Electronic, didactic and innovative platform for learning based on multimedia assets

e-DIPLOMA

Funded by the European Union

D1.3: Data Management Plan

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V4.0	29.07.2025	CSI	▪ 3rd Updated version: - Data Collected for Pilots with e-learning modules (WP3) - Data collected for Co-design with Stakeholders and Selection of the Best Policy Options(WP6)

(*) According to the section “Review and Submission of Deliverables” of the Project Handbook

1. Technical References

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3. Introduction

3.1. Executive Summary

This deliverable is developed in the context of Work Package 1 (WP1): Project Management of the Project. The main aim of the Data Management Plan (DMP) is to describe the data management life cycle for the data to be re-use, collected, processed and/or generated during the e-DIPLOMA project. Within Horizon Europe, good research data management is viewed as the key conduit leading to knowledge discovery and innovation, and to subsequent data and knowledge integration and reuse. A robust DMP is the backbone of this, outlining how data is to be handled both during the project life and after its completion and setting out the principles and procedures to ensure that data is well-managed in the present and prepared for preservation in the future. An essential aspect of the DMP is the introduction of appropriate controls related to data privacy issues. Furthermore, as per the Grant Agreement (Article 17), a key guiding principle of Horizon Europe projects is making research data generated from said projects findable, accessible, interoperable, and reusable (FAIR); to accomplish this, a DMP should include information on:

- The handling of research data during & after the end of the project
- What data will be generated, collected, processed and/or re-used,
- Which methodology & standards will be applied
- Whether data will be shared/made open access and
- How data will be curated & preserved (including after the end of the project).

3.2. Relation to Other Project Documents

The following documents overruled the present document:

- Grant Agreement (GA) and their Annexes: (Annex 5, Article 17)
- Consortium Agreement (CA)

3.3. Abbreviation List

Below we include the list of the acronyms that are used in the present document:

- WP: Work Package
- DMP: Data Management Plan
- FAIR: Findable, Accessible, Interoperable, and Reusable
- GA: Grant Agreement
- CA: Consortium Agreement

3.4. Reference Documents

e-DIPLOMA's general Data Management Plan that is presented next has been developed in accordance with the following principles and guidelines:

- Directorate-General for Research & Innovation, "Guidelines on FAIR Data Management in

Horizon 2020, Version 3.0," EUROPEAN COMMISSION, 26 July 2016. [Online]. Available: h2020-hi-oa-data-mgt_en.pdf (europa.eu).
- European Research Council, "Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020, Version 3.2," 21 March 2017. [Online]. Available: h2020-hi-oa-pilot-guide_en.pdf (europa.eu).
- European Research Council, "Guidelines on the Implementation of Open Access to Scientific Publications and Research Data in projects supported by the European Research Council under Horizon 2020, Version 1.1," 7 April 2017. [Online]. Available: h2020-hi-erc-oa-guide_en.pdf (europa.eu)
- Horizon Europe template: Data Management Plan V1.0 – 05.05.2021 (Online). Available: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON#:~:text=Data-,management,-plan%20(HE)
- OpenAIRE, "How to comply with Horizon Europe mandate for Research Data Management" (Online). Available: https://www.openaire.eu/how-to-comply-with-horizon-europe-mandate-for-rdm
- OpenAIRE, "How do I know if my research data is protected? (Online). Available: https://www.openaire.eu/how-do-i-know-if-my-research-data-is-protected
- OpenAIRE, "How to make your data FAIR". (Online). Available: https://www.openaire.eu/how-to-make-your-data-fair
- OpenAIRE: "How to deal with sensitive data". (Online). Available: https://www.openaire.eu/sensitive-data-guide
- OpenAIRE: "How to I license my research data". (Online). Available: https://www.openaire.eu/how-do-i-license-my-research-data

4. Data Management Framework

The e-DIPLOMA project established e-learning at an upper quality level over a three-year research project, utilising Augmented Reality/Virtual Reality, Artificial Intelligence, Interactive Technologies, chatbots, and gamification in a newly designed e-learning platform. The objectives of the e-Diploma are:

- To optimize the potential and opportunities of e-learning practices with emerging technologies on experiential topics and to reduce risks and barriers.
- To design and evaluate new educational practices with emerging technologies to modify the e-learning process to overcome existing barriers and mitigate the risks.
- To develop an innovative e-learning platform with emerging technologies, and describe its impacts on learning, educational policies, and society.

To complete the project successfully, the collection, processing, and storage of multiple datasets were required, related to surveys, workshops, and pilots, as well as data generated as research outputs. As the data identification and collection activities are still ongoing, the current Data Management Plan (DMP) provides an incomplete picture as it only refers to the datasets that have already been collected as part of the project activities. Nevertheless, the current data summary already provides a good overview of the different types of datasets and sets out the framework which will be leveraged to set out the data management and governance considerations for any

remaining data collection activities. While the focus of the first version of the DMP was mainly on data collected, the current one also reports on data produced in the context of the project and non-sensitive data that can be made publicly available in open data repositories and registered at relevant catalogues.

To develop e-DIPLOMA's DMP, the consortium leverages the *TEMPLATE HORIZON EUROPE DATA MANAGEMENT PLAN (DMP)*[1] which consists of a set of questions to be answered with a level of detail appropriate to the project. The DMP was a living document in which information were made available on a finer level of granularity through updates as the implementation of the project progressed and when significant changes occurred. The seven main areas that the current DMP addresses are: Data summary, FAIR data, Other research outputs, allocation of resources, data security, ethical aspects, and other issues. Next, the main sections that are covered by the DMP are outlined in the Data Management Framework (section 4), followed by description tables (section 5) addressing the issues for the data already collected within e-DIPLOMA.

4.1. Data Summary

- Purpose of the data collection/generation
- Relation of the objectives of the project
- Types and formats of data generated/collected.
- Specify if existing data is being re-used (if any)
- Specify the origin of the data.
- State the expected size of the data (if known)
- Outline the data utility: to whom will it be useful.

4.2. FAIR Data

4.2.1 Making data findable, including provisions for metadata

- Outline of the discoverability of data (metadata provision)
- Outline of the identifiability of data and refer to standard identification mechanism. (Do you make use of persistent and unique identifiers such as Digital Object Identifiers?)
- Outline of naming conventions used
- Outline of the approach towards search keyword
- Outline of the approach for clear versioning
- Specify standards for metadata creation (if any). If there are no standards in your discipline describe what type of metadata will be created and how

4.2.2 Making data openly accessible

- Specify which data will be made openly available? If some data is kept closed provide rationale for doing so .

[1] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON#:~:text=Data-,management,-plan%20(HE)

- Specify how the data will be made available
- Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g., in open-source code)?
- Specify where the data and associated metadata, documentation and code are deposited
- Specify how access will be provided in case there are any restrictions

4.2.3 Making data interoperable

- Assess the interoperability of your data. Specify what data and metadata vocabularies, standards, or methodologies you will follow to facilitate interoperability.
- Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?

4.2.4 Increase data re-use (though clarifying licenses)

- Specify how the data will be licensed to permit the widest reuse possible Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed.
- Specify whether the data produced and/or used in the project is usable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why
- Describe data quality assurance processes
- Specify the length of time for which the data will remain re-usable

4.3. Other research outputs

- Types and formats of other research outputs: digital (e.g., software, workflows, protocols) or physical (e.g. new material, others)

4.4. Allocation of resources

- Estimate the costs for making your data FAIR. Describe how you intend to cover these costs
- Clearly identify responsibilities for data management in your project
- Describe costs and potential value of long-term preservation

4.5. Data security

- Address data recovery as well as secure storage and transfer of sensitive data

4.6. Ethical aspects

- To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former

4.7. Other issues

- Use of national/funder/sectorial/departmental procedures for data management

5. Data Management Plan

Below, it is presented the Data Management Plan (DMP) for the data collected until the end of all the project's activities involving data collection is presented. The following information is applicable to all partners, except when specific cases are defined for some partners.

Each data-collecting activity is described in a dedicated table as specified on the DMP template, outlining the specific details related to that activity. The five activities that are discussed in this plan are:

- Subtask 2.1.2: Survey on sustainability and ethical dimensions of e-learning systems and practices. Aim: (i) to analyse the European current situation of e-learning in teacher training and (ii) to co-create the educational practices with emerging technologies to satisfy real needs.
- Task 2.2: Analysis of remote e-learning in teacher training. Aim: (i) to analyze the ethical dimensions of e-learning systems and practices and, (ii) to assess the potential benefits and vulnerabilities, which might arise from the use of emerging technologies in educational systems at different levels
- Task 3.1: Coordinating the codesign. Aim: To perform hackathons for the purpose of collecting feedback to develop and adapt innovative educational practices and technology-enhanced learning tools for the development of the three learning modules
- Task 3.2: Pilots with e-learning modules. Aim: to conduct national pilots of the e-learning modules, collect evaluation feedback, and document the outcomes as good practice case studies.
- T6.2: Co-design with Stakeholders and Selection of the Best Policy Options. Aim: to gather and discuss proposals from stakeholders through brainstorming sessions, leading to the selection of key ideas by participant consensus.

The section addressing FAIR data principles (2nd area of the table)—comprising aspects such as data findability, accessibility, interoperability, and reusability—is consistent across all activities. Therefore, instead of repeating this identical content in each activity-specific table, the FAIR data section is presented once at the beginning of the plan, before the individual activity tables. This approach avoids redundancy while ensuring that all FAIR-related considerations are clearly documented and applicable to all data generated within the project.

2. FAIR Data

This principle was followed using the same methodology for all the e-DIPLOMA's tasks, as explained below:

2.1. Making data findable, including provisions for metadata

The e-DIPLOMA data and metadata will be assigned a globally unique and persistent identifier in accordance with FAIR principles and will be uploaded to Zenodo with a Digital Object Identifier (DOI) to make them easily citable and trackable. The e-DIPLOMA data will be managed, and stewardship will be performed in line with the FAIR Guiding Principles to ensure its findability, accessibility, interoperability, and reusability. A Metadata Schema provided by Zenodo will be used and will include at least the following metadata: project number, project acronym, project title,

granting authority, call, topic, type of action, ORCIDs ID, and PIC of organisations. Keywords will also be used to promote discovery and reuse. The metadata will be deposited in Zenodo and will be searchable and accessible for free. The content and format of metadata will be guided by the general metadata standards used by Zenodo, the repository of e-DIPLOMA metadata, and the domain model is based on DataCite's Metadata Schema minimum and recommended terms will be used for open data generated by e-DIPLOMA.

2.2 Making data openly accessible

The data will be stored in the trusted repository Zenodo, following the DOI standard, and assigned a DOI for easy citation and tracking. It is compliant with the data management requirements of Horizon Europe and facilitates the finding, accessing, re-using and interoperating of data sets. Access to the data requires approval from the Project Data Protection Officer and the e-DIPLOMA Ethics Committee, consisting of members from UJI, CSI, Technical University of Sofia, and the Open University of Cyprus. The data will be uploaded to the e-DIPLOMA: Electronic, Didactic and Innovative Platform for Learning based On Multimedia Assets community in Zenodo, created in January 2023. For "public" results data will be made accessible according to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon Europe. The data will be available during the project and for five years after, with metadata accessible after the data is no longer available.

2.3. Making data interoperable

Data and metadata of e-DIPLOMA use a formal, accessible, shared, and broadly applicable language for knowledge representation and follows FAIR Guiding Principles. Data from other pilot studies and codesign activities inside the current project will be referenced. The use of the uncommon ontologies will be avoided in e-DIPLOMA, but in case new ontologies are created a vocabulary section will be included as an annex in the dataset to contribute to a correct understanding of the concepts and extending their use.

2.4. Increase data re-use (through clarifying licences)

Readme files and data dictionary will be attached in an open repository in which the data could be found. Information about the methodology, analyses and results will be published in scientific journals ensuring free access and re-use. A quality assurance process has been implemented, that is, the workshop activity was assessed by the institutional Ethics Committee and at the end of the activity the data collected will be assessed by the Data Protection Officer and the e-DIPLOMA Ethics Committee for quality control. The workshop data is related to the Deliverable 2.2: Review of e-learning ecosystems, which dissemination level is public and the data related to it will be open access as soon as possible (according to the annex 5 of the Grant Agreement) under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0) or a license with equivalent rights, unless providing open access would be against the beneficiary's legitimate interests, including regarding commercial exploitation, or be contrary to any other constraints, in particular the EU competitive interests or the beneficiary's obligations under this Agreement.

5.1 Subtask 2.1.2: Survey on sustainability and ethical dimensions of e-learning systems and practices

Relevant Work Package: 2	Subtask 2.1.2: Survey on sustainability and ethical dimensions of e-learning systems and practices

1. Data summary

Main **objectives** of e-DIPLOMA in WP2, subtask 2.1.2 are (i) to analyse the European current situation of e-learning in teacher training and (ii) to co-create the educational practices with emerging technologies to satisfy real needs. The workshop data focuses on analysing the technology used in the project and its status, perspective, and requirements, helping to correctly contextualise the needs of the project objectives.

Through the workshop activities the following data was collected:

1. Consent Forms
2. Workshop Transcripts
3. Forms completed by workshop participants.

The workshop recruitment process for each entity differed and is outlined below:

For the workshop's participant recruitment process, **UJI** made call through entities that facilitated contact with participants, including some Associate Partners. The entities were previously informed through a letter explaining the project and the objective of the activity. In addition, the participants completed an informed consent form that had to be signed in the case of the workshop and that they had to accept by clicking on a box on the survey, since it was an electronic survey.

A Google Form was created, then the collected data was saved in an Excel File that was uploaded by every partner to the Google Drive. Finally, Tallin University (TLU) joined all the data to draw conclusions in a Excel file

TLU sent a workshop invitation to potential stakeholders, students, educators, and educational technology company experts with the aim of recruiting 20-25 persons. The sample consisted of people with some experience or interest in disruptive technologies so different stakeholder profiles were represented. Participation was voluntary and informed consents were provided to the participants. The process of informing was done through electronic survey. The consents to anonymously use the data were added to the survey.

TU, contacted separate groups to be invited to workshop from near to far:

1. Employees at TU Delft
2. Students at TU Delft
3. Employees at other universities
4. Students at other universities
5. People outside the academic circles

Initially, a poll was sent out to identify suitable dates and then additional invites were sent over email to other departments and groups outside TU Delft (such as the medical visualization group in Leiden).

Finally, relatives and friends were also invited.

UPV outsourced the recruitment process to an external company. This was done to ensure a fair and unbiased selection of individuals and to avoid any conflicts of interest. The external company's role was limited to identifying and contacting potential participants who met the criteria for the study. They were not involved in any of the research activities or discussions and

did not have access to any of the topics discussed or conclusions drawn during the workshop. By keeping this process separate, we can ensure that the integrity of the research is maintained and that the study's results are unbiased. The external company is Empymer, (https://empymer.com/) a company focused on opinion polls and market research. One of the services offered by the company is the recruitment of subjects to carry out this type of research. To carry out this sample recruitment for market research, Empymer relies on recruiting people who are interested in participating in research studies and who register through their website. When someone registers, they typically provide some basic demographic information such as age, gender, and location, as well as their interests. This information is stored in a database, only accessible by Empymer, which allows the company to make the necessary selections for their clients. The purpose of collecting this information is solely to contact interested persons to complete their profiles and inform them of the selected collaborations in the case of being chosen as candidates. As explained before, the protection of the participants' data was a top priority throughout the recruitment process. The external company is responsible for ensuring that the data collected from potential participants was handled in compliance with national (Ley Orgánica 3/2018, de 5 de diciembre, de Protección de Datos Personales y garantía de los derechos digitales) and European (GDPR) data protection laws. This includes obtaining informed consent from participants, storing data securely, and protecting the confidentiality of participants' personal information. All necessary measures are taken to protect the privacy and rights of the participants involved in the study. The ethics workshop data includes statements on ethical and sustainability values in ruptured technology learning scenarios. No participant data are collected, but participant types are described. The data will be stored in ASCII-formatted files, such as CSV, and does not require special software.

BME, issued an open call, included in the same letter as the call for the survey and distributed it to the same partners. Intent to participate was to be signalled to the organizer. The participants signed the consent forms on arrival at the event.

INN adopted an internal approach to participant recruitment by proactively promoting the workshops through their website, social media platforms, and other online channels to attract a broad audience. Interested individuals were encouraged to register directly on InnoGrowth's website. Participants were given the opportunity to express their interests and preferences related to the workshop topic. This allowed InnoGrowth to tailor the workshop content and ensure it aligned with the specific needs and expectations of the participants.

CSI organized the workshop in a secondary school during ‘Educators Day’ on the 15th of February, involving 22 teachers from different fields of study. This day was dedicated by the Ministry of Education to teachers to educate and develop themselves. Hence, invitations were sent to different schools, explaining the project and the objective of the activity. It was decided to visit Faneromeni Secondary School in Larnaka as their interests were the most relevant to the theme of the workshop. Before the beginning of the workshop, the participants signed the participants’ list and incorporated the consent form.

ARIS FR recruited participants within their regional and national network mainly among social enterprises and related VET Centers and Universities. The links were sent via e-mail invitation directly to our network contacts.

The data collected from the respective workshops on WP2 will be used to create Deliverable 2.2 “Review of e-learning ecosystems”, which is a report on ethical and sustainability statements in the form of a dataset whose volume will be less than 10MB. The data collected will provide insights for those interested in e-learning and can be used for replicability studies and comparisons with other data. The target group consists of teaching staff in professional training

studies or higher; technical staff responsible for maintenance and support of educational technologies; tech-savvy developers and general students.

3. Other research outputs

The database preservation is free and managed by the Data Protection Officer (DPO) and the Ethics Committee from multiple institutions. Long-term preservation plans are not currently in place, but the project coordinator and partners will likely play a major role in ensuring it. The repository services offered by Zenodo permit to share and **preserve research data and other research outputs** in any size and format: datasets, images, presentations, publications, and software. Each uploaded dataset is assigned a unique DOI rendering each submission uniquely identifiable and thus traceable and referenceable.

4. Allocation of resources

Raw data

Raw data is collected in the **Google Drive Form** and stored in the shared folder of the project in the Google Drive, which ensures the security of the files by storing them on its servers using 256-bit Advanced Encryption Standard (AES) encryption for all transactions. Furthermore, the institutional Google Drive accounts are protected by regularly changed passwords, adding an extra layer of security.

The raw data collected by TU Delft is securely stored in SURFdrive, a cloud service specifically designed for Dutch education and research. This community cloud ensures that all documents are stored safely and reliably, providing a secure and accessible location for storage and future access.

The storage service agreement complies with **EU data protection law and the National Bioethics Committee rules** and regulations and includes EU model clauses. After data processing, which is the process of converting raw data into useful information, data will be archived at Zenodo and on other online institutional databases and they will use the Creative Commons licences, which are free of charge.

Consent forms

Each participating entity followed stringent guidelines regarding the processing of consent forms and assigned a responsible Data Controller. This is summarised in the table below:

Entity	Storage procedure for consent forms	Data Controleer
UJI	The signed consent forms were collected and are kept locked in a locker in the office of the Data Controller. These informed consents were digitized and stored in a Google Drive folder that can only be accessed by the Data Controller and the project manager. The consent forms of the survey don't include any personal data, so no special treatment was needed.	Dr. Raul Montoliu Colás

TLU	The data of the survey were stored in an analytical data dump stored in the server space of Tallinn university. The same platform will be used to perform statistical procedures to explore the data from the institutional perspective and the roles (teacher, specialist, student) perspective. After this dataset will be added as open data in the outputs of e-DIPLOMA.	Kai Pata
TU	**The raw data collected by TU Delft is securely stored in SURFdrive, a cloud service specifically designed for Dutch education and research. This community cloud ensures that all documents are stored safely and reliably, providing a secure and accessible location for storage and future access.** The documents are stored in a locked closet in an administrative office space in the faculty. In our case, our secretary. There are ongoing debates about whether a digitization would be allowed but our data steward currently suggests avoiding this step.	Lauretta Ritchie Amir Zaid
BME	Consent forms are stored in a locked cabinet in the office of the Data Controller at BME, who is responsible for their custody.	László Szécsi
UPV	Once all the consent forms signed by the subjects in each of the projects have been collected, they were stored in definitive folders, folders that are kept in a safe place in our facilities for a period ranging from 5 to 10 years, depending on the project.	Vanesa García-Moreno
INN	Electronic copies of the consent forms are securely saved on an internal server in Google Drive.	Tanya Trayanova.

CSI	The signed consent forms were collected and are kept in the locker of the Data Controller who is also the CSI Project Manager and responsible for their custody. The locker is in an office at CSI premises. These informed consents were digitized and stored in a Dropbox folder that can only be accessed by the project management team of e-DIPLOMA.	Kleovoulos Stylianou
ARISFR	The signed consent forms (119) have been collected, stored in a designated locker for e-DIPLOMA archive within our office premises, and scanned for digital preservation. The electronic copies are securely saved on an internal server in ARIS internal space. within Next cloud.	Enrico Libera

5. Data security

Access to the data is restricted to researchers working on the project using their unique login credentials. Consortium partners have their own institutional General Data Protection regulation in line with EU Data Protection Law and regulations. The consortium agrees for the file naming to avoid confusion: ProjAcronym_DeliverableNo_DatasetName_Version
For example: e-DIPLOMA_D1.3_ DataManagementPlan_V1

6. Ethical aspects

The first version for the consent forms were created and translated in all partner languages, which are included in the Deliverable 7.5. Check/ review of ethics documents. All reasonable steps have been taken to ensure that consent is granted, transparency is ensured and that participants can revoke their consent any time, according to Horizon Europe standards and all partners have taken steps to ensure conformity with national and EU-level laws and regulations. All partners have taken steps to submit this research to national/institutional ethics committees for approval prior to executing them. CSI, as leader of WP7 and the members of the Ethics committee of the project are committed in ensuring that the ethics standards that apply are respected across the board on every step of the implementation. Data transfer to the e-DIPLOMA repository, Zenodo, for human subjects is permitted only if informed consent, ethics approval, and necessary local data protection authorities' approval have been obtained. The data must be either pseudonymized or anonymized and the Data Owner is responsible for the anonymization process and ensuring that no directly identifiable information is transferred, such as name, national ID, phone number, email, address, and geographical coordinates. The Data Owner should only provide the minimum necessary information for analysis.

7. Other

As well as European Commission policies on open data management, project partners must also adhere to their own institutional policies and procedures for data management.

5.2 Task 2.2: Analysis of remote e-learning in teacher training

Relevant Work Package: 2	Task 2.2: Analysis of remote e-learning in teacher training

1. Data summary

The main objectives of e-DIPLOMA in WP2 related to the task 2.2 Remote e-learning analysis are: (i) to analyze the ethical dimensions of e-learning systems and practices and, (ii) to assess the potential benefits and vulnerabilities, which might arise from the use of emerging technologies in educational systems at different levels. The survey on capacity of teacher training ecosystems for using ruptured technologies in e-learning data focuses on knowing the current state of technologies in different contexts and the perspective of the different profiles that use them and the needs of the project objectives.

E**ach partner chose how to proceed with the survey. Then the data was saved in an Excel File, uploaded to the Google Drive and** TLU joined **all the data to extract conclusions in a**n **Excel file.**
The survey recruitment process for each entity differed and is outlined below:
UJI issued a call for participants through entities that facilitated contact with participants, including some Associate Partners. The entities were previously informed through a letter explaining the project and the objective of the activity. In addition, the participants completed an informed consent form that had to be signed in the case of the workshop and that they had to accept by clicking on a box on the survey, since it was an electronic survey.
TLU identified the institutions in Estonia among higher education and vocational education. They contacted educational technology specialists in these institutions and the lecturers of the institutions by email. The lecturers recruited the survey among their students. The whole process of answers was anonymous, but the possibility to identify the institutions from where data were collected is available by associating the number of teachers and students with the dataset.
TU contacted separate groups to be invited to the survey from near to far:
1. Employees at TU Delft
2. Students at TU Delft
3. Employees at other universities
4. Students at other universities
5. People outside the academic circles

For the survey, a link was sent out to a TU Delft self-hosted Qualtrics instance that let responders stay fully anonymous. This link was sent to the same groups mentioned for the workshop.
BME issued an open call for anyone in the required groups to fill in the survey, complete the consent for and turn it in to the organizer from BME's part (László Szécsi). This call was sent, via e-mail, to a high number of contacts at higher education institutes for distribution among their colleagues. The associated partner NJSZT (John von Neumann Computer Society) forwarded the same call to several vocational education institutes. Anyone who completed the survey also needed to turn in the completed consent form. We have no way of linking the consent forms (and the names on them) to the individual answers.
UPV outsourced the recruitment of participants to an external company. The purpose of this was to ensure that the survey was distributed to a diverse and representative sample of individuals. The external company was not given access to any of the survey questions or responses and was not involved in any of the data processing or analysis. The external company is ESAM

Tecnología (https://esamtecnologia.com), a University of Valencia's spin-off that has developed a product called e-nquest, a technological solution applied to market, business, academic and sociological research. It consists of an international panel of recruited people who are connected through its platform to the questionnaires to be completed. Within the solution designed for this point, it has been decided that the connection will be between their panel and the surveys developed during the project, thus preventing them from having access to the complete questionnaire and, at the same time, protecting the identity of the subjects, from whom only the information necessary for their classification is collected anonymously. The protection of the participants' data was also a top priority for our online survey. The external company was responsible for ensuring that the data collected from potential participants was handled in compliance with national (Ley Orgánica 3/2018, de 5 de diciembre, de Protección de Datos Personales y garantía de los derechos digitales) and European (GDPR) data protection laws. This included obtaining informed consent from participants, storing data securely, and protecting the confidentiality of participants' personal information. Overall, the involvement of the external company was limited to recruitment and did not extend to the handling of any survey data. All necessary measures are taken to protect the privacy and rights of the participants involved in the survey. Overall, the involvement of the external company was limited to recruitment and did not extend to the handling of any survey data. No participant data will be collected, but participant types will be described. The data will be stored in ASCII-formatted files, such as CSV, and does not require special software.

INN implemented a comprehensive strategy to ensure the inclusion of a diverse and representative sample. Various channels were utilized, such as targeted email invitations sent to individuals within the relevant target groups. Collaborations with partner organizations, universities, industry networks, and online communities were also established to expand the reach of the surveys. In addition, social media platforms and other online channels were leveraged to engage with potential participants who possessed the desired knowledge, experience, or characteristics for the research.

CSI distributed the links to the surveys through email invitations to the relevant target groups. CSI has a strong network of Universities in Cyprus, and we contacted the academics directly or the universities' departments which they then forward the surveys to the relevant recipients. We also make use of social media channels to share the questionnaires. The participants accept the informed consent form by clicking on a box on the survey since it was an electronic survey.

ARIS FR recruited participants within their regional and national network mainly among social enterprises and related VET Centres and Universities. The links were sent via e-mail invitation directly to our network contacts.

The data collected from the survey on WP2 will be used to create the Deliverable 2.2 "Review of e-learning ecosystems", which is a report on ethical and sustainability statements in the form of a dataset whose volume is less than 10MB. The data collected will provide information about the current state of the region and can be used for replicability studies and comparisons with other data. The interested profiles were of three types: Teaching staff in professional training studies or higher; technical staff responsible for maintenance and support of educational technologies; and students who have experiences with some forms of group-learning or practice-based learning.

3. Other research outputs

The database preservation is free and managed by the Data Protection Officer and the Ethics Committee from multiple institutions. Long-term preservation plans are not currently in place, but the project coordinator and partners will likely play a major role in ensuring it. The repository services offered by Zenodo permit to share and preserve research data and other research outputs in any size and format: datasets, images, presentations, publications, and software. Each uploaded dataset is assigned a unique DOI rendering each submission uniquely identifiable and thus traceable and referenceable.

4. Allocation of resources

Raw Data

UJI, INN and ARIS FR raw data collected by online surveys are stored in Qualtrics servers. At Qualtrics, the servers are fortified with state-of-the-art firewall systems, and constant scans are carried out to identify and address any security weaknesses promptly. Every year, an independent third party conducts comprehensive application penetration tests to reinforce the security of the system. To ensure seamless operation, the services are equipped with swift failover points and backup hardware, and daily backups are performed to safeguard against data loss. Additionally, Qualtrics implements Transport Layer Security (TLS) encryption, commonly referred to as HTTPS, to encrypt all data transmitted. The storage service agreement complies with EU data protection law and the National Bioethics Committee rules and regulations and includes EU model clauses.

TU Delft stores the raw data collected in SURFdrive, which is a personal cloud service for Dutch education and research. Documents are kept safe and sound in our community cloud. Once the data processing has been completed, data is archived in Zenodo as well as other online institutional databases to ensure that the data is shared and used in an open and transparent way, the data should be licensed under Creative Commons licences. These licences allow others to use, distribute, and build upon the data for free, while ensuring that the original author is credited, and any modifications or changes are clearly indicated. Using Creative Commons licences in e-DIPLOMA help to promote collaboration, accelerate research, and increase the impact of the data.

Consent forms:

As with the workshops, each participating entity followed stringent guidelines regarding the processing of consent forms and assigned a responsible Data Controller. This is summarised in the table below:

Entity	Storage procedure for consent forms	Data Controleer
UJI	The signed consent forms were collected and are kept locked in a locker in the office of the Data Controller. These informed consents were digitized and stored in a Google Drive folder that can only be accessed by the Data Controller and the project manager. The consent forms of the survey don't include any	Dr. Raul Montoliu Colás

	personal data, so no special treatment was needed.	
TLU	The data of the survey were stored in an analytical data dump stored in the server space of Tallinn university. The same platform will be used to perform statistical procedures to explore the data from the institutional perspective and the roles (teacher, specialist, student) perspective. After this dataset will be added as open data in the outputs of e-DIPLOMA.	Kai Pata
TU	The documents are stored in a locked closet in an administrative office space in the faculty. In our case, our secretary. There are ongoing debates about whether a digitization would be allowed but our data steward currently suggests avoiding this step.	Lauretta Ritchie Amir Zaid
BME	Consent forms are stored in a locked cabinet in the office of the Data Controller at BME, who is responsible for their custody.	László Szécsi
UPV	Once all the consent forms signed by the subjects in each of the projects have been collected, they were stored in definitive folders, folders that are kept in a safe place in our facilities for a period ranging from 5 to 10 years, depending on the project	Vanesa García-Moreno
INN	Electronic copies of the consent forms are securely saved on an internal server in Google Drive.	Tanya Trayanova
CSI	The signed consent forms were collected and are kept in the locker of the Data Controller who is also the CSI	Kleovoulos Stylianou

	Project Manager and responsible for their custody. The locker is located in an office at CSI premises. These informed consents were digitized and stored in a Dropbox folder that can only be accessed by the project management team of e-DIPLOMA.	
ARISFR	The signed consent forms (119) have been collected, stored in a designated locker for e-DIPLOMA archive within our office premises, and scanned for digital preservation. The elecironic copies are securely saved on an internal server in ARIS internal space within Nextcloud.	Enrico Libera

5. Data security

Access to the data is restricted to researchers working on the project using their unique login credentials. All consortium partners have their own institutional General Data Protection regulation in line with EU Data Protection Law and regulations.

6. Ethical aspects

The first version of the consent forms has been prepared in all partner languages and included in Deliverable 7.5. e-DIPLOMA has taken all necessary measures to ensure that participants are fully informed and provide their consent in a transparent manner. Participants are free to withdraw their consent at any time, in compliance with Horizon Europe standards and relevant national and EU-level laws and regulations. In addition, all partners have submitted the research to national/institutional ethics committees for approval before implementation. CSI, as the leader of WP7 and the Ethics Committee are committed to upholding ethical standards throughout the project's implementation.

Data transfer to the e-DIPLOMA repository, Zenodo, for human subjects is permitted only if informed consent, ethics approval, and necessary local data protection authorities' approval have been obtained. The data must be either pseudonymized or anonymized and the Data Owner is responsible for the anonymization process and ensuring that no directly identifiable information is transferred, such as name, national ID, phone number, email, address, and geographical coordinates. The data owner should only provide the minimum necessary information for analysis.

7. Other

As well as European Commission policies on open data management, project partners must also adhere to their own institutional policies and procedures for data management.

5.3 Task 3.1: Coordinating the codesign

Relevant Work Package: 3	**Task 3.1: Coordinating the codesign**
1. Data summary	
The main objectives of e-DIPLOMA in WP3 related to the task 3.1 were to perform hackathons for the purpose of collecting feedback to develop and adapt innovative educational practices and technology-enhanced learning tools. Consortium partners issued open calls in order to recruit participants and elicitated both online and offline registration through webpages and social media accounts. In some cases, new Social Networking accounts and new webpage were built specifically for the Hackathon event. These tools were used to reach possible participants. In addition, the e-DIPLOMA Social Network Accounts were also used for recruitment. Lastly, the wide network of Associated Partners were also contacted to be involved in the dissemination of the event Other consortium partners recruited directly participants who were connected with the respective research institute either through current or past employment. In all cases, consent forms were distributed and will be retained for the required period in a locked space at each respective consortium partner's premises. The data collected from hackathons on WP3 will be used to co-design input to properly develop the prototypes foreseen in the project.	
3. Ethical and Legal Considerations Addressed	
Partners conducting hackathons were responsible for following ethical data collection and data management procedures. These partners reported about the procedure to the WP3 T3.1. folder. Külli Kori (TLU) is responsible for managing the hackathon reports on behalf of the WP coordinator. The basic mode for ensuring ethical and transparent use of data collected was informed consent. All consortium partners followed the following procedures to ensure compliance and ethical use of data: ● Obtaining Informed Consent ● Ensuring materials clearly communicate the purpose of data collection, potential	

- risks and benefits, usage and other GDPR-related considerations
- Anonymising or de-identifying personal information to protect the
- privacy of participants
- Implementing secure storage and transmission methods to prevent unauthorized access to participant data including consent forms
- Clearly defining data ownership and establishing guidelines for sharing data within the research community and (if applicable), the public.
- Adherence to practices respecting intellectual property rights and providing proper
- attribution when using others's data
- Documenting the data collection process and any potential sources of bias or error in your data
- Sharing raw data openly (whenever possible) to allow for independent
- verification and replication (this applies to questionnaire data but not for the audio at the time of report writing)
- Establishing clear guidelines for the retention and disposal of data, considering legal and ethical requirements
- Adhering to practices ensuring the safe and secure disposal of data when it is no longer needed for
- research purposes (not practiced yet but planned)

4. Allocation of resources

Raw Data

The type of data collected through the hackathon activities included videos, photos, transcripts and notes taken and stored in flat files.

They were eventually stored in a dedicated folder in the e-DIPLOMA Google Drive or initially in project storage on the respective university/research institute's sites.

Consent forms:

As with the workshops, each participating entity followed stringent guidelines regarding the processing of consent forms and assigned a responsible Data Controller. This is summarised in the table below:

Entity	Storage procedure for consent forms	Data Controleer
UJI	The signed consent forms were collected and are kept locked in a locker in the office of the Data Controller. These informed consents were digitized and stored in a Google Drive folder that can only be accessed by the Data Controller and the project manager.	Dr. Raul Montoliu Colás

	The consent forms of the hackathons don't include any personal data, so no special treatment was needed.	
TLU	The data of the hackathon were collected by the WP coordinator and stored on the e-diploma drive.	Kai Pata
TU Delft	The informed consent forms will be retained for the required period and will be stored in a locked drawer at TU Delft	Santosh Ilamparuthi Richard Grimes
BME	Consent forms are stored in a locked cabinet in the office of the Data Controller at BME, who is responsible for their custody.	László Szécsi

5. Data security

Access to the data is restricted to researchers working on the project using their unique login credentials. All consortium partners have their own institutional General Data Protection regulation in line with EU Data Protection Law and regulations.

6. Ethical aspects

The first version of the consent forms has been prepared in all partner languages and included in Deliverable 7.5. e-DIPLOMA has taken all necessary measures to ensure that participants are fully informed and provide their consent in a transparent manner. Participants are free to withdraw their consent at any time, in compliance with Horizon Europe standards and relevant national and EU-level laws and regulations. In addition, all partners have submitted the research to national/institutional ethics committees for approval before implementation. CSI, as the leader of WP7 and the Ethics Committee are committed to upholding ethical standards throughout the project's implementation.

Data transfer to the e-DIPLOMA repository, Zenodo, for human subjects is permitted only if informed consent, ethics approval, and necessary local data protection authorities' approval have been obtained. The data must be either pseudonymized or anonymized and the Data Owner is responsible for the anonymization process and ensuring that no directly identifiable information is transferred, such as name, national ID, phone number, email, address, and geographical coordinates. The data owner should only provide the minimum necessary information for analysis.

7. Other

It is noted that no sensitive personal data were collected during the hackathons and the data collected in the hackathons comprised design suggestions and ideas for the eDiploma

prototypes. No measurements were done with people, therefore, the above data management and protection guidelines refer mainly to the management of consent forms.

5.4 Task 3.2: Pilots with e-learning modules

Relevant Work Package: 3	Task 3.2: Pilots with e-learning modules

1. Data summary

Main objective of e-DIPLOMA in WP3, task 3.2 is to conduct national pilots of the e-learning modules, collect evaluation feedback, and document the outcomes as good practice case studies.

Through the pilot activities, the following data was collected by consortium partners:
ARIS:

- Consent Forms
- Pilot Experimentation Metadata (e.g., behavioral and sensor data)
- TMT (Trail Making Test) Metadata: Data collected from the TMT assessments, which capture participants' cognitive performance, structured in CSV or Excel-based tables.

CSI:
For CSI, data collection was implemented by UJI. This consisted of:

- Consent forms
- Participant's biometric information, such as eye tracking during the Virtual Reality activities, cognitive load, heart rate, and electrodermal activity.
- Responses to questionnaires on sociodemographic factors and cognitive-affective skills, such as curiosity, motivation, emotional self-regulation, self-efficacy, attention, and emotional self-assessment, are also recorded.
- Scores obtained from knowledge assessments, as well as task performance metrics such as completion time, accuracy, number of attempts, and key actions.

UJI Spain:

- Consent forms
- Participant's biometric information, such as eye tracking during the Virtual Reality activities, cognitive load, heart rate, and electrodermal activity.
- Responses to questionnaires on sociodemographic factors and cognitive-affective skills, such as curiosity, motivation, emotional self-regulation, self-efficacy, attention, and emotional self-assessment, are also recorded.
- Scores obtained from knowledge assessments, as well as task performance metrics such as completion time, accuracy, number of attempts, and key actions.

Tallinn University:

- Consent Forms
- Anonymized survey data on conceptual learning (pre- and post-tests), cognitive, affective, and psychophysiological baselines, ethical values related to the learning process, and behavioural metrics collected with wearables.
- Specific biometric metrics including eye tracking, physiological metrics like electrodermal activity and heart rate variability, and actions performed during learning modules.

BME Hungary:

- Consent Forms
- Anonymized Qualtrics forms, Moodle quizzes, Emotibit and activity logs during module execution
- Scans and photographs of hand-filled forms
- Edison project snapshots
- Video captures and transcripts
- Attention test logs from tablets.

The pilot recruitment process for each entity differed and is outlined below:
CSI Cyprus: Participants were recruited through collaboration with Alexander College, involving an open call to students and educators, specifically software developers. Interested individuals booked slots via a website, followed by email communication for Moodle Platform access.

UJI Spain: Recruitment involved multiple channels, including university students (offered as a for-credit course), volunteers (via personal networks), classroom outreach, secondary school students (through principals/teachers), university staff (via institutional emails), and developers (via collaborator businesses).

Tallinn University: Participants were recruited voluntarily among students, educators, educational technologists, and edtech entrepreneurs. Information was shared in lists, with age and language proficiency criteria. Recruitment was supervised by K. Pata, with data anonymization and destruction protocols in place.

BME Hungary: Recruitment included offering the pilot as a for-credit course, contacting volunteers via Teams messages, recruiting teachers through partners, faculty staff via email lists, social entrepreneurs through business contacts, and developers through associations.

The data collected from the respective workshops on WP3 will be used to create Deliverable xx. The data collected will provide insights for those interested in e-learning and can be used for replicability studies and comparisons with other data. The target group consists of teaching staff in professional training studies or higher; technical staff responsible for maintenance and support of educational technologies; tech-savvy developers and general students.

3. Storage and Custody of Consent Forms

All consortium participants took appropriate measures to safeguard the storage of consent forms as follows:

- CSI Cyprus: Stored in a locker at CSI premises, managed by Kleovoulos Stylianou and Dr. Sotiris Themistocleous.
- UJI Spain: Stored in a locked drawer within INIT office, accessible only to authorized personnel.
- Tallinn University: Stored in a secured room, with recruitment data destroyed post-experiment.
- BME Hungary: Stored in a locked drawer on campus, accessible only to designated personnel.

4. Allocation of resources

Raw data was handled following FAIR principles ensuring appropriate guardrails were applied to safeguard their storage and management: • CSI Cyprus: Data was stored in separate repositories, duplicated in AWS for partner access. • UJI Spain: Data was stored locally, on Moodle and Qualtrics servers, duplicated in AWS. • Tallinn University: Data was managed digitally and anonymously, protected by AWS IAM. • BME Hungary: Data was stored in Qualtrics, Moodle, and S3 cloud storage, with redundancy measures. Documentation and Metadata Across all forms, data was anonymized, structured, and stored with descriptive metadata following FAIR principles. Documentation ensured usability and understanding by other researchers, with compliance to ethical standards and transparency in methodologies. Access to the data is restricted to researchers working on the project using their unique login credentials. Consortium partners have their own institutional General Data Protection regulation in line with EU Data Protection Law and regulations.
5. Data security
Access to the data is restricted to researchers working on the project using their unique login credentials. All consortium partners have their own institutional General Data Protection regulation in line with EU Data Protection Law and regulations.
6. Ethical aspects
As with previous project tasks, consent forms were created and translated in all partner languages, All reasonable steps have been taken to ensure that consent is granted, transparency is ensured and that participants can revoke their consent any time, according to Horizon Europe standards and all partners have taken steps to ensure conformity with national and EU-level laws and regulations. All partners have taken steps to submit this research to national/institutional ethics committees for approval prior to executing them. CSI, as leader of WP7 and the members of the Ethics committee of the project are committed in ensuring that the ethics standards that apply are respected across the board on every step of the implementation. Data transfer to the e-DIPLOMA repository, Zenodo, for human subjects is permitted only if informed consent, ethics approval, and necessary local data protection authorities' approval have been obtained. The data must be either pseudonymized or anonymized and the Data Owner is responsible for the anonymization process and ensuring that no directly identifiable information is transferred, such as name, national ID, phone number, email, address, and geographical coordinates. The Data Owner should only provide the minimum necessary information for analysis.
7. Other
Apart from the European Commission policies on open data management, project adhered to their own institutional policies and procedures for data management.

5.5 Task 6.2: Co-design with Stakeholders and Selection of the Best Policy Options

Relevant Work Package: 6	**T6.2: Co-design with Stakeholders and Selection of the Best Policy Options**
1. Data summary	

Main objective of e-DIPLOMA in WP6, T6.2 is to gather and discuss proposals from stakeholders through brainstorming sessions, leading to the selection of key ideas by participant consensus. Through the work package activities, the following data were collected by consortium partners:
InnoGrowth (Bulgaria)

- Completed templates filled out by participants (Word documents)
- Supporting materials such as notes or summaries from the sessions (digital text files)

BME (Hungary)

- Google Docs containing participants' ideas and proposals
- No transcripts or records of deliberations

CSI (Cyprus)

- Individual Word documents with participants' policy recommendations
- Google Docs with enriched ideas and comments

ARIS (Italy)

- Policy recommendations saved in .doc or .pdf format

Spain (UJI, UPV, Brainstorm)

- Written recommendations provided by participants (documents)
- Numerical ratings of each recommendation (online forms)

TU Delft

- Notes stored in text files

Recruitment of Participants for these sessions was performed by consortium partners as follows:

- InnoGrowth (Bulgaria): Utilised stakeholder mapping, direct invitations, interactive videos, open calls, and diversity criteria.
- BME (Hungary): Used university mailing lists, student groups, and personal contacts.
- CSI (Cyprus): Leveraged its network of HEIs, experts, researchers, and educators through email and phone invitations.
- ARIS (Italy): Selected participants from students and trainers involved in the piloting phase.
- Spain (UJI, UPV, Brainstorm): Used targeted channels, social media, and professional networks.
- TU Delft: Direct invitations in person or by email.

3. Storage and Custody of Consent Forms

Informed Consent Procedures included the following:
InnoGrowth: Detailed information provided through informed consent forms, signed digitally or physically.
BME: Goals explained, consent forms distributed and signed.
CSI: Consent forms sent via email, signed electronically or physically.
ARIS: Online session explaining the activity, consent forms delivered and signed.
Spain: Editable documents sent by email, signed and returned as PDFs.
TU Delft: Consent forms signed before sessions.

All consortium participants took appropriate measures to safeguard the storage of consent forms as follows:

InnoGrowth: Stored in encrypted digital repository and locked physical cabinets. BME: Stored in a locked drawer in room IB312. CSI: Stored in a specific locker at CSI premises. ARIS: Stored on ARIS cloud and printed copies in ARIS register. Spain: Collected via project email address. TU Delft: Scanned and stored in local university drive, paper versions shredded.
4. Allocation of resources
Metadata Creation and Documentation Across all forms, data was anonymized, structured, and stored with descriptive metadata following FAIR principles. Documentation ensured usability and understanding by other researchers, with compliance to ethical standards and transparency in methodologies. Access to the data is restricted to researchers working on the project using their unique login credentials. Consortium partners have their own institutional General Data Protection regulation in line with EU Data Protection Law and regulations. Specifically, InnoGrowth: Structured Excel spreadsheet for metadata. BME: No metadata creation, deferred to INNOGROWTH. CSI: No metadata creation. ARIS: No metadata creation, files renamed systematically. Spain: Implicit metadata system through folder structure. TU Delft: Report summarizing and detailing data and findings.
5. Data security
InnoGrowth: Secure cloud-based repositories, Google Drive for sharing. BME: Google Drive managed by INNOGROWTH. CSI: Google Drive, internal server. ARIS: ARIS privacy server, paper copies in ARIS archive. Spain: Google Drive, shared folders. TU Delft: Local university Teams drive.
6. Ethical aspects
As with previous tasks of the project, several ethical and legal considerations we adhered to, as follows: InnoGrowth: Compliance with GDPR, informed consent, data protection, IPR, transparency. BME: Informed consent, data management explained, non-anonymous data, defers to INNOGROWTH for data management. CSI: Informed consent, IPR acknowledged, non-anonymous data, no ethics approval needed. ARIS: Compliance with ARIS data management policy, non-anonymous data, no sensitive data collected. Spain: No sensitive information collected, names used for acknowledgment, non-anonymous data. TU Delft: Compliance with WP6 guidelines, non-anonymous data.
7. Other issues
-

6. Conclusion

The e-DIPLOMA consortium understands the importance of a robust Data Management Plan (DMP) as a key element of good data management and was committed to following all the necessary best-practices and precautions to ensure all research data produced through the project is findable, accessible, interoperable, and re-usable (FAIR). The initial Data Management Plan (DMP) of the e-DIPLOMA project introduced a detailed data management policy in line with Horizon Europe open data requirements and guidelines on FAIR (Findable, Accessible, Interoperable and Reusable) data management, defining comprehensible and easy to follow administrative and technical procedures and clear responsibilities for embedding data management activities in the complete project lifecycle. Throughout the project activities, data management was active and updated after the implementation of activities involving data collection.

e-DIPLOMA

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