#VISUAL_KA

ViSuAL
Video-Supported Education Alliance

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Open data and research strategy

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Consortium

Nr	Partner Acronym	Category	Country
1	AHW	Applicant	The Netherlands
2	JAMK	Partner	Finland
3	UT	Partner	Estonia
4	EVORA	Partner	Portugal
5	LUT	Partner	Finland
6	SFIVET	Partner	Switzerland
7	IRIS Connect	Partner	United Kingdom
8	Flowbox Ltd	Partner	Finland
9	DiSEL21 Ltd	Partner	Finland
10	Bloco	Partner	Portugal
11	NorSim	Partner	Finland
12	EAPRIL	Associate partner	The Netherlands

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Table of contents

1. Introduction

Data Management Plans (DMPs) of projects are according to the European Commission guidelines (see http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm) a key element of good data management. A DMP describes the data management life cycle for the data to be **collected, processed and/or generated** by a project. As part of making research data findable, accessible, interoperable and re-usable (FAIR), a DMP should include information on:

- the handling of research data during & after the end of the project
- what data will be collected, processed and/or generated
- 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).

If in a project Personal data will be collected; you also have to explain how you will comply to the GDPR. in order to comply (to the GDPR) the DMP also has to explain which personal data will be collected, how informed consent is being realised and how the privacy and safety of the data is guaranteed, during and after the project.

In the ViSuAL project “Open data and research strategy” we will describe all of these aspects. As suggested by the European Commission, this is a living document. It’s available online and will be updated throughout the project according to the needs derived from the other work packages of the project. The first version of the deliverable 8.3 mainly gives the structure for operationalising all questions regarding data management.

A key question in the ViSuAL project is how much open data we could provide for other interested researchers. We fully understand the trend to open data and open research, as introduced in the concept documents about the framework of Responsible Research and Innovation. However, we also understand the risks regarding sensitive data that is generated in ViSuAL project in the form of video recordings as well as some relevant ethical implications we cannot underestimate, especially in teacher education. On the other hand we accept the citizens’ right to privacy and, therefore, take very seriously every data collection procedure and inform all involved people in the best possible way about the aims of the data collection and about data management plans.

In general, the aim of the open data and research strategy is to guide the research and experimentation teams in data collection and availing access to data with respect to privacy and rights of the research subjects. In addition, strategy will guide open access publication of research findings and operation on the open research platform and together with the open research community.

Open data and research strategy has been developed in consulting respective documents and template provided by the European Commission, especially the new EU General Data

Protection Regulation that is in place since 25 May 2018 (see https://ec.europa.eu/commission/priorities/justice-and-fundamental-rights/data-protection/2018-reform-eu-data-protection-rules_en).

2. Data Summary

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In ViSuAL project data will be collected in three main purposes: 1) to give feedback to the people about whom data is collected, 2) to conduct summative assessment of the products and procedures developed in the project with the aim to revise and improve these, 3) to generate research outcomes, 4) to document activities of the project and disseminate information about these.

What types and formats of data will the project generate/collect?

Contentwise, in ViSuAL project will be collected data about learners' learning process and learning outcomes, about teachers' teaching process and used learning materials, communication and knowledge dialogue from the knowledge alliance partners. These are recordings about the process (videos, audio, text), reflection on this (interviews, written reflections) and questionnaire-data or test-results about learning outcomes. In addition, background data will be collected about the learners (age/date of birth, gender, country, school) and technical devices used in the project-related activities (information about devices used, authentication data, location information). In addition, some other data might be collected that is uploaded and shared with the people involved in the ViSuAL learning process (students, teachers, other stakeholders). Everyone from who data is collected; will be asked to consent in sharing the collected data for the project. If no consent is given; the data will be processed anonymously

Will you re-use any existing data and how?

In ViSuAL project we use only original data. No previously existing and data generated outside the project activities will be reused.

What is the origin of the data?

The data created in ViSuAL project originates from 1) video-recordings, 2) audio-recordings, 3) written materials (responses to questionnaires, tests, essays, task-related data in the learning activities carried out in the project, 4) log-files and virtual dialogue databases.

What is the expected size of the data?

The size of the data cannot be estimated and will be specified later based on the experience gathered from pilots.

To whom might it be useful ('data utility')?

The collected data is especially useful for the people in the project consortium for research (focus of the higher education institutions) and development (specific focus of companies and schools); however, it is also beneficial to the learners about whom data is collected and their teachers who might improve their competence using this data. The learners can

improve their learning according to the data. The data is foreseen to be also useful for researchers and developers outside the consortium. However, its relevance and usability in broader context will reveal during the project course. Finally, the data would be useful to policy makers in order to justify needs for changes in policy documents or school practice.

3. FAIR data

3.1. Making data findable, including provisions for metadata

Are the data produced and/or used in the project discoverable with metadata, identifiable and locatable by means of a standard identification mechanism (e.g. persistent and unique identifiers such as Digital Object Identifiers)?

Datasets that will be created in ViSuAL project and will made available for further use are uploaded to the servers of the partner institutions of the ViSuAL project and linked in the ViSuAL web-site http://visualproject.eu. Later it will be decided if each data-set will be registered in a widely used system as DOI (Digital Object Identifiers).

Each dataset will be specified with a title (file name) consisting some metadata and additional metadata. The list of meta-data provided in title and additional metadata follows the Common European Research Information Format (CERIF, see http://www.dcc.ac.uk/resources/metadata-standards/cerif-common-european-research-information-format). According to this the following information will be provided:

1. Identifier - as the title of the dataset (later it will be decided id this will be replaced by DOI or other identified; in the beginning of the project the identifier = title).
2. Creator - coded in the title and specified in a field of additional metadata.
3. Title - specified as described below.
4. Publisher - specified in a field of additional metadata.
5. Publication Year - specified in a field of additional metadata.
6. Subject - specified in a field of additional metadata.
7. Contributor - specified in a field of additional metadata.
8. Date - specified in a field of additional metadata.
9. Language - specified in a field of additional metadata.
10. ResourceType - coded in the title and specified in a field of additional metadata.
11. Alternate Identifier - not in use.
12. Related Identifier - not in use.
13. Size - specified in a field of additional metadata.
14. Format - specified in a field of additional metadata.
15. Version - specified in a field of additional metadata.
16. Rights - specified in a field of additional metadata.
17. Description - specified in a field of additional metadata.
18. GeoLocation - specified in a field of additional metadata.

The following metadata will be provided in the title of each data file:

1. Project identifier (ViSuAL).

2. Partner identifier - the main creator of the datafile who coordinated creation of it and is responsible in uploading the dataset to ViSuAL web-site and updating its versions as needed (partner acronymes will be used: AHW, JAMK, UT, EVORA, LUT, SFIVET, IRIS, Flowbox Ltd, DiSEL21 Ltd, Bloco, NorSim, EAPRIL).
3. Object type identifier (data for datasets but the same system could be later used for other types of digital objects created in ViSuAL project, e.g. publication, report, news).
4. The category identifier (in case of data these will be video, audio, test, questionnaire, narrative, log-file but this list is preliminary list and will be extended if additional categories are needed).
5. The unique numbers of the objects of the same type and category (numbering will start from 001 identifying the first object created and registered).

Consequently, **the title of a digital dataset file of the ViSuAL project** are presented in the format ***ViSuAL-partner-object-category-number*** (e.g., VISUAL.UT.data.test.001 in case of dataset with test-results registered by Estonian team). This title is in accordance with the DOI system and because of that the data can be later easily linked with the DOI system.

In addition, the following meta-data will be provided about the datasets (depending on the format of the file it could be presented within the data file; e.g. on a separate sheet of an Excel file or as an additional document linked to the data file; e.g. link to a pdf-file in the description of a video or audio file):

1. Identifier - as the title of the dataset (later it will be decided id this will be replaced by DOI or other identified; in the beginning of the project the identifier = title).
2. Creator - coded in the title (acronyms) and specified in a field of additional metadata (full name and contact e-mail of the partner's representative).
3. Title - specified as described above.
4. Publisher - we will usually present the project outcomes as shared outcomes of the consortium and; therefore we will use here "ViSuAL Knowledge Alliance" but different solutions are also possible and will be discussed and decided in the steering committee meeting if needed.
5. Publication Year - year when the last data collection has been done.
6. Subject - it's a freeform text that should be specified by the creator but the list of the subjects will be continuously updated in this Open data and research strategy document in order to avoid emergence of similar codes without particular need (the list of subject codes: *will be created when data is available*).
7. Contributor - here should be listed all people (given name and family name) and partners contributed in data collection; in case of every person the acronym of the partner institution should be provided next to the name in parentheses (e.g. Frank de Jong (AHW), Eila Burns (JAMK)...).
8. Date - date or period of data collection in format dd/mm/yyyy.
9. Language - language used in the dataset (in names of the variables, language of the open-ended questions, language of the text in audio, etc.); more than one language code could be used if part of the data is available in one and other part in other language (e.g. item names are in English and many of them can be used in

international analyses but the content of some open-ended questions is in Estonian); the language will be expressed according to ISO 639-1 language codes (see https://en.wikipedia.org/wiki/List_of_ISO_639-1_codes), e.g. en for English, et for Estonian, fi for Finnish.

10. ResourceType - coded in the title and repeated here using the words video, audio, test, questionnaire, narrative, log-file but this list is preliminary and will be extended if additional categories are needed in a field of additional metadata (if needed then additional information about the type could be provided here; e.g. title of the test of questionnaire).
11. Size - file size in megabytes (MB).
12. Format - technical format of the data file will be provided; common formats will be used; e.g. for data tables: SPSS, SAS, Stata or Excel files or ASCII files, for text-based documents: pdf-files, txt-files, docx-files, for image files: JPG, GIF, PNG or TIFF format, for audio and sound recordings WAV (Windows Wave), MPEG-1/2 (MP3), for video files MPEG-4 (H.264, MP4) or a link to a files stored in a storage base (e.g. YouTube, Vimeo).
13. Version - number of the version of the dataset (the first version will get number 1 and this will be updated in case of additional data will be added to the same file or some modifications will be made in the data file (e.g. some items will be added/deleted, recoded).
14. Rights - licensing information (under which licence this dataset has been disseminated; e.g. one of Creative Commons licences, see https://creativecommons.org/share-your-work/licensing-types-examples/), information about giving reference to this data set (suggested format for referencing), and information about consent asked from the respondents (e.g. from them or their parents, information of what is allowed to do with this data according to the consent).
15. Description - short description of the dataset (what is this data about (e.g. contextual information that is needed in interpreting this data - school type, class type, learners characteristics), by whom (full names of consortium partners) and in what purpose it was collected, who were the respondents (e.g. students, their age group)).
16. GeoLocation - information about the country/countries where the data is collected.

In addition, four more metadata fields will be used to ensure appropriate dissemination of the project outputs and acknowledgment of contributors:

17. Target groups that are seen as potential users of the dataset.
18. Accessibility - information about persons/groups who has access to the data.
19. Information about usage of this dataset (where it has been already used, references to published reports and articles to increase readers' awareness of the analyses already done in order to avoid duplicated work and to ensure appropriate dissemination of the research outputs).
20. Acknowledgements (to specify the parties that should be acknowledged regarding having this dataset, including the European Commission that financed the ViSuAL project).

This list on metadata is preliminary and will be extended by analysing each dataset from the viewpoint of potential users of it. According to this analysis additional metadata will be generated and the Open data and research strategy document will be updated.

Will search keywords be provided that optimize possibilities for re-use?

Each dataset will be provided with relevant keywords described in the ERIC.ed.gov thesaurus to make it more easily findable by potential users. Here is presented a list of keywords that is considered in case of each ViSuAL data set but in addition to this additional keywords could be provided.

Keywords describing the type of the data: qualitative data, quantitative data; test, questionnaire, interview, essay, document, video, audio, image, log-files.
Keywords describing the respondents: school, lower-secondary school, upper-secondary school, vocational school, higher education; learners, teachers (including student-teachers, inservice teachers, teacher-educators).
Keywords describing the content: video pedagogy, knowledge building, collaborative learning, collaboration, professional development, teacher education, teacher training, vocational education and training, professional education, co-creation, collaborative creation, education, teacher education, educational institutes, company, working life, world of work, business, pedagogical model, educational technology.

3.2. Making data openly accessible

Which data produced and/or used in t3rhe project will be made openly available as the default? If certain datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions.

The ViSuAL consortium understands the benefits of making data openly accessible and considers this option in case of every dataset keeping in mind the privacy expected by the respondents or people about whom the data has been collected (taking into account the informed consents collected from them). Therefore, we cannot say that some data will be made openly accessible by default but it will be an informed decision in every case. When a dataset is created then this option will be taken for discussion in the ViSuAL team where data has been collected and they make a justified proposal for decision-making on the level of the steering committee.

How will the data be made accessible (e.g. by deposition in a repository)?

If the steering committee has made a decision for making a dataset openly accessible then the creator of the dataset is responsible in following the guidelines given in the Open data and research strategy document to give to the dataset an appropriate title and to provide all metadata. If the steering committee has made a decision (then only data from people who have given permission are made accessible; otherwise it's made accessible anonymously.

Next, the link to the dataset and metadata file (if provided separately) will be given to the partner responsible in updating project web-site. This partner is responsible in making the dataset and metadata openly accessible through the ViSuAL web-site.

What methods or software tools are needed to access the data?

When a dataset is made openly accessible through the ViSuAL web-site then specific tools will not be needed to access the data. However, depending on the type of data specific software might be needed, e.g. a software for opening data tables (MS Excel, SPSS, etc.) or accessing video or audio files. In case of specific needs there is the possibility to contact the creator of the dataset (e-mail given in the metadata) for transforming the dataset from one to other format (e.g. from SPSS format to Excel file).

Is documentation about the software needed to access the data included?

The ViSuAL project consortium is very much interested in monitoring how the data created in the project will be reused in other contexts by other partners. Therefore, we have created a specific data field in metadata to describe the usage of this particular dataset. This will provide information how this dataset has been used by the members of the ViSuAL project partners but we encourage the other users of the dataset to share the same information. Therefore, we ask the users of the dataset to contact the creator of the dataset.

Is there a need for a data access committee?

If there is any doubt about the rights in giving access to use a particular dataset within the consortium or outside it then the ViSuAL steering committee acts and the data access committee and makes the decision based on the consequences of each particular case.

Are there well described conditions for access (i.e. a machine readable license)?

Several recommendations are made in creating the data files in order to make datasets more easily accessible by different users and to increase the possibility for machine readability. So far these specify the characteristics of the data tables but guidelines for creating other types of datasets will be provided in case of need.

The guidelines are the following:

1. Usually, data tables should be provided in csv format that is easily accessible by different data analysis software (other options are also available and should be specified in metadata, see section 2.1.).
2. Items will be presented in columns and cases in rows; each item has a title that is presented on the first and only on the first row, the second row is already for the data about the first case.
3. The names of the items (variables) should be short and supporting understanding the structure of the data collection instrument (e.g. all items of one factor should have the same short name + item number), special characters should avoided in naming items.
4. The data should be clearly described (e.g. items and their options in case of a questionnaire or test, interview questions).

5. The values of the variables should be presented in numbers (e.g. gender using 1 and 2 instead of using F and M), on a separate sheet should be explained values of each number (e.g. variable “gender”, 1 = female, 2 = male; variable “TSI_att_1”, 1 = is not about me, 4 = is about me is explained that we have Teamwork Skills Inventory dimension “attending teamwork” and there is a 4-point scale where only values 1 and 4 are specified while 2 and 3 are between these two).
6. In case of computed variables should be specified on the separate sheet how these have been computed (e.g. it’s an average/sum of items xx and yy [here should be provided the titles of particular items] or it’s a latent variable found in combining a list of variables (titles should be given) in factor analysis).
7. The identifiers of the cases should be selected so that the respondents are not identifiable if this identification is not particularly needed according to the nature of a particular dataset and it is in accordance with the informed consent asked from the respondents (e.g. the consortium uses a personal identifier to link the same respondents in different datasets).

3.3. Making data interoperable and increasing data re-used

Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?

In order to make ViSuAL datasets interoperable the partners will use the widely accepted formats of metadata (see section 2.1.) and use specific actions to make the data files openly accessible (see section 2.2.); however, in addition to this the creators of the datasets follow the common standards in presenting data. This is ensured by sharing international experience of the project partners. The ViSuAL project Exploitation team is responsible in monitoring each new dataset and discussing its format in a regular team meeting in order to achieve the best interoperability that is possible based on the shared knowledge base of the team.

When will the data be made available for re-use? If an embargo is sought to give time to publish or seek patents, specify why and how long this will apply, bearing in mind that research data should be made available as soon as possible.

The datasets will be made openly available as early as possible after adapting these to the guidelines and rules specified in this particular Open data and research strategy document. When it is made open then there is no embargo for using it by any interested parties; however, the licensing and referencing needs have to be considered and followed.

The project partners also do not set any time-limits for keeping the datasets available. Only data is made interoperable for which an informed consent is given.

4. Allocation of resources

What are the costs for making data FAIR in your project?

Making data openly available might need some resources. For example, data files need to be adapted according the the guidelines and rules specified in the Open data and research strategy and the metadata should be provided. In addition, in some cases need for collecting additional permissions from the respondents or the authors of the data collection instrument might be relevant. In some cases there might be some costs related to the storage of the dataset.

How will these be covered? Note that costs related to open access to research data are eligible as part of the Horizon 2020 grant (if compliant with the Grant Agreement conditions).

All these costs will be covered by the partner who is the creator of a particular dataset. These costs might be covered from the budget of the ViSuAL project or from other budget. In case the dataset is a shared dataset of several partners then the share of costs should be taken for discussion in the steering committee if the responsible creator cannot cover all costs and requests sharing these between partners. In this case the creator has to provide a budget split between different partners and explanation of how this split has been made and why it is needed. If the steering committee decides the split of budget then the partners involved will act according to the agreement.

Who will be responsible for data management in your project?

The daily decisions on the data management will be made by the coordinator of the dissemination work package (WP8); however, in case of any need the responsibility is taken to the steering committee that makes decisions.

Are the resources for long term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?

The data produced within the ViSuAL project will be kept available for re-use at least five years beyond the end of the project (until 31 December 2025). Beyond this all of the data will be deleted. Until this happens the responsible for keeping the data updated will be the Head of the Institute of Education in the University of Tartu.

5. Data security

What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?

All datasets will be stored by project partners securely in their own storage bases. Each partner is responsible in following common principles to ensure secure storage of data and making regular backups of the datasets. If the data will be not made open to the others then it will be stored only in the partner's storage base. However, if it will be made openly available then, in addition, an offline copy of each dataset and its accompanying documents

(e.g. metadata file) will be created by the coordinator of the Dissemination work package (WP8) while uploading dataset to web-site.

Is the data safely stored in certified repositories for long term preservation and curation?

The partners follow the data security principles set in their own institution while storing datasets with regular save backups. The offline copy made by the coordinator of the Dissemination work package (WP8) will be stored using a solid state external encrypted hard drive which is stored in a locked place in the rooms of the partner institution. In this way the data is protected from lost and attack and if something will happen with online data then it can be stored from offline copy and vice versa. The risk that something happens with both online and offline data simultaneously is very low and the sensitivity and importance of the data collected in ViSuAL project is not so high that there would be a need to use a more sophisticated and advanced but also more expensive procedure for ensuring data safety.

6. Ethical aspects

Are there any ethical or legal issues that can have an impact on data sharing? These can also be discussed in the context of the ethics review. If relevant, include references to ethics deliverables and ethics chapter in the Description of the Action (DoA).

There are several ethical issues that are considered in collecting and making data openly available in the ViSuAL project. First, we aim to collect data as few as possible and as much as needed in order ensure effective use of human resources, budget provided by the European Commission and the time of the respondents. Due to the aims of the project we do not foresee that data collection and ViSuAL project interventions could cause any harm to any parties involved in the process; however, we will observe the data collection and data analysis process keeping this potential risk in mind and discuss these issues immediately with the project coordinator and after that in either coordination team or steering committee meeting if needed. In case of additional need, relevant ethics committees in particular partner institutions or countries or at European level will be contacted.

In order to acknowledge the contribution of the ViSuAL consortium in collecting and analysing data we also follow a guideline for adding acknowledgement while publishing or presenting data and other outputs of the ViSuAL project. The main principles are the following:

1. In case of every public presentation and publication there will be added the following acknowledgment:

   > This study was conducted in the context of the European project Video-Supported Knowledge Alliance (ViSuAL) (project number: 588374-EPP-1-2017-1-NL-EPPKA2-KA), funded by the European Union (EU) under the Erasmus+ Key Action 2 - Knowledge Alliances. This document does not represent the opinion of the EU, and the EU is not responsible for any use that might be made of its content.

2. In case of preparing a publication (journal article, chapter, contribution in conference proceedings, etc.) the corresponding author is responsible in sharing information about the plan of publishing well in advance before the submission (at least one week but preferably much earlier to involve additional contributors in case of interest):
   a. Preliminary title of the submission
   b. Place it will be submitted (conference, journal)
   c. Expected time of submission
   d. Preliminary abstract
   e. Preliminary list of authors (and indication if they would like to involve more authors if someone is interested to contribute or if this is not expected)

   This information need be shared in the steering committee e-mail list and the steering committee members are responsible in sharing this information with other members of the consortium in their institution. The steering committee members have to indicate if they see an ethical issue (e.g. of using dataset that should be used in a way that somebody else should be involved as an author) and they have a suggestion to involve more authors or to leave out some data from the analysis. If the

steering committee members do not reply with their concerns within a week then this is taken as their acceptance for submission of this particular publication under the conditions that were described by the corresponding author.

3. When the publication is accepted for publication or published then the references of the publication will be sent to the coordinator of the dissemination work package (WP8) who is responsible in sharing this information on ViSuAL web-site and if relevant then in other formats (e.g. in newsfeed).

If additional aspects should be specified then these will be discussed and decided in the steering committee meeting.

Is informed consent for data sharing and long term preservation included in questionnaires dealing with personal data?

We also inform the people (learners, teachers, etc.) participating in data collection and research in the context of the ViSuAL project about the potential risks we foresee and encourage them to contact us whenever they find that their ethical principles have been violated or might be if they do not have enough information about the project and a particular data collection or analysis project. We aim to be as transparent as possible and cooperative to avoid any issues that may arise from ethical dilemmas in the context of the ViSuAL project. It is especially high for ethical issues in this project while we do not collect only written data but also very rich videodata (and a bit less rich audio and image data) that could be potentially used in ways that we do not foresee today. Therefore, we also add in the forms of consent information about our procedures of data collection, storing and sharing and ask an informed consent for this by indicating that they have always the possibility to take this consent back whenever they want to do that. In order to make it possible, we also provide contact details in the consent forms and on the project web-site.

The consent forms will be developed according to the needs and these will be specific to different target groups (students, parents, teachers, companies, others involved). When available, these will be added as appendixes to this Open data and research strategy document for reuse and adaptation in the following data collections.

7. Conclusions

Open data and research strategy is a “living” document and it will be updated throughout the ViSuAL project according to the needs. It is also open for suggestions made by people outside the ViSuAL consortium.