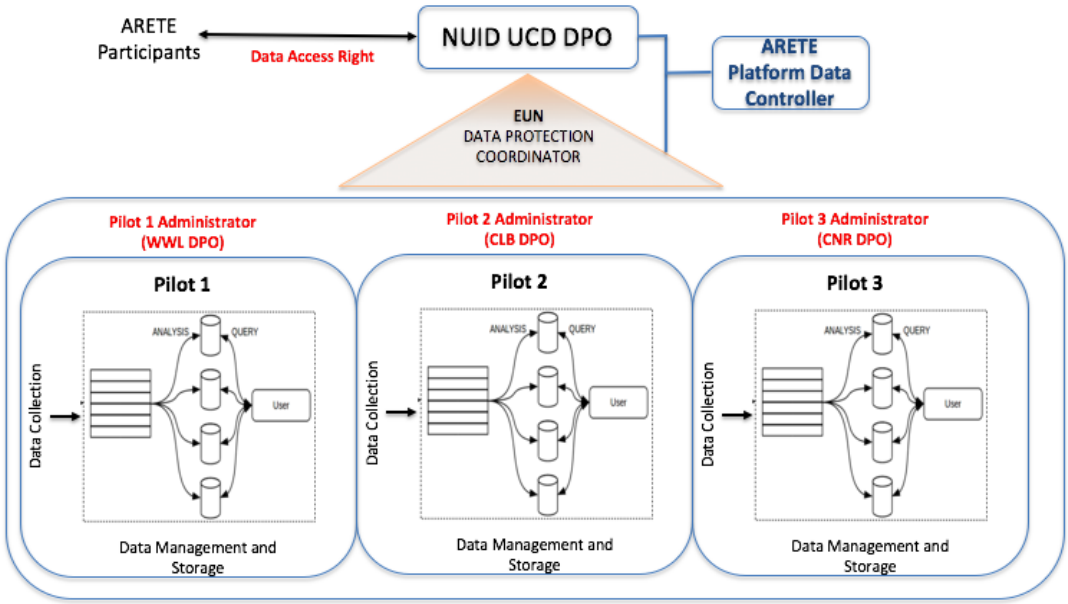


Figure 6: ARETE Ethics Process

The choice of Pilot ethics administrator assigned to the partners' DPO is based on the fact that each partner is in compliance with GDPR based on their normal practice. The audit will be conducted by UCD, supported by UCD Office of Research Ethics. UCD has informed all partners of the details required for GDPR compliance at the project kick off meeting, and all the details are part of the signed grant agreement from all partners. UCD Office of Research Ethics will provide ethics approval of the project ethical strategy produced from all consortium partners, which will rest on the common values of autonomy, independence, beneficence and justice. We will agree upon common ethical guidelines for the user studies including issues relating to informed consent; documentation; data protection; freedom of information and dealing with complaints. We will also embed an ongoing discussion about ethical issues into our structure of meetings throughout the project, facilitating reporting of ethical matters. Through the involvement of the **NUID UCD Human Research Ethics Committee - Sciences (HREC-Science)** there will be a continuous watch of new laws and legislations that may arise during the project development, regarding the ethical management of research with humans within national and European levels, to ensure that if new legislation arises during the project, they will be immediately applied to the ARETE project strategy, and all pilot leaders will inform the consortium of any changes at national level, where the pilots take place. NUID UCD DPO is responsible for support to the scientific research performed within ARETE.

4.2 ARETE Ethics Procedures

Ethical procedures in ARETE have adapted a holistic approach. ARETE will implement different methodological approaches and tools: focus groups, interviews, experiments, questionnaires, etc. However a unified approach to ethical procedure has been decided as a general framework for the project. To support this, ARETE consortium will draft a list of

possible research methodologies within the application for full ethics approval from UCD DPO, before contacting any stakeholder for the participation at the pilots. The different possible stakeholders, as well as those considered vulnerable group, will be taken into consideration as well as the fact of the different languages and ways to interact with the consent form. After finalising the exact users for the interactions within WP3, WP4, WP5, WP6 and WP7, permission to interact with the stakeholders will be requested from UCD DPO and this file (D2.2) will be updated with the final letter within the next predefined update (M12). This permission is needed to gather user requirements and contact the stakeholders with information related to the pilots.
UCD Office of Research Ethics requests information related to the title of the project; description of the project; research area for human participants; information of consortium partners; research objectives with the experiment; research methodology; information to participants and data management plan detailed in the following predefined document templates:

- HR1 Application Form (Annex 2: Template)
- HR2 Supporting Documents (Annex 3: Template)

4.3 ARETE Stakeholders' recruitment

Participants for all three pilots will be recruited through official channels and will be volunteers. Information sheets will be provided and pilot managers have already participated in and lead many research pilots and we have close collaboration already based on other EU projects. Specific details about the recruitment process for human participants and about inclusion and exclusion criteria are defined for each specific test in D1.1. Recruitment will be performed once ethics approval is granted from UCD DPO, through personal invitation to stakeholders (including Information Sheet and Consent Form).
Information sheets and informed consents will be provided in writing and formally documented. We will insure fully informed understanding of the implications of participation in each pilot with detailed information of the expectations from the human participants. Information sheets and consent forms will be written in a way that participants can fully understand.

4.4 ARETE Human Participants' Personal Data Protection

Data protection regulations in ARETE are in line with GDPR. The project partners take on board EU data protection policies following the European Directive 95/46 with date 24/10/1995 and also national policies for the countries where the pilots will be performed.

4.5 ARETE Human Participants' Personal Data

Within the human participants rights for ARETE project, individuals have a number of specific rights under the data protection law to keep them informed and in control of the processing of their personal data. The most commonly exercised of those rights are those found under the GDPR (in Articles 12-22 and 34). All ARETE partners are compatible with the GDPR Personal Data Control cycle (Figure 7).

The data subject's rights under the GDPR include:

- Right to be informed if, how, and why their personal data are being processed
- Right to access and get a copy of their personal data
- Right to have their personal data corrected or supplemented if it is inaccurate or incomplete
- Right to have their personal data deleted or erased
- Right to limit or restrict how their personal data are used
- Right to data portability
- Right to object to processing of their personal data
- Right not to be subject to automated decisions without human involvement, where it would significantly affect them

Information provided to data subjects when these rights are exercised must be transparent, understandable and easily accessible, using clear and plain language. The information should be provided in writing, or other means, including, where appropriate, electronically. When requested by the data subject, the information may be provided orally, provided that the identity of the data subject is clear or can be proven.

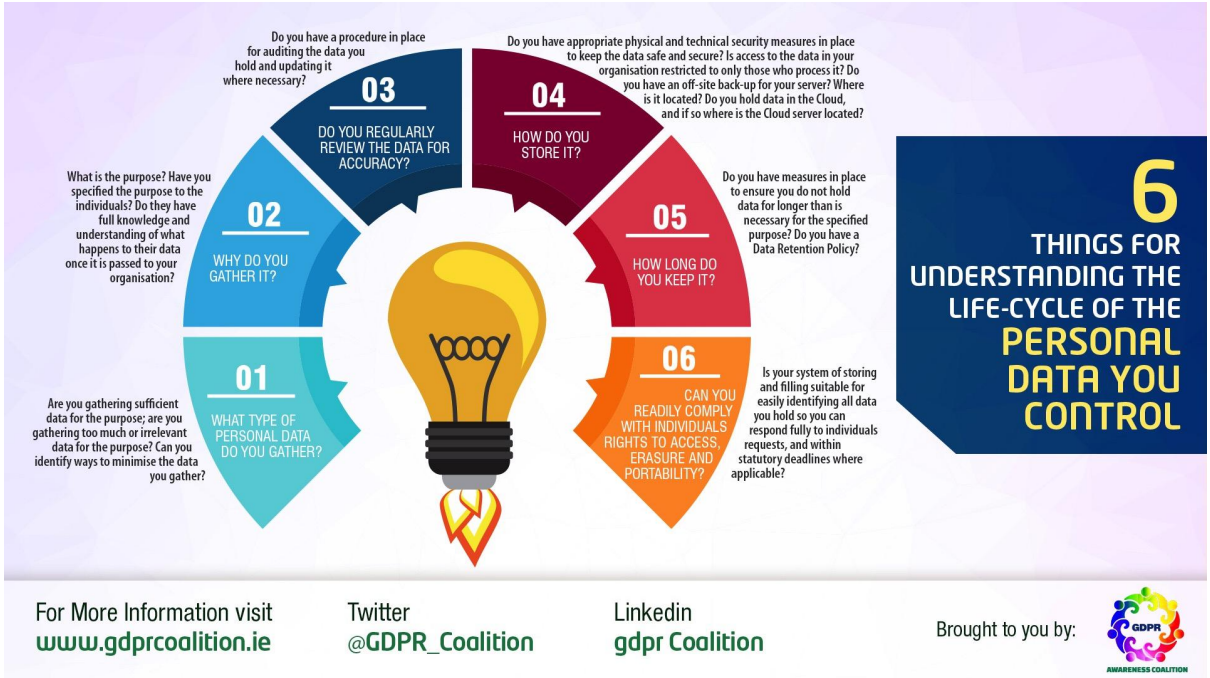


Figure 7: GDPR Personal Data Control[4]

Personal Data and Research[5]

- European Citizens have a fundamental right to privacy. It is important for

[4] http://gdprcoalition.ie/

[5] https://www.dataprotection.ie/en/guidance-landing/anonymisation-and-pseudonymisation

organisations, which process personal data to be cognizant of this right. Therefore GDPR also applies to any research that uses personal data, including scientific research and studies in the arts and humanities**.** This may include public health research, studies on health outcomes, epidemiology, social sciences, politics and modern history.

- Under GDPR data controllers are required to specify the purpose or purposes of processing and for how long data will be retained. Data controllers are also not allowed to do any further processing, beyond the original purpose.
- GDPR recognizes that in the context of research it will not always be possible to be so specific from the outset. GDPR also recognizes that frequently in a research context secondary processing of personal data collected will be required to achieve the research goals.
- Therefore, to address this challenge, Article 6(4) allows for subsequent processing operations that are '*compatible*' with the primary purpose without having to seek renewed consent. Recital 50 specifies that further processing for research purposes '*should be considered to be compatible*'.
- The GDPR creates an exemption to the principle of purpose limitation for research. Article 5(1)(b) states, "*further processing for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes shall, in accordance with Article 89(1), not be considered to be incompatible with the initial purposes."* Article 89 sets out the safeguards that controllers must implement in order to further process personal data for research.

Key steps reporting a personal data incident

As shown in Figure 8, all partners will adhere to the following process once there has been an incident reported:

1. Immediate Reporting to Pilot Manager
2. Complete Incident Report Form
3. Carry out Risk Assessment
4. Contain the Breach
5. Office of NUID DPO (UCD Data Protection Office) Notify DPC (Data Protection Commission) if required
6. Notify the Individual(s) if required

Figure 8: Key steps reporting a personal data incident

Awareness of 72 hour window

An organisation has 72 hours from when an incident is detected to notify the DPO.
All partners of ARETE are required to carry out their own risk assessment[6].

4.6 ARETE Informed Consent Procedures:

All participants in the pilots will be given a detailed Information Sheet and an informed consent form. Both documents will be written in terms that participants can understand. They describe the aims, methods and implications of the pilots and the research of ARETE project and any risks taking place. Participation in ARETE pilots will always be voluntary and participants will explicitly be informed that they can refuse to participate or withdraw their participation at any time without any consequences. Participants will be informed that they can request additional information about the project results they are interested in.
Consent forms will be produced and approved in English and then translated into other languages needed for each pilot. The procedure that will be followed to obtain informed consent are:

- Welcome participants in writing
- Inform participants about the project and specific pilot in which they are involved in an appropriate format according to their needs and the approved Information Sheet from NUID UCD Ethics Committee
- Request for the participants to sign their consent. The consent form and information sheet should be included on a single piece of paper (both sides, if needed). Once the pilot is finished the consent forms will be kept within the Schools. All forms will be kept in a locked room in a secure building.

4.7 ARETE Video recordings:

Video recordings and promotional material has been established for WP7 (Dissemination) to generate short videos about ARETE project and aims at creating short movies to follow the development of the project. Anyone being recorder for dissemination processes will sign a

[6] http://www.ucd.ie/gdpr/resources/testyourdataprotectionreadiness

release and consent form that grants photo, video and sound recording rights. This form will be stored at the WP7 leader (CLB) for the duration of the project and five years after the end of the project in a locked room in a secure building.

4.8 ARETE Website

Only project information considered as PUBLIC will be published on the ARETE website. No personal data will be obtained through the website. We have made an extra effort with the web developer so that user interaction will be anonymous and there is no contact form but information on how to contact the project coordinator. News items are posted via the consortium partners and the twitter feed is shown automatically for news on our project publicly.

4.9 ARETE Data Management Principles

The ARETE Data Management principles and ethical procedures will be based on the following DMP principles[7]:

- **Lawfulness, fairness, and transparency**: Any processing of personal data should be lawful and fair. It should be transparent to individuals that personal data concerning them are collected, used, consulted, or otherwise processed and to what extent the personal data are or will be processed. The principle of transparency requires that any information and communication relating to the processing of those personal data be easily accessible and easy to understand, and that clear and plain language be used.
- **Purpose Limitation**: Personal data should only be collected for specified, explicit, and legitimate purposes and not further processed in a manner that is incompatible with those purposes. In particular, the specific purposes for which personal data are processed should be explicit and legitimate and determined at the time of the collection of the personal data. However, further processing for archiving purposes in the public interest, scientific, or historical research purposes or statistical purposes (in accordance with Article 89(1) GDPR) is not considered to be incompatible with the initial purposes.
- **Data Minimization**: Processing of personal data must be adequate, relevant, and limited to what is necessary in relation to the purposes for which they are processed. Personal data should be processed only if the purpose of the processing could not reasonably be fulfilled by other means. This requires, in particular, ensuring that the period for which the personal data are stored is limited to a strict minimum.
- **Accuracy**: Controllers must ensure that personal data are accurate and, where necessary, kept up to date; taking every reasonable step to ensure that personal data that are inaccurate, having regard to the purposes for which they are processed, are erased or rectified without delay. In particular, controllers should accurately record information they collect or receive and the source of that information.

[7] http://www.ucd.ie/gdpr/about/personaldata/

- **Storage Limitation**: Personal data should only be kept in a form which permits identification of data subjects for as long as is necessary for the purposes for which the personal data are processed. In order to ensure that the personal data are not kept longer than necessary, the controller for erasure or for a periodic review should establish time limits.
- **Integrity and Confidentiality**: Personal data should be processed in a manner that ensures appropriate security and confidentiality of the personal data, including protection against unauthorized or unlawful access to or use of personal data and the equipment used for the processing should be protected against accidental loss, destruction or damage, using appropriate technical or organizational measures.
- **Accountability**: Finally, the controller is responsible for, and must be able to demonstrate their compliance with all of the above-named Principles of Data Protection. Controllers must take responsibility for their processing of personal data and how they comply with the GDPR, and be able to demonstrate (through appropriate records and measures) their compliance, in particular to the DPO.

Data storage, Backup and Security

Any data breaches within ARETE project must be reported. Figures 9 & 10 are the recommended Backup and Security Layers from UCD and the recommended data classification guide that all partners will comply with.

Figure 9: Backup and Security Layers

	Red Data	Amber Data	Green Data
Legal Data Types	Protection of data is required by law or regulatory instrument.	UCD has an obligation to protect the data.	Protection of data is at the discretion of the owner or custodian.
Reputation of UCD Data	Disclosure would cause exceptional or long term damage to the reputation of the University, or risk to those whose information is disclosed.	Could cause harm to the reputation of the University.	Low risk of embarrassment or reputational harm.
Commercial Data	May have serious or long term negative financial impact on the University.	May have short term financial impact on the university.	No impact to the commercial operation of UCD.
Other Institutional Risks	Information which provides access to resources, physical or virtual.	Smaller subsets of protected data from a school.	General university information.
Approved Storage Platform Options	Novell Storage Custom Storage * Encrypted Storage Device**	Google Drive Novell Storage Microsoft office 365 (pilot) Custom Storage Encrypted Storage Device**	Google Drive Novell Storage Microsoft office 365 (pilot) Custom Storage Storage Device **

Figure 10: UCD Data Classification Guide

Do's:

- Keep personal data only on **electronic devices** that are:
  - Password protected and never use your institutional password for any other account
  - Regularly scanned with security software
  - If portable, encrypted as well
- Leave **paper documents** containing personal data:
  - If not in use, locked away
  - Never lying around or behind
  - Out of sight of unauthorized people (e.g. when reading a CV in a public place, on a train or in an airplane)
- After the original purpose you got permission for has come to an end, **dispose of personal data, both electronic and paper, only in a manner that does not allow undoing deletion/destruction.** This means for paper documents confidential shredding, and for electronic data using an appropriate deletion programme. The 'Recycling Bin' of your electronic device is not an appropriate place for deleted personal information.

Don'ts

- Never put unencrypted personal information on any device that can be lost or stolen easily. This includes thumb drives, external hard disks you carry around, laptops left in cars, mobile phones, tablets.
- Storage solutions like DropBox, Google Drive, etc are not suitable for storing unencrypted personal data
- Don't log on to public Wi-Fi, because it can be hacked easily
- Don't use your institutional password for anything else
- Never rely on your device provider to take care of security scans for you
- Never send unencrypted personal information by email or similar
- For paper documents containing personal information:
    - Never keep them on an open shelf in a general office
    - Never throw them in the general bin
    - Never leave them behind after you are finished with it
- For both electronic and paper formats of personal information, if you share it with other people, be sure you have the right to do so.

ARETE Ethics Procedures - Conclusions

The present section outlines the underlying ethics procedures principles that the ARETE consortium will adhere to during the various project related activities, as well as the ethical standards which inform these principles.

The ARETE Ethics Principles will be described in detail within the UCD Research ethics application form for full approval and are based on:

- Anonymity
- Confidentiality
- Privacy and Security
- Data minimisation
- Informed consent

Moreover, the 'ethics from the beginning' approach will ensure that European Commission Ethical Principles will inform all project activities since the very start of the project.

5. Conclusions

The D2.2 Project Plan, Quality Plan and Ethics Procedures provides an organized set of guidelines, procedures and support documents that shall be used for optimizing the project implementation.


ARETE

6. Annexes

6.1 Annex 1: List of Work Packages including Leaders

WP	Work Package Title	Lead Partner	Lead Partner	WP Leader (WPL)	Person Months	Start	End
1	Ethic Requirements	UCD	1	Eleni Mangina (♀)	N/A	M1	M36
2	Project Management	UCD	1	Eleni Mangina (♀)	37	M1	M36
3	Interactive Augmented Reality Toolkit	WWL	3	David Ross (♂)	79	M3	M22
4	User-centred Interactive Design	ULE	5	Effie Law (♀)	99	M1	M33
5	Interactive AR for PBIS	CNR	7	Giuseppe Chiazzese (♂)	105	M3	M32
6	Pilots' Implementation, Deployment and Evaluation	EUN	6	Agueda Gras-Velazquez (♀)	120	M10	M36
7	Dissemination, Exploitation & Communication	CLB	9	Darya Yegorina (♀)	58	M1	M36
				Total Person Months:	**498**		

6.3 Annex 2: HR1 Application Form (Template)

Human Subjects Ethical Review Application Form

Section A: General Information

1. *PROJECT DETAILS*			
a) Project Title:			
b) Study Start Date:	(dd/mm/yy)	**Study Completion Date:**	(dd/mm/yy)
c) Start Date of Data Collection *(must post-date the ethical review)*:	(dd/mm/yy)	**Completion Date of Data Collection:**	(dd/mm/yy)

2. *APPLICANT / PRINCIPAL INVESTIGATOR DETAILS*			
a) Name of Applicant/ Principal Investigator (PI) *(please include title if applicable):*			
Please Note: *UCD Staff members are Principal Investigator (PI); UCD Students are applicants and must include their supervisor's name below in section f)*			
b) Applicant's position in UCD *(please select the relevant option):*	**Staff**	**Postgraduate**	**Undergraduate**
	☐	☐	☐
c) Academic / Professional Qualifications			
d) Applicant's UCD Contact Details	**UCD Telephone** *(if applicable)*	**UCD Email** ***(applicant's name NOT Student Number)***	
e) Name of UCD School and address ***(NOT home address)***			
f) Name of Supervisor *(including title e.g. Prof., Dr etc.,)*			
g) Supervisor's UCD Contact Details	**UCD Telephone**	**UCD Email:**	

h) UCD Investigator(s) and affiliations	*(name all investigators on project)*		
i) Funding *if applicable*	**Source** *(details of funding programme)*	**Amount**	
	If funded commercially, are there any restrictions on the freedom of the researcher to publish the results? Please specify:		
j) Applicant's most recent relevant publications, if any			
k) If this study is being presented for an academic qualification please provide details	*(if yes, your supervisor must provide an endorsement letter which should be included in your support documents accompanying this form)*		
l) Which degree? *Please indicate which one with 'yes'*	*PhD ?*	*Taught Masters/MSc?*	*Other? Give details*

3. SUBMISSION FOR FULL ETHICAL REVIEW	**Yes**	**No**
a) Has this proposal been submitted to any other research ethics committee? ***If yes***, please provide details below of which committee and the outcome.	☐	☐
b) Is this a pilot study?	☐	☐
c) Have you attended a Research Ethics Application Advisory Consultation?	☐	☐
d) Are you seeking permission to access UCD Students from more than one school?	☐	☐
e) Are you seeking permission to conduct a university-wide survey of UCD students? *(if the research is a campus-wide student survey[8] and involves students from two or more schools, then permission to schedule the survey will be sought from the University Student Survey Board (USSB) after the ethical review and approval has been granted).*	☐	☐
f) Do you or other investigators require a Garda Vetting Certificate for the purpose of this study? *(If **YES**, please confirm your compliance in Section C, Q11)*	☐	☐

4. GUIDELINES: please confirm that you have read the following *(select Yes*	**Yes**	**No**

[8] Where the target population comprises students drawn from two or more schools and the survey encompasses university-wide activities or services

or No):		
1) *HREC Guidelines and Policies specifically Relating to Research Involving Human Subjects:* http://www.ucd.ie/researchethics/policies_guidelines/	☐	☐
2) *The UCD Data Protection Policy:* http://www.ucd.ie/dataprotection/policy.htm	☐	☐
3) *The UCD GDPR Policies & Procedures:* http://www.ucd.ie/gdpr/policiesprocedures/	☐	☐
4) *The General Data Protection Regulation:* *https://www.dataprotection.ie/docs/GDPR/1623.htm*	☐	☐
5) *The Data Protection Guidelines on Research in the health sector, (if applicable):* https://www.dataprotection.ie/documents/guidance/Health_research.pdf	☐	☐
6) *The Health Research Regulations:* *http://www.hrb.ie/funding/gdpr-guidance-for-researchers/gdpr-and-health-research/health-research-regulations-2018/*	☐	☐
For all the latest versions of the UCD REC and HREC Policies and Guidelines please see the research ethics website: http://www.ucd.ie/researchethics/policies_guidelines/		

NOTE: Approval will not be granted if recruitment and/or data collection has already begun

5. EXTERNAL APPLICANTS ONLY			
a) External Investigator(s) *if applicable*			
b) Name of Organization		**Relationship with External Organization**	
c) Address of Organization			
d) External Investigator(s) *if applicable*			
e) Project Title:			
f) Start Date of Data Collection:	(dd/mm/yy)	**Completion Date of Data Collection:**	(dd/mm/yy)

6. INSURANCE			
Please note that UCD's existing insurance policy providing cover in relation to research work and placements, being undertaken by UCD staff and students, is currently limited to ***Public Liability*** *only. Provisions of other types of insurance cover, as listed in the table below, are the sole responsibility of the researcher.*			
Please select **Yes** or **No** and provide details, where required. Please do not assume that you do not require insurance. NOTE: **This section is mandatory** – your application will not be processed unless this section is completed.		**Yes**	**No**
a) Does this study require medical malpractice or clinical indemnity insurance? *(If* ***YES,*** *please provide details below)*		☐	☐
i: Is relevant insurance cover already in place? (Yes/No)		☐	☐
ii: Insurance Holder's Name:			
b) Is this study covered by Clinical Indemnity Scheme (CIS)[9]? *(If* ***YES,*** *please provide details below)*		☐	☐
i: Healthcare Provider's Name:			
Is there any blood or other tissue sampling involved in this study? *(If* ***YES,*** *please provide details below)*		☐	☐
Ii: Who will be taking samples?			
Iii: Insurance details:			
d) Are there other medical procedures involved in this study? *(If* ***YES,*** *please provide details below)*		☐	☐
i: Details of Procedures:			
Does this study involve travelling outside of Ireland? *If* ***Yes****, please name the country/countries where the researcher will travel in the field below*		☐	☐
ii: Name country/countries outside of Ireland:			
The Office of Research Ethics will liaise with the Insurers and will advise you of any specific requirements, if necessary.			

7. ETHICAL ISSUES & DILEMMAS		
Please select **Yes** or **No** and provide relevant details below. **This section is MANDATORY!**	**Yes**	**No**

[9] The **Clinical Indemnity Scheme** (CIS) is the main scheme under which the State Claims Agency (SCA) manages all clinical negligence claims taken against healthcare enterprises, hospitals and clinical, nursing and allied healthcare practitioners covered by the scheme. Under the CIS, the State assumes full responsibility for the indemnification and management of all clinical negligence claims.

a) Does this study involve any ethical dilemmas which may arise in the course of the study?	▱	▱
i: if YES, please identify any ethical dilemmas which may arise in the course of the study and provide details of how you propose to address them.		
ii: If NO, please explain why you think that there are no ethical dilemmas and why you are submitting application for full ethical review.		

Section B: Research Design & Methodology

8. RESEARCH PROPOSAL	
a) Has this topic been studied before? ***If yes,*** why is an additional study needed?	
b) Provide a brief description of research	*The description must be presented in everyday or lay language and not more than 250 words each*
i	the aims and objectives of the study
ii	the scientific/theoretical background of study
iii	the research design
Iv	the methods of data collection
V	the size and composition of sample
vi	how the size of the sample was determined
vii	Will there be a pilot study run initially?
viii	the methods of analysis to be used
Ix	Will formal statistical procedures will be used
X	the expertise available to the researcher/s for analysis of the data
c) Methods of data collection *(please select Yes or No)*	

I	standard educational practices	Yes / No	
Ii	standard educational tests	Yes / No	
Iii	standard personality tests	Yes / No	
Iv	standard psychological tests	Yes / No	
V	interviews or focus groups	Yes / No	
Vi	public observations	Yes / No	
Vii	persons in public office	Yes / No	
Viii	using existing data only	Yes / No	
Ix	surveys/questionnaires	Yes / No	
X	audio/video recordings	Yes / No	
Xi	Other*(please specify)*	Yes / No	

Section C: Research Participants: Risk, Harm, Selection and Consent

9. RECRUITMENT OF PARTICIPANTS		
a) Who are the participants or informants? *(including size and composition)*		
b) Where are you recruiting the participants from?		
i	Do you have permission to access these participants? *(provide details of organization/group and attached a copy of the permission if applicable)*	
If you are recruiting UCD students please ensure that you complete ***Section E*** *below.*		

10. RISKS TO PARTICIPANTS: *Please indicate the level of risk for research participants, and provide brief details:*		
a) Extreme risk?	Yes / No	
b) High Risk?	Yes / No	
c) Some Risk?	Yes / No	
d) Minimal Risk?	Yes / No	
e) Please indicate the steps that will be taken to control this risk or to address any harm associated with participant *(e.g. debriefing procedures etc.,)*		

11. Please provide details on the participants of the study:		
a) *Selection and Recruitment:* How will the research participants in this study be selected, approached and recruited?		
i	Please state clearly who will approach potential participants?	
b) *Screening Criteria for recruitment/selection of participants*		
i	Inclusion criteria. What inclusion criteria operate?	
ii	Exclusion criteria. What exclusion	

	criteria operate?	
c) Vulnerable participants:		*If the participants (or controls) belong to any of the following vulnerable groups below please give details*
i	Children under 18 years of age	
ii	University Students *(see policies – accessing students and recommendations on using students in research)*	
iii	People who have language difficulty	
iv	People who have a recognised or diagnosed intellectual or mental impairment	
v	Older people	
vi	People confined to institutions *(prisoners, residents in 24 hour nursing facilities)*	
vii	Persons in unequal relationships with the researcher *(teacher/student; therapist/client; employer/employee)*	
viii	Others *(please specify)*	
12. If the study participants (or controls) belong to any of the vulnerable groups please state what special arrangements will be made to protect them (including Garda Vetting requirement) and to deal with issues of consent/assent.		

13. Please confirm that the following issues have been addressed in your Information leaflet for participants *(please note that the items listed below are also the <u>headings to be used in your information sheet</u> and are addressed to the participant)*	**Yes**	**No**
a) Introductory statement: • Researcher's name and descriptor (Professor, Dr. Mr. Ms) • Name of researcher's School • The topic and title of the research.	☐	☐
b) 'What is this research about?'	☐	☐
c) 'Why I am doing this research?'	☐	☐
d) 'Why have you been invited to take part?'	☐	☐
e) 'How will your data be used?'	☐	☐

f) 'What will happen if you decide to take part in this research study?'	☐	☐
g) 'How will your privacy be protected?'	☐	☐
h) 'What are the benefits of taking part in this research study?'	☐	☐
i) 'What are the risks of taking part in this research study?'	☐	☐
j) 'Can you change your mind at any stage and withdraw from the study?'	☐	☐
k) 'How will you find out what happens with this project?'	☐	☐
l) Contact details for further information	☐	☐
If not included in the information leaflet fully explain and justify why?		

14. Describe the procedures by which consent will be obtained			**Yes**	**No**
a) Is written consent to be obtained?			☐	☐
i	**If yes,** describe the procedures by which written consent will be obtained			
ii	**If no,** describe procedures regarding how consent will be obtained			

15. Expenses & Reimbursements *(Please read REC Guidelines on Expenses & Incentives before completing this section)*		**Yes**	**No**
a) Will payment of any kind, including expenses, be made to participants?		☐	☐
i	**If yes,** please provide details and justification below.		

Section D: Confidentiality and Data Protection

16. What arrangements are in place to ensure that the identity of each participant remains confidential?

17. Do you intend to use any of the following recording devices as a means of collecting information for this research study?	**Yes**	**No**
a) Audio/Sound recorder (tape/cds)	☐	☐
b) Photography(incl. digital cameras/phones)	☐	☐
c) Film/Video/DVD recorder	☐	☐
d) Computer	☐	☐
e) Other	☐	☐

<u>If yes</u> is indicated for any of these devices, please indicate the specific permission that will be obtained as part of the informed consent document.

18. Please indicate the form in which the data will be collected/stored/accessed and provide brief details: *For explanation of the terms below please refer to **Personal Data Definitions & Examples** short guide*		**<u>Collected</u>**		**<u>Stored and/or accessed</u>**	
		Yes	**No**	**Yes**	**No**
I	Anonymous				
ii	De-identified (or anonymised)				
iii	Identifiable				
iv	Potentially identifiable				
Please provide any additional details about data collection or storage					

19. Describe the measures that will be taken to protect the confidentiality of the data which will be collected:	
a) Who will have control of the data generated by the research?	

b)	Where will the data will be stored/ or archived, does this comply with the HREC guidelines?		
c)	In what format will the data be stored?		
d)	For how long will the data be stored?		
20. Responsibility for data collected in the study			
a)	Who will be responsible, for the secure storage of and for control of access to the data generated by the research, until it has been either archived or destroyed,		
b)	Who will be responsible for archiving or destroying the data at the end of the period indicated in answer to Q 19d?		
c)	Will the data generated by the research be destroyed?	**Yes**	**No**
		☐	☐
d)	Will the data be destroyed at or before the end of the study?	☐	☐
e)	**<u>If yes</u>,** Please justify **why** the data will be destroyed and confirm that you will inform the Committee that the destruction of data has occurred in the Human Research Ethics Committee *End of Study Report Form* (HR4)		
f)	Who will be responsible for destroying the data?		
g)	**<u>If no</u>,** please indicate what will happen to the data and who will be responsible for it. The chosen option should also be confirmed in the Human Research Ethics Committee *End of Study Report Form* (HR6)		
h)	Will the data be archived at the end of the study?	☐	☐
i)	Will the archived data be intended for personal use only?	☐	☐
j)	Will the archived data be made available to other researchers?	☐	☐
<u>If yes</u>, Please provide details about how and where the data is to be archived and details on the future use of the data – who will be allowed to access the data, what restrictions will be in put in place and any other criteria for accessing this data in the future by a third party?			

k)	*Who will be responsible for the archive and future use of the data?* (please provide a name of a UCD staff member or UCD school or external organisation)		
21. Will any subsequent publications entail the use of audio, video and/or photographic records? *(provide details)*		☐	☐

Section E: Access to UCD Students

Where researchers are hoping to access UCD students in more than one school, Part 1 must be completed. If your research is a university-wide student survey, Parts 1 and 2 must be completed. For information on the process of securing access please see the policy document: *Research Access to UCD Students: A policy for UCD Staff/Students and external organizations* ***Please ensure that you have completed both Parts 1 and 2 of Section E in this form as your request to access students will not be processed***

Part 1: Request for Permission to Access Students

1. Accessing Students?		**Yes**	**No**
a)	**Are you accessing students from more than one school?**	☐	☐
b)	**Do you wish to conduct a university-wide student survey?**	☐	☐
If your answer to 1(b) is yes, please also complete Part 2 below.			

2. Type of Study *(interviews, focus groups, electronic or paper based questionnaires, etc)*			
Proposed Start Date:	(dd/mm/yy)	**Proposed End Date:**	(dd/mm/yy)
If the study will be repeated, please indicate the frequency: *(annual, twice-yearly, etc):*		**Target students** (which schools/colleges)	
Any other Comments:			

Part 2: University-Wide Student Surveys ONLY

1. Title of Proposed Student Survey			
2. Survey Sponsor / Applicant *(please include title if applicable):*			
3. Details of the Proposed Survey			
	Has this survey been conducted in UCD before?	**Yes**	**No**
		☐	☐
If yes, why is an additional survey required?			

Section F: Signed Declaration

23. SIGNATURES ARE REQUIRED ONLY POST-REVIEW AND FOLLOWING SATISFACTORY RESPONSES TO ANY CLARIFICATIONS. Before the final Approval Letter is issued by the HREC the Applicant and Supervisor/Head of School will be instructed via InfoHub/SISWeb to provide a sign off on the declaration below.

I, the undersigned researcher, have read the *UCD Guidelines and Policy for Ethical Approval of Research Involving Human Subjects* and *Further Exploration of the Process of Seeking Ethical Approval for Research* and agree to abide by them in conducting this research. I confirm that the information provided on this form is correct and accurate.

We the undersigned researchers acknowledge or agree with the University:

a) It is our sole responsibility and obligation to comply with all domestic Irish and European legislation and to obtain such statutory consents as may be necessary;

b) Not to commence any research until any such consents have been obtained;

c) To furnish to the proper officer of UCD a true copy of any consent obtained;

d) That neither the University, the Committee, nor individual members of the Committee accept any legal obligation (to us or to any third party) in relation to the processing of this application or to any advice offered in respect of it nor for the subsequent supervision of the research;

***e)** That the research will be conducted in accordance with any approval for an exemption from full review granted by the Committee and in conformity with the documentation submitted with this application and with licence granted under any legislation;*

***f)** That the undersigned researcher(s) have read the most recent UCD Research Ethics Committee Guidelines and Policy for Ethical Approval of Research involving Humans – which are available on the UCD website (www.ucd.ie/researchethics) and agree to abide by them in conducting this research;*

***g)** Confirm that the information provided on this form is correct and accurate;*

***h)** In conducting research a researcher has both ethical duties and legal obligations. Compliance with one set of responsibilities does not guarantee compliance with the other - what is legally permissible may not be ethical and vice versa. It is for the researcher to inform himself and herself as to what ethical duties and legal obligations apply to his or her research and to comply with these duties and obligations;*

***i)** It is not acceptable for an applicant to treat the grant of ethical approval as absolving them from the responsibility of informing themselves of their legal responsibilities in relation to data protection and of complying with these;*

***j)** It must be understood that any ethical approval granted is premised on the assumption that the research will be carried out within the limits of the law;*

***k)** Ethical approval does not constitute any sort of advice or representation to the applicant that compliance with the requirements, as laid down by the UCD Human Research Ethics Committee, will be sufficient to comply with the applicable law in the area.*

6.3 Annex 3: HR2 Supporting Documents (Template)

HREC SUPPORTING DOCUMENT CHECKLIST & TEMPLATE for submission via InfoHub

This template is a checklist and intended to aid your submission to the HREC for a full ethical review by providing you with a reminder of all the documents you *might* submit in one file. All supporting documents should be inserted into this document where indicated. **Please note that your submission cannot be reviewed without the relevant Information Sheet(s) and Consent/Assent Form(s).**

Please tick the documents you have provided for review only

	ıation Sheet for Participants	]
	ıation Sheet for Parents/Guardians	]
	ıation Sheet for Children	]
	nt form for Participants	]
	nt Form for Parents/Guardians	]
	t Form for Children	]
	ew Schedule for Interviews/focus groups	]
	onnaires/Surveys	]
	tisement/Poster/flyers for recruitment of participants	]
	(s) of permission from external organization(s) granting access to their business/school/charity/database etc.,	]
	ther relevant supporting documents specifically required for your study	]
	Letter Responding to Decision Points *(<u>not</u> required for a new submission but will be required for your response to the committee after the review)*	]

Insert all Information Sheets here *and ensure that they following the correct format – see Question12 in the HREC Application Form (HR1) – please confirm that you will print this document on your School Headed Paper*

Insert all consent forms here *– the format can vary as researchers may want to itemize everything that they need a participant to consent to involved in the current study and may anticipate further research such as future publications, archiving or re-using the de-identified data at a later stage. Please confirm that you will print this document on your School Headed Paper*

*Insert **Children's Assent Form**, if applicable here*

*Insert **Interview schedule** and any instructions for interviewing here*

*Insert **Questionnaires/Surveys/scales** and any associated evaluation document here*

*Insert **Recruitment Advertisement/Poster or flyers here** – if the document is not in Word please insert the text only*

*Insert **External Letters of Permissions here** – such as letters from School Principals, Company CEOs, Charity Directors, Copyright permission for use of questionnaire if applicable*

*Insert **Local Research Ethics Approval Letters or Letters of Permissions to access databases**– such as letters from Hospitals, Nursing Homes, HSE Health Boards, Prisons, or any other body or organization that has a Research Ethics Committee)*

Insert any other supporting documentation that is not listed above here but is relevant to your study: For Example: a listing of support groups, a training programme for researchers, a debriefing doc, or a protocol for dealing with stressed participants

Cover Letter Responding to Decision Points *(not required for a new submission)*