Extending Design Thinking with Emerging Digital Technologies

Project Handbook

Grant Agreement Number 101060231
HORIZON-CL2-2021-TRANSFORMATIONS-01-05
(Integration of emerging new technologies into education and training)

Deliverable D1.1
Project Handbook

Due date of deliverable: M3
Actual submission date: M3

Exten(D.T.)² identifier	D1.1: Project Handbook
Name of author/s	Shamim Patel / Marcelo Milrad
Affiliation/s	Linnaeus University
Work Package/Task no.	WP1/T1.1
Work Package lead	LNU
Document status	Draft
Confidentiality	Public

Table of Contents

Table of Tables

Table of Figures

List of Exten.D.T.^{2} Project Related Acronyms

Acronym	
AGMA	Annotated Model Grant Agreement
CFS	Certificate on the Financial Statements
CA	Consortium Agreement
CO	Coordinator
DoA	Description of the Actions
DT	Design Thinking
EB	Ethics Board
ET	Emerging Technologies
GA	Grant Agreement
HE	Horizon Europe
KPI	Key Performance Indicator
OMT	Operational Management Team
PD	Professional Development
PI	Principal Investigator
PO	Project Officer
RIA	Research and Innovation Action
RP	Reporting Period
SC	Steering Committee
SME	Small and Medium-sized Enterprise
SyGMa	System for Grant Agreement Management
TRL	Technology Readiness Levels
WP	Work Package
EU	European Union

1.   Introduction

The aim of this project handbook is to provide a concise and easy-to-read summary of key information and references related to the project including project management and administration aspects. It will provide a good overview of, and help manage and address, planned activities, resources, risks and quality assurance particularly those associated with key expected achievements and requirements.

The document will be a useful reference for the project partners in the consortium, members within each Work Package (WP), and various stakeholders including the EC and UKRI who are funding the project. It does not replace the European Commission's Grant Agreement or its provisions, nor the Consortium Agreement.

The Exten.D.T.[2] Project started on 1 September 2022 and spans 36 months. This handbook has been developed at month 3 (November 2022) as a public deliverable. It is a living, dynamic document and will be updated when necessary.

2. General Project Information

2.1 Project Summary

The Extending Design Thinking with Emerging Digital Technologies project (Exten.D.T.[2]) uses Emerging Technologies (ET) to enhance the pedagogical value, sustainable digitization, and potential for wide deployment of Design Thinking (DT).

Design thinking is a key component of project-based learning. As a pedagogical approach, design thinking can be progressive and conducive for transformative learning as part of a human-centred problem-solving approach. In this context, the Exten.D.T.[2] project will use emerging technologies to enhance pedagogical value, sustainable digitisation and the potential for wide deployment of design thinking. Specifically, it will use design-based research to support pedagogical transformation based on established home-grown expressive digital media enhanced by artificial intelligence, augmented reality, 3D printing and scanning as well as virtual robotics.

The project's overall aim is to inspire teachers to roll out design thinking projects in their classrooms addressing core societal challenges and create spaces for reflective discourse and risk-taking around them.

The consortium includes eight research sites, with complementary interdisciplinary academic expertise, to support project development and at the same time maintain active and sustainable connections with educational institutions and policy-making centres over six European countries.

2.2 Key Data

Quick reference data relating to the project can be found below in Table 1.

Table 1: Quick Project Reference Data

Project Title:	Extending Design Thinking with Emerging Digital Technologies
Project Acronym:	Exten.D.T.[2]
Grant Agreement Number:	101060231
Framework Programme:	Horizon Europe
Call:	HORIZON-CL2-2021-TRANSFORMATIONS-01 (Inclusiveness in times of change)
Type of Action:	Research and Innovations Action (RIA) Programme
Granting Authority:	European Research Executive Agency
Project Officer:	Angel Fuentes Mateos
Start date:	1 September 2022
Duration:	36 months
Maximum EC contribution:	€2 585 135
Maximum UKRI contribution:	€ 499 970
Key words:	Innovation in learning, teaching and assessment practices supported by digital technologies

3.   Legal Basis

3.1   Grant Agreement

The Grant Agreement forms the legal basis of the project. It is composed of:

- Terms and Conditions (including Data Sheet)
- Annex 1: Description of the Action (DoA)
- Annex 2: Estimated budget for the action
- Annex 2a: Additional information on unit costs and contributions
- Annex 3: Accession forms
- Annex 4: Model for the financial statements
- Annex 5: Specific rules

The Terms and Conditions is the Core contract and has been signed between the EC and the Coordinator (CO) of the project. All beneficiaries who have signed the Accession Forms have become individual contract partners with the Commission. UK partners are Associate Partners. They participate in the action, but without the right to charge costs or claim contributions from the EC. They are instead funded through UKRI.

The Grant Agreement must be kept by all signatory partners. In the case of an audit, it will be requested by the auditor. It is downloadable in the participant portal within the document library of the Exten.D.T.[2] project (See Section 7.7). Alternatively for Associate Partners it may be requested from the Project Manager.

3.2   Consortium Agreement

A Consortium Agreement (CA) has been signed by all project partners and is a confidential document. It specifies the rights and obligations of the partners. The consortium is solely responsible for the preparation of the CA and is a contract under private law, where the EC is under no circumstances involved.

The GA takes precedence over the CA. This means the CA must not contradict the GA and the information provided in the "DoA" (Annex 1 of the GA) is binding for the CA. The CA allows all consortium members to agree on any specific details not covered by the GA. It covers:

- General provisions: definitions, entry into force, duration, applicable law.
- Obligations of beneficiaries: compliance with deadlines for deliverables and reports, information obligations, participation in meetings etc. and consequences of non-compliance.
- Internal organisation and decision-making: composition and duties of bodies, meetings, voting rules etc.
- Financial provisions: allocation of funding and transfer to the partners (e.g., payment of pre-financing in instalments), handling of receipts and financial losses etc.
- Provisions on the handling of intellectual property rights.
- Other issues: liability, non-disclosure, dispute resolution etc.

The CA must also be kept by all partners. In the case of an audit, it will be requested by the auditor. The CA has been shared with all partners prior to the start of the project. It may be requested by partners from the Project Manager.

3.3   Amendments

If project-specific data and/or the DoA change during the project, an official amendment may be necessary.

Amendments may be requested by any of the project partners. Circumstances may include removal/addition of a beneficiary; change of the coordinator; changes relating to associated partners; and other substantial or important changes including duration and/or significant changes of tasks and/or budget. The processing is carried out electronically via the Funding & Tender Opportunities Portal. Once approved the Coordinator (CO) will also inform and share the revised version with the consortium including Associate Partners. The revised GA will also be downloadable in the participant portal within the document library of the Extend.T.2 project.

Budget changes which do not require an amendment are dealt with in accordance with the provisions of the CA. The Project Officer (PO) is kept informed of all such changes.

3.4   Useful EC Links and Supporting Documents

Annotated Model Grant Agreement (AMGA)
- This is a user guide providing further details on all articles of the GA including examples. https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf
- The current version published on the 23 July 2021 is a pre-draft, meaning that it is not the final version. Future versions of the AMGA will be available through the same link once they are published.

Horizon Europe Online Manual
- This is an online user guide for EU funding and managing projects in Horizon 2020. https://webgate.ec.europa.eu/funding-tenders-opportunities/display/OM/Online+Manual

Horizon Europe Periodic Reporting Template
- https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/temp-form/report/periodic-report_horizon-euratom_en.pdf

Further Horizon Europe Documents
- For further HE documents (and their updates) see the Funding and Tender portal under "reference documents" (select programming period 2021-2027 and programme Horizon Europe in the left-hand column). https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON

4.   Project Contacts

4.1   Coordinator

The Coordinator (CO) of the Exten.D.T.^{2} project is Linnaeus University.

Partners and third parties should contact the Principal Investigator (PI) for any scientific or technical questions relating to the project. The Project Manager should be contacted for any administration or financial matters. Contact details for the Principal PI and Project Manager can be found in Table 2 .

Table 2: Main Coordinator Contact Details

Principal Investigator:	Project Manager:
Prof Marcelo Milrad Linnæus University Department of Computer Science and Media Technology Faculty of Technology SE-351 95 Växjö | Sweden M: +46 703 396 9574 | lnu.se	Shamim Patel (ACA) Project Manager | Exten.D.T.^{2} Project Linnæus University Office of External Relations SE-351 95 Växjö | Sweden M: +46 705 898 396 | lnu.se

The project has a general email address: extendt2@gmail.com for queries for anyone visiting the project website which is dealt with by the Dissemination and Exploitation Manager (See Section 7).

4.2   EC Project Officer

The EC Project Officer (PO) and Research Programme Administrator is Dr Angel M. Fuentes.

Linnaeus University as CO acts as the interface between the PO and all other project partners. LNU will draw upon and involve the other partners where appropriate. Project partners should not contact the PO directly, but through the CO.

5.   Consortium

5.1   Partners

The Exten.D.T.^{2} consortium comprises of eight partners: seven universities and one SME. Information on partners and the contact details of the respective lead PIs can be found within Tables 3 and 4.

Table 3: Partner Information

Partner Number	Partner Organisation Name	Short Name	Country
1	Linnaeus University	LNU	Sweden
2	Ethniko kai Kapodistriako Panepistimio Athinon	NKUA	Greece
3	Universiteit Gent	UGent	Belgium
4	Norges Teknisk-Naturvitenskapelige Universitet	NTNU	Norway
5	Trinity College Dublin	TCD	Ireland
6	SIMPLE	SIMPLE	Greece
7	University College London	UCL	UK
8	The Open University	OU	UK

5.2   Lead Partner PIs and Contact Details

Table 4: Partner Contact Details

Partner	Lead PI	Email
1: LNU	Prof Marcelo Milrad	marcelo.milrad@lnu.se
2: NKUA	Prof Chronis Knyigos	kynigos@eds.uoa.gr
3: UGent	Prof Lieva Van Langenhove	Lieva.VanLangenhove@UGent.be
4: NTNU	Dr Sofia Papavlasopoulou	spapav@ntnu.no
5: TCD	Prof Carina Girvan	girvanc@tcd.ie
6: SIMPLE	Dr Filothei Chalvatza	filothei.chalvatza@gmail.com
7: UCL	Prof Manolis Mavrikis	m.mavrikis@ucl.ac.uk
8: OU	Prof Christothea Herodotou	christothea.herodotou@open.ac.uk

6.   Project Governance

The project organisation structure is illustrated in Figure 1 below:
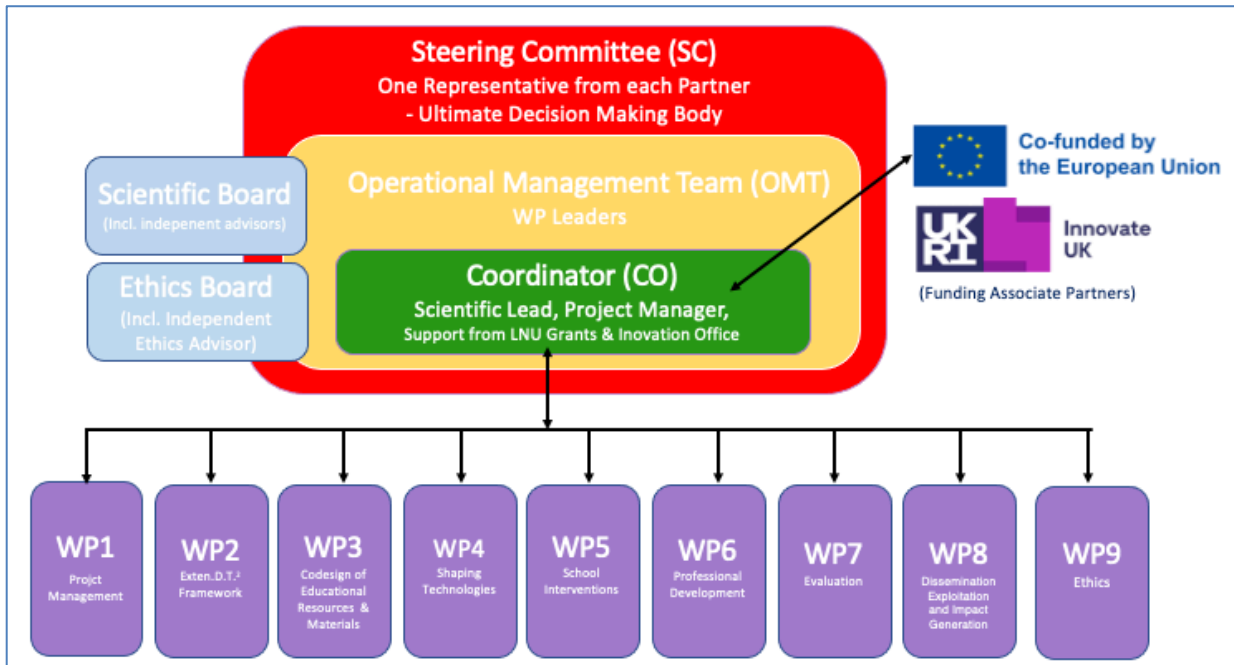
Figure 1: Exten.D.T.² Project Organisation

6.1   Steering Committee

The Steering Committee (SC) is the ultimate decision-making body of the consortium. It consists of one representative from each Partner who has the authority to deliberate, negotiate and decide upon content, finances, and intellectual property rights; evolution of the consortium; and appointments such as independent experts.

The SC will hold meetings every six months either virtually or physically. Meetings are quorum if 2/3 of members are present. All decisions are taken with a 2/3 majority, though the objective is unanimity. The meetings are chaired by the CO. The Project Manager prepares the agenda, minutes and follow-ups on actions and decisions.

6.2   Operational Management Team

The Operational Management Team (OMT) is responsible for direct project implementation. It monitors and assesses work progress. Membership comprises of the CO and all Work Package (WP) Leaders. If a WP Leader cannot attend, they are expected to send a proxy/representative, preferably from their organisation. Two partners, SIMPLE and UCL, are not WP leaders. Their PIs are invited as permanent guests to ensure inclusion of all partners at the operational level. Guests do not have voting rights. WP leaders in the WPs that SIMPLE and UCL collaborate in will take into consideration and represent SIMPLE and UCL views as appropriate.

The OMT meetings follow quorum and voting rules as defined for the SC. The meetings are chaired by the CO. The Project Manager helps prepare the agenda, minutes, and follows up on actions and decisions.

6.3   Work Package Leaders and Task Leaders

The WP Leaders and the Task Leaders are responsible for the detailed implementation of the WP and tasks and preparation of the corresponding deliverables and milestones. The WP Leaders perform operative management at the level of their work package and are responsible for reporting progress at monthly OMT meetings including risks or significant deviation in the work plan.

WP leaders are also responsible in collaboration with Task Leaders to coordinate activities and make decisions at the WP level. The Task Leaders assist the WP leaders in planning, managing and performing their respective tasks in the WP. Some WPs plan to hold meetings regularly, either weekly or fortnightly; other WPs on a "need to" basis.

6.4   Coordinator

The CO, LNU, is responsible for the overall technical implementation and day to day management of the project including organisation and chairing of various governance body meetings as detailed in this section. LNU is the sole point of contact between the partners and the EC. As CO it administers and transfers the EC funding to the partners and submits the compiled deliverables, milestones, periodic and final reports to the EC. It is also responsible for overseeing and reporting on ethics and gender equity. For further information and contact details of the CO see also Section 3.

6.5   Scientific Board

The Scientific Board is a an advisory and quality control mechanism. It comprises of of the following academic peer representatives from each of the university partners: M Milrad (LNU), C Kynigos (NKUA – and Scientific Board Lead), L Van Langenhove (UGent), M Giannakos (NTNU), B Tangney (TCD), M Mavrikis (UCL) and C Herodotou (OU).

The Scientific Board additionally receives complementary independent scientific, strategic, and planning advice from two external advisory experts: Prof Barbara Wasson (University of Bergen) and Prof Tilde Bekker (Eindhoven University of Technology) who are recognised leaders in AI analytics and design thinking in mainstream education respectively. They will be invited to 2-3 project related events or conferences over the duration of the project which may include the periodic or final review. Travel and subsistence costs will be covered through the CO budget.

6.6   Ethics Board

Ethical issues related to children, data and AI were flagged as part of the EC initial Ethics Review with a recommendation for an Ethics Board (EB) to be part of the Project Governance. The EB will compromise of two internal members and one external independent member. Prof C Girvan (TCD) will act as Chair. She has expertise on ethics relating to children. Dr J Velander (LNU) will also be a member of the EB. She has expertise on AI and technological aspects. Prof A Hedgecoe will be the external independent Ethics Advisor.

The EB will work with members of the project, reviewing its data collection and project developments. It will identify potential ethical issues and making recommendations on how to address these. The EB will report to the EC at M6, M18 and M36. Prof A Hedgecoe's contributions are expected to be ca. 11 days. He will be compensated at the rate of € 450 per day which is in line with EC remuneration rates for experts.

7.   Communication & Information Exchange

The main channels for information exchange within the project are e-mail correspondence, video conferences, physical project meetings, visits, workshops, the google drive hosted by LNU and the EC Participant Portal.

7.1   Mailing Lists

The CO has set up three mailing lists associated with the Exten.D.T.^{2} project. Members within each group are able to receive and post emails as appropriate:

- extendt2_all@lists.sunet.se: This is the mailing list for all researchers working on the project. It is aimed for communicating general project information related to Exten.D.T.^{2}, e.g., information from the CO; information on workshops and webinars, other exploitation, dissemination, and communications activities; information from the EC; Sister projects etc.
- extendt2_omt@lists.sunet.se: This is the mailing List for the Operational Management Team members. Members of each organisation are responsible for keeping the Project Manager informed of any changes to the lists.
- extendt2_admin@lists.sunt.se: This is the mailing list for Administration and Financial Reporting contacts within each organisation.

When using one of the three emailing lists [Extendt2] will automatically appear first in the subject header. When not using one of the three mailing lists, e.g., for correspondence between two or three project members, senders are encouraged to include in the subject title the name of the project, followed by a short description of the subject (example: Extendt2_D1.1 Project Handbook_request for input).

7.2   Expectations on Receiving Responses

All project members are asked to follow good etiquette and respond in a timely manner. If a member is away the out-of-office function should be utilised with a date of expected return/or when a reply is likely to be received. Partners are similarly asked to respect an out-of-office and use the 'scheduling' or "send later" function to send a reminder on the day when the person is expected to return.

In circumstances where an out of office may not be appropriate members may contact the Project Manager or the respective WP leader/deputy who can inform the rest of the consortium without disclosing any personal/sensitive information.

In cases of persistent non-responses, the CO should be contacted. The CO will contact the partner concerned. (See also Section 4 of the CA, "Responsibilities of Parties").

7.3   LNU Google Drive - Platform for Collaboration

Following the discussion during the Project's Kick-Off meeting it was agreed to use Google Docs/Workplace as a platform to share and collaborate on documents. LNU has access to a Google Drive which is suitable for such purposes, and which has been run through with its Data Protection Officer.

The Google Drive hosted by LNU includes, inter alia, a folder for each WP, which all members can populate with meeting agendas, minutes, supporting documents as well as certain final and work-in progress project related documents. As a reminder:

- The documents on Google Drive must not contain any confidential or sensitive information.
- Each document should have one owner who can edit it and is responsible for its content. All other partners are invited to collaborate and contribute, where required. When editing a document that one does not own, the "suggesting" function (equivalent to track changes in Word) should be used.

7.4   Physical and On-Line Meetings

Approximately two physical meetings are planned each year. At least one of these will be open to all researchers participating in the project. Where feasible one of the physical meetings may coincide with the EC periodic and final reviews (see Section 12.3). The logistics of the meetings are the responsibility of the host, with assistance from the CO as appropriate. The consortium should be notified of the dates of the physical meetings at least 6 months in advance if possible.

The OMT plans to have 2-hour video meetings each month The dates and times are agreed at the beginning of each teaching semester.

Work Package meetings are the responsibility and arranged by WP leaders. These may be on a regular basis (e.g., weekly, or bi-monthly) or on a "as need to be" basis.

7.5   Calendar, Invitations and Meeting Related Documents

A Calendar is available in the Project Google Drive. Here the CO and WP leaders can slot in their meetings, and all project members may add workshops and other events. The aim of the Calendar is to provide all project members with an overview of project happenings and a tool to help avoid clashes wherever possible.

Outlook calendar invitations should be sent wherever possible and in good time.

Agendas, attendance lists, minutes of meetings and supporting documents should be filed in the respective Google Drive folder.   Minutes of meetings may be requested by the auditors and will be shared with the EC if requested.

7.6   Conventional Naming of Files and Documents

In order to use a common file naming convention, the guidelines below should be followed as much as possible by all consortium members as illustrated in Table 5 below:

Table 5: Conventional Naming of Documents

Example	
Emails: ExtenDT2 + Event/Activity	(Example) ExtenDT2_Kick-Off Meeting
Documents: ExtenDT2_Name of Document_DDMMYYY	(Example) ExtenDT2_Kick-Off Agenda_01092022
Deliverables: ExtenDT2_Deliverable No_Deliverable short name	(Example) ExtenDT2_D1.1_Project Handbook

7.7   EC Participant Portal

EU grants are managed fully electronically through the EU Funding & Tenders Portal ('Portal').
https://ec.europa.eu/info/funding-tenders/opportunities/portal/

Individual members may contact the PI from their organisation to be granted access.
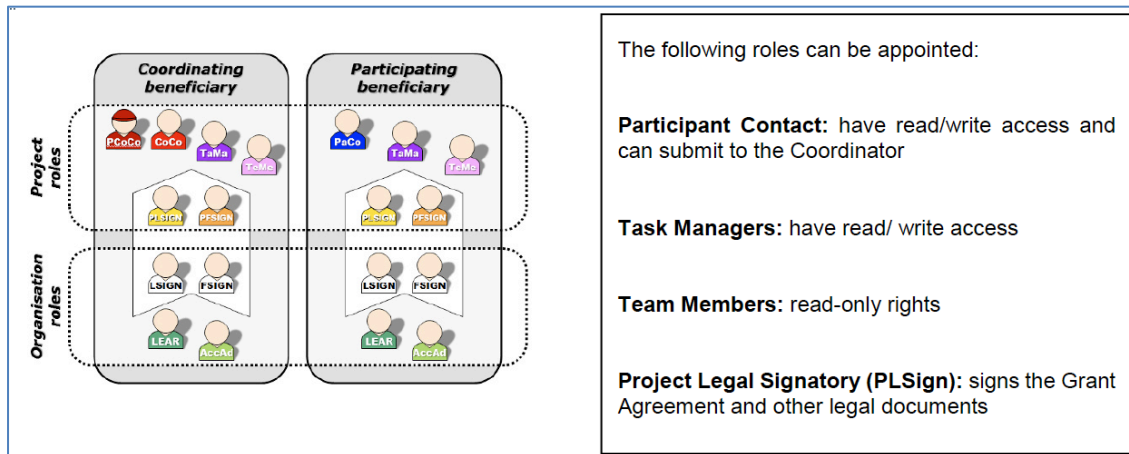
Figure 2: Roles in the Participated Portal

After logging into the system, the Exten.D.T.[2] project can be accessed by clicking onto <My Project> in left hand menu:

Figure 3: Accessing Exten.D.T.[2] Documents in the Portal

Project related documents including the approved Grant Agreement, Deliverables, Periodic and Final Reports are available under <Manage Project> <Document Library>. These are accessible to all project partners receiving funding from the EC (see Figure 3 above).

Associate Partners who do not have access to the Portal may request documents through contacting the CO.

8. Dissemination & Exploitation

A publicly available deliverable "Dissemination and Exploitation Plan" will be available in March 2023 which will provide full details including guidelines for publications, Open Access, and strategies to be adopted at national, European and International level.

8.1 Project Website

The Exten.D.T.[2] website has the following domain address: https://extendt2.eu. It will be progressively expanded during the project with achieved results, public deliverables and project-related information.

8.2 Social Media

Social media accounts have been created for the project in the main social network platforms and can be found under Table 6 below:

Table 6: Social Media Accounts

Social Platform	
Twitter account	https://twitter.com/extendt2
Linked-in account	https://www.linkedin.com/company/extend-t-2/?viewAsMember=true
YouTube channel	https://www.youtube.com/channel/UCf5hTi82TXaL01pSAGnq6Dg/about
ResearchGate page	https://www.researchgate.net/project/ExtenDT2-Extending-Design-Thinking-with-Emerging-Digital-Technologies

The general hashtag for the project is: #extend.

All partners are encouraged to share posts published through their personal and institutional accounts where possible to generate further interest in Exten.D.T.[2].

8.3 Exten.D.T.[2] Logo

The Project Logo is available in the WP8 Google Drive Folder "Dissemination, Exploitation and Impact Generation".

8.4 Further Dissemination & Exploitation Resources

The Google drive Folder "Dissemination, Exploitation and Impact Generation" additionally includes:

- an excel sheet for everyone to record dissemination activities
- template for deliverables etc
- a general PowerPoint presentation on the project

8.5 Glossary

A Glossary of terms relevant to the project is currently under progress and will be available on the project website from early 2023.

8.6 Shared Bibliography

The project uses Zotero. Anyone can go into this, create a group, and invite others to join.

8.7 Acknowledgement of EU funding

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

8.7.1 Visibility — European Flag and Funding Statement

All communication activities (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support and display the European flag (emblem) as illustrated in Figure 4 below, and funding statement (translated into local languages, where appropriate):
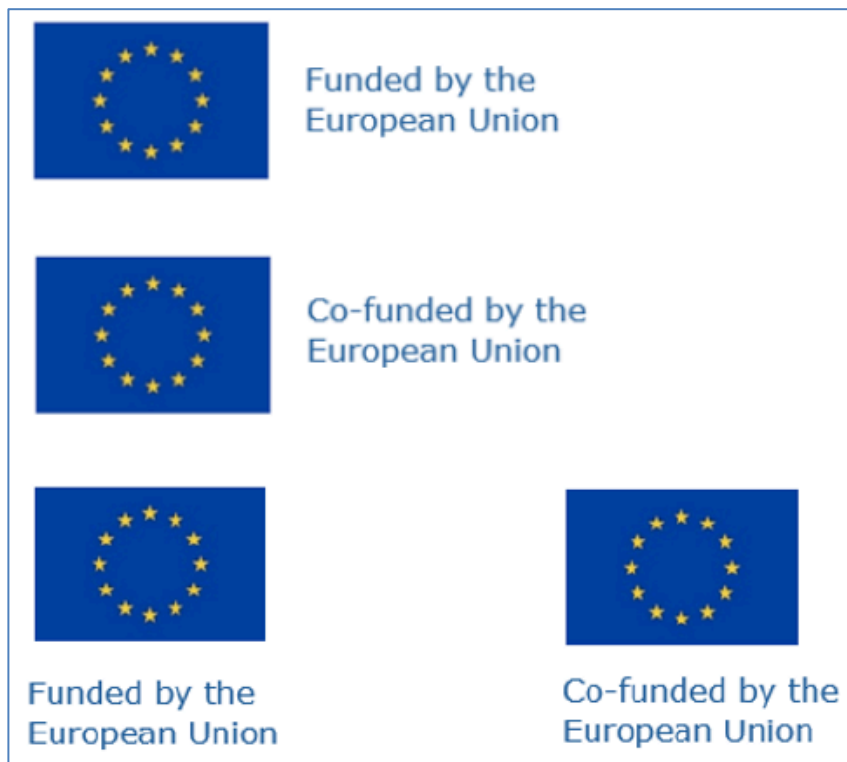
Figure 4: European Flag Emblems

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.

Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g., of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.

8.7.2   Quality of information — Disclaimer

Any communication or dissemination activity related to the action must use factually accurate information. Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

> *"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them."*

8.8   Dissemination and Exploitation Contact

For any further information related to project dissemination, exploitation and impact generation activities please contact the "Dissemination and Exploitation Manager", Prof C Herodotou at: christothea.herodotou@open.ac.uk.

9. Monitoring Progress & Risk Management

9.1 Gantt Chart

A Gantt chart has been developed (Figure 5) to visually help monitor the evolution of the project. It acts as a tool to help coordinate and track specific tasks and deliverables and detect as soon as possible issues such as possible delays.

Figure 5: Exten.D.T.^{2} Gantt Chart

Together with updates from WP Leaders of progress in their respective WP, the Gantt Chart is reviewed at every monthly OMT Meeting.

9.2 Risk Management

The consortium identified a number of initial potential risks and proposed risk mitigation measures during the proposal and Grant Agreement preparation phase (see Table 7 below).

Interdependencies and potential delays were discussed in detail at the start of the project during the Kick-Off Meeting. This was a measure to help ensure that work which is dependent on others started in adequate time to ensure that delays are avoided. Impact, Key Performance Indicators (KPI) and quality markers were also reviewed.

During the project lifetime risks and mitigation measures are planned to be further reviewed quarterly at the OMT meetings or more frequently if required. The risk reporting area of the System for Grant Agreement Management (SyGMa) will additionally be used to monitor the expected risks during the project life (See Section 12.2 related to Continuous Reporting) .

New risks if identified will be included in the list and in the process of risk management as soon as they are recognised

Table 7: Risks and Mitigation Measures

Description of Risk with: (i) Likelihood: Low/Medium/High (ii) Severity: Low/Medium/High	WPs Involved	Proposed Risk-Mitigation Measures
Risk of disengagement by teachers/students: • Lack of technological skills to use the tools • Limited interest in Design Thinking Methodology • Hard to understand Exten.D.T.[2] activities and take part • Previous learning difficulties inhibiting participation in activities *Likelihood: Medium* *Severity: Medium*	WP5 WP6 WP7	• Teachers will be engaged with the design of activities and technologies from the beginning of the project promoting their active participation and sense of ownership. • Additionally for their participation in Teacher PD programmes, teachers will be accredited with the Europass Digital Credential (EDCI). • There will be continuous communication and exploitation of the project outcomes to school networks and events. • The Teacher training actions will be part of existing PD programmes, such as Bachelor and MSc courses and Greece's wide-scale training programme, that have a stable number of participants every year. • Piloting of DT activities will ensure that risks will be identified and addressed in a timely manner prior to the large-scale implementation.
• Technical obstacles in the design of AI component, extended constructionist technologies (games, 3D modeler, V robotics) and their connection to the nQuire platform or other public displays *Likelihood: Medium* *Severity: Medium*	WP3 WP4	• The AI component will continue, extend and combine existing tools, algorithms and analysis techniques developed by NKUA, UCL and LNU and already in TRL 2 or TRL 3. • The 4 educational technologies (2 games, 3D modeler and V-Robotics) will extend existing, widely tested technologies with Libraries and Algorithms for AR or 3D printing. • Piloting of technological developments in the first 6 months will ensure that any major problems will be identified early on and resolved for timely project implementation. • Advice will be sought from advisory members and colleagues from participating institutions, where an alternative solution cannot be identified within the project team.
• Urgent measures to educational organisations due to COVID-19, e.g., local or national lockdown, student/teacher quarantine. A critical risk can be foreseen to activities due to a possible upsurge in the spread of COVID-19, or a new mutation becoming harder to guard against • This may have an effect on, for example, the numbers of students who can participate at any given time. Estimating a worst-case scenario, there might be a 66% shortfall in the student numbers *Likelihood: Medium* *Severity: Low*	WP5 WP6 WP7	• The project technologies and tools will be designed to be accessible and usable in both online and in blended learning contexts. Teacher training material and lectures will be made freely available online. • The consortium has plans to: a) space out the student activities over a longer period of time with smaller groups, and, b) postpone some activities until more favourable conditions apply. • In either contingency, the project will engage with the European Commission on either a new timeline with the lifetime of the project, or a possible extension to the project duration, moving resources to a later period.
• Inadequate communication among WPLs and within the consortium • Lack of understanding of reporting requirements • Lack of cohesion and clarity as to what is required in each LiFE activity *Likelihood: Low* *Severity: High*	WP1, All WPs	• The Project Coordinator will employ an experienced project manager to facilitate all processes, including communication and reporting requirements. • Regular meetings (physical and virtual) and traditional mail communication will be combined with other channels and solutions (See Communication section above). • Multiple channels in e.g., SLACK will be created for ongoing asynchronous communication about e.g., school implementation, competence framework design and dissemination.

10. Deliverables, Milestones and Quality Control

10.1 List of Deliverables in Chronological Order

The dissemination level of all Exten.D.T.^{2} deliverables is public (PU).

Table 8: List of Deliverables

Deliverable	Deliverable Name	WP	Lead	Due Date
D1.1	Project Handbook	WP1	LNU	M3
D1.2	Initial Data Management Plan	WP1	LNU	M6
D2.1	Report on the Theoretical Review	WP2	NTNU	M6
D4.1	Technical Specifications for DT platform, LA, AR and 3D Printing Technologies	WP4	LNU	M6
D5.1	Report on the Activities Plans for School Interventions	WP5	NKUA	M6
D8.1	Dissemination and Exploitation plan	WP8	OU	M6
D9.1	Initial Ethics Board Report	WP9	TCD	M6
D2.2	The Exten.D.T.2 Framework	WP2	NTNU	M9
D2.3	Guidelines for Mass Deployment	WP2	NTNU	M9
D3.1	Report on the Educational Resources and Supporting Material for Students	WP3	OU	M9
D3.2	Report on Supporting Material for Stakeholders	WP3	OU	M12
D4.2	DT platform, LA, AR and 3D Printing Technologies for DT^2 (1st report)	WP4	LNU	M12
D6.1	Report on Pilot PD Activities	WP6	UGent	M12
D5.1	Report on the Activities Plans for School Interventions (updated at M12)	WP5	NKUA	M12
D5.2	Report on the Pilot Implementation	WP5	NKUA	M12
D6.1	Report on Pilot PD Activities	WP6	UGent	M12
D.7.1	Cycle 1 Evaluation Report	WP7	TCD	M12
D1.3	Updated Data Management Plan	WP1	LNU	M18
D.8.2	Dissemination and Impact Report 1	WP8	OU	M18
D9.2	Reporting Period 21Ethics Board Report	WP9	TCD	M18
D3.1	Report on the Educational Resources and Supporting Material for Students (final version)	WP3	OU	M24
D3.2	Report on supporting material for stakeholders (final version)	WP3	OU	M24
D3.4	Report on the D.T.^{2} Toolkit	WP3	UGent	M24
D5.3	Report on 2nd and 3rd Year Implementations	WP5	NKUA	M24
D5.4	Report on ALA User Analysis	WP5	NKUA	M24
D6.2	Report on the Implementations of PD Activities	WP6	UGent	M24
D4.3	DT platform, LA, AR and 3D Printing Technologies for DT^2 (2nd report)	WP4	LNU	M25
D.7.2	Cycle 2 Evaluation Report	WP7	TCD	M25
D3.4	Report on the D.T.2 Toolkit (updated)	WP3	UGent	M30
D6.2	Report on the Implementations of PD Activities (final version)	WP6	UGent	M30
D6.3	OpenLearn Online Course	WP6	OU	M30
D5.3	Report on 2nd and 3rd Year Implementations (final version)	WP5	NKUA	M34
D5.4	Report on ALA User Analysis (final version)	WP5	NKUA	M34
D2.2	The Exten.D.T.2 Framework (final version)	WP2	NTNU	M35
D2.3	Guidelines for Mass Deployment (final version)	WP2	NTNU	M35
D1.4	Final Data Management Plan	WP1	LNU	M36
D4.4	DT Platform, LA, AR and 3D Printing Technologies for DT^2 (final report)	WP4	LNU	M36
D.7.3	Cycle 3 Evaluation Report	WP7	TCD	M36
D8.3	Dissemination and Impact Report 2	WP8	OU	M36
D8.4	Policy Brief	WP8	LNU	M36

D9.3	Reporting Period 2 Ethics Board Report	WP9	TCD	M36

10.2 List of Milestones in Chronological Order

Table 9: List of Milestones

Milestone	Milestone Name	WP	Lead	Means of Verification	Due Date
M1	Validation and Evaluation Plan is Released	WP7	TCD	Final version of validation and evaluation plan released	M6
M2	Dissemination and Exploitation Plan is released	WP8	OU	Final version of implementation plan released	M6
M3	Learning activities and resources for school interventions and for Professional Development are ready	WP3 WP5 WP6	UGent	Learning activities and other resources accessible via the project website	WP3, WP5, WP6
M4	The enhanced educational technologies, i.e., AR Games, programming application for 3D printing/scanning, Virtual Robotics are developed in TRL4 and have been connected with the nQuire platform	WP3, WP4	LNU	Functional testing across participating partners	M12
M5	End of Cycle 1 evaluation & Roadmap for Cycle 2 based on evaluation input	WP7	TCD	Report detailing evaluation outcomes and roadmap for Cycle 2	M12
M6	Authorable Learning Analytics and Dashboard are developed in **TRL4** and have been connected with the nQuire platform	WP4	M15	Technologies available to access via project website, and nQuire	M12
M7	End of Cycle 2 evaluation & Roadmap for Cycle 3 based on evaluation input	WP7	M24	Report detailing evaluation outcomes and roadmap for Cycle 3	M24
M8	All project technologies (educational tools, ALA & Dashboard) have reached **TRL8**, after iterative refinements	WP4	M35	Technologies available to access via project website, OpenLearn and nQuire	M35
M9	End of Cycle 3 evaluation and final ExtenDT^2 Framework	WP2 WP7	M36	Report detailing evaluation outcomes of Cycle 3	M36

10.3 Quality Control for Deliverables and Milestones

The following procedure has been proposed by the OMT for deliverables as listed in Table 8:

- A spreadsheet will be set up in the Project Google Drive listing all deliverables, the responsible lead author, and reviewers.
- The lead author will propose reviewers in the first instance, including members of the Scientific Board where applicable. There will also be capacity for volunteers to propose themselves as reviewers. WP leaders may for example wish to review deliverables which are in line with their expertise areas and useful for them to read especially in relation to their work.
- The lead author is responsible for the deliverable and managing specific contributions from relevant partners.
- The lead author will share a contents page (in good time, ideally well before the review process) to all relevant members involved in the work package and reviewers for feedback and to help ensure nothing essential is omitted.
- Respective WP Folders on Google Drive are recommended to collaborate on draft live versions of the deliverables (See Section 7.3). A deliverable template is available on the drive and should be used for homogeneity .

Time will need to be factored in for reviewers to have sufficient time to provide review comments and for the authors to implement comments before the final version is submitted to the EC. The following timetable is therefore proposed for each deliverable:

- Six weeks before the due date of the deliverable: The CO contacts the lead author.
- One Month before due date: The lead author sends the first draft version of the deliverable to the WP Leader and the designated reviewers.
- 15 days before due date: The WP leader and reviewers separately provide their comments to the lead author.
- 7-10 days before due date: The lead author should finalise changes to the deliverable as necessary and submit this version to the CO.
- The CO will do a final check. The deliverable will be uploaded on the participant portal before the final working day of the month, and at the same time shared with the rest of the consortium.
- All deliverables are public and will be further disseminated in accordance with the Dissemination and Exploitation Plan.

There are nine milestones linked to the achievement of important outputs during the project lifetime as can be seen in Table 9. Lead beneficiaries of each milestone will monitor the progress and report any potential issues to the CO. Any identified issues will then be discussed during the next OMT meetings and appropriate risk mitigation measures taken.

10.4   Diversity and Equal Opportunities

Exten.D.T.[2] refers to the following in its DoA regarding equality, diversity and equity amongst different societal groups:

- Project actively addresses students, youngsters and adults
- At school age there is roughly a 50:50 gender split. It is reasonable to assume that the implementation of pilots in schools will involve both boys and girls in roughly equal proportion
- Teachers recruited for the co-creation activities will be represented by every gender
- Participation in OpenLearn and existing institutional programmes for teachers do not operate with gender quotas - i.e., they are open to all who wish to participate – but gender will be a factor used in the analysis of data
- All co-created teaching and professional development materials will be reviewed for explicit and implicit gender biases (counter-hegemonic narratives, images, language, etc.)
- Data analysis will investigate gender, socioeconomic background, etc.

It is important for all consortium members to be aware of the above and actively take measures to promote diversity and equal opportunities wherever possible. This will also be addressed as part of the project's continuous and periodic reporting (see Section 12.2 below).

11. Sister Projects

Further information on our "Sister Projects" from the Call: Inclusiveness in times of change (HORIZON-CL2-2021-TRANSFORMATIONS-01 is available in the portal through the following links:

- **e-DIPLOMA:** Electronic, Didactic and Innovative Platform for Learning based On Multimedia Assets

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/org-details/999999999/project/101061424/program/43108390/details

- **EMPOWER:** Design and evaluation of technological support tools to empower stakeholders in digital education

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/org-details/999999999/project/101060918/program/43108390/details

- **i-MASTER:** Integrating Adaptive Learning in Maritime Simulator-Based Education and Training with Intelligent Learning System

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/org-details/999999999/project/101060107/program/43108390/details

PowerPoint presentations as presented at respective Kick-Off Meetings have been further shared and are available in the Exten.D.T.[2] Project Google Drive. Each Sister presentation include slides on initial thoughts on possible collaborations.

Contact has been initiated in the first months of the project and will be maintained with further collaboration ideas will be explored. Main aims will include, but not be limited to, sharing learnings, synergising dissemination and communication actions and providing joint Policy recommendations.

12.   Reporting, Payments and Record Keeping

12.1   Formal Reporting Periods to EC

Two reporting periods (RP) have been agreed with the EC of which there will be associated physical EC Reviews around M18 and M36.

- RP No 1: M01-M18
- RP No 2: M19-M36

12.2   Continuous Reporting

It is possible to continuously update information such as deliverables, milestones , dissemination activities, and gender in the portal under <Manage Projects>.

Below in Figure 6 is a snapshot of the Continuous Reporting menu bar, that is "open" for updating; and what is possible to view (and eventually download) under for example the "Deliverables" tab.
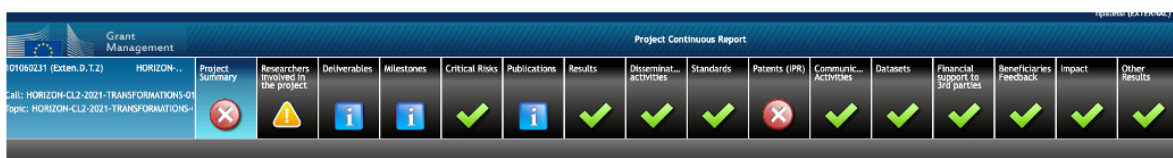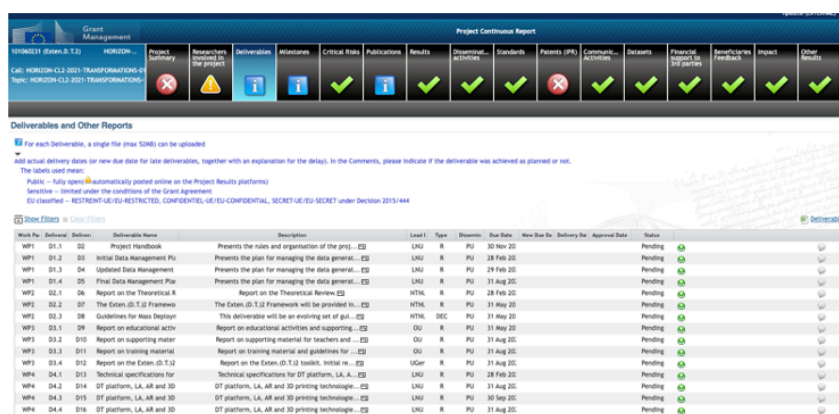

Figure 6: Project Continuous Reporting in the EC Participant Portal

12.3   EC Periodic /Final Reporting and Audit Certificates

Periodic Reporting templates for the two reporting periods above will be available from the EC for both the technical and financial reporting parts. The Project Manager will send the templates out together with instructions to all partners in good time.

If desired a supplementary Annex to this Project Handbook can be produced nearer the time containing relevant information, guidelines and references for both the technical and financial reporting.

A Final Report to the EC will also need to be submitted together with the second periodic report. It comprises, a) the "final technical report", which is a summary for publication including an overview of results and their exploitation and dissemination plus socio economic impact; and b) the "final financial report".

For Partners who request an EC contribution of € 430 000 or more to costs, a Certificate on Financial Statements (CFS) will need to be submitted. This is likely to affect beneficiaries, LNU, NKUA and NTNU.

12.4   EC Reviews

The EC is entitled to check, review, investigate and audit the proper implementation of the project and its compliance with the GA and eligibility of costs claimed. The EC reviews include assessment by expert external reviewers of the deliverables submitted for the period and the technical and financial Periodic Reports including work carried out, main achievements and use of resources.

The CO will inform the partners of the meetings dates as soon as they are confirmed. WP leaders will be asked to prepare content and likely requested to be present at the EC reviews.

12.5   Internal Reporting

The CO will propose complementary internal reporting at M9, and M27. These will be in the form of a light version of the periodic reporting required for the EC. The aim of the internal reporting is to monitor work progress and flag any significant deviations as well as highlight any major under and over-spends. This will help mitigate risks by allowing appropriate actions and remedies to be taken in good time.

The timing and format of the internal reporting is subject to agreement with the OMT in early 2023.

12.6   Payments

See GA Article 22.3 For full details including formula for calculations of the payments summarised below.

Prefinancing Payment
The aim of the prefinancing is to provide the beneficiaries with a float. It remains the property of the EU until the final payment. The CO received the initial pre-financing from the EC at the start of the project and promptly paid all beneficiaries their share in accordance with the terms of the CA.

Interim Payments
Interim payments reimburse the eligible costs and contributions claimed for the implementation of the action during the reporting periods. For Exten.D.T.[2] the interim payment is subject to the approval of the first Periodic Report.

Final Payment
The final payment (payment of the balance) reimburses the remaining part of the eligible costs and contributions claimed for the implementation of the action (if any). Payment is subject to the approval of the final Periodic Report.

12.7   Record Keeping

Each beneficiary must – for a period of five years after the payment of the final balance – keep records and other supporting documentation to prove the proper implementation of the action (See GA Article 20 for full details).

Beneficiaries must keep the records and documentation according to their usual cost accounting practices and internal control procedures. Costs declared for the EU project must be linked to the recorded amounts in the accounts and supporting documents.

The beneficiaries must keep the original documents. Digital and digitalised documents are considered originals if they are authorised by the applicable national law.

The records and supporting documents must be made available upon request (see GA Article 19) or in the context of checks, reviews, audits or investigations (see GA Article 25).

12.8   Standard Time-Limits after Project End

- Record-keeping: for 5 years after final payment.
- Reviews: up to 2 years after final payment.
- Audits: up to 2 years after final payment.