



SIGNON

Sign Language Translation Mobile Application and Open Communications Framework

Deliverable 7.8: Data Management Plan (formerly D8.2)



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Overview: This deliverable D7.8 contains the framework and requirements for the Data Management Plans of each project partner. D7.8 is complemented by the specific DMPs for each partner. These will be delivered in D7.10 which is due in M36. In order to accommodate the dynamic nature of DMPs, intermediate versions of D7.10 are scheduled for M12 and M24. These specific DMPs will be reviewed by SignON's REC.

Revision History

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Approval Procedure

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Acronyms

The following table provides definitions for acronyms and terms relevant to this document.

Acronym	Definition
APC	Article Processing Charge
DMP	Data Management Plan
FAIR	Findable, Accessible, Interoperable, and Reusable
GDPR	General Data Protection Regulation
DHH	Deaf and Hard of hearing
FLOSS	Free/libre and Open-Source Software
RDM	Research Data Management
SL	Sign Language
Term	Definition
Data subjects	Legal term for participants included in data collections, in the case of SignON typically (but not only) from the DHH population.

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1. Executive Summary

Data Management Plans (DMPs) are a key element of good data management. In the definition of the EC,¹ a DMP describes the data management life cycle for the data to be collected, processed and/or generated by a Horizon 2020 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).

A DMP is a dynamic document and multiple DMPs will be needed by the various partners in the SignON project. The DMP's "living document" approach complements the GDPR requirements of Privacy by Design and Privacy by Default. In other words, ensuring data protection is incorporated at the outset and throughout the project. This deliverable D7.8 outlines the framework and the principles which individual DMPs in the project should meet in line with the contract obligations stipulated in Article 29.3 of the Grant Agreement of the project. The general principles addressed in this deliverable are:

- Data summary
- Meeting FAIR principles
- Publications
- Allocation of resources
- Data security
- Ethical aspects

D7.8 is complemented by the specific DMPs for each partner. These will be delivered in D7.10 which is due in M36. In order to accommodate for the dynamic nature of DMPs intermediate versions of D7.10 are scheduled for M12 and M24. These specific DMPs will be reviewed by SignON's Research Ethics Committee (REC), as introduced in D9.1.

¹

https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm

The SignON project will use:

- Open Access journals and green route (Zenodo) for publications
- Zenodo and CLARIN centres for data sharing
- B2SHARE for research data and models sharing
- B2DROP for internal exchange of data and models

2. Data Summary

The purpose of the data collection is to gather resources to be used in research into optimal methods of natural language processing (NLP), machine translation (MT), sign language recognition (SLR) and automated speech recognition (ASR), 3D animation and avatar synthesis, sign language (SL) understanding, and SL linguistics for the development of a smooth communication service that uses MT to translate between SL and verbal languages and facilitates the exchange of information among deaf and hard-of-hearing (DHH) and hearing individuals. That is, the data will be used to build new models, update and evaluate existing models, improve user experience, etc. Models and algorithms that will exploit the data will be designed and developed such that the information contained therein cannot be deduced to any individual.

In the SignON project, video and audio data from both DHH and hearing participants will be collected and processed. In this project the linguistic aspects of SL (use) are studied, along with attitudes to MT in DHH communities. The consortium takes the position that special data protection provisions above those required for personal data are not needed. DHH adults are not inherently vulnerable. In SignON, we are engaging with DHH adults with the capacity to give informed consent in a language that they understand to participate in the project's activities. We are not targeting participants who are under 18 years of age. We are not specifically targeting any DHH participants who are vulnerable (e.g. DHH participants with an intellectual disability). We are not collecting any metadata that relates to the health of any individual - our focus is solely on participants' linguistic backgrounds and their experiences with and attitudes to MT. As a consortium we therefore confirm that we do not deal with special category health data in the sense of the GDPR². This means that we do not collect (meta)data about the health conditions of our subjects

² <https://gdpr-info.eu/art-9-gdpr/>

but about their linguistic backgrounds: e.g. whether SL is their first language, or whether they are native speakers. Therefore specific Data Protection Impact Assessments are not deemed necessary nor are additional approvals by medical ethics boards (MREC) beyond the usual ethical approvals for the data collection which we do require.

The project will generate and collect video data (with signers), speech recordings, text documents, and metadata about individuals as far as is needed for the research. All data generated within the project (regardless of the format or type) will be in line with the FAIR requirements for interoperability as required by the data centres where the data will be stored and made accessible (see below). The resulting models (acoustic models, language models, sign models) will be void of personal information and will be shared at the level of open access in standard formats.

Members of the SignON consortium will use newly collected and existing speech recordings to study the research topics mentioned above. A list of existing resources used within the project can be found in deliverable D3.1. Where possible, project members will reuse existing data, either public, or from project partners or related institutions. The appropriate permissions, based on the uses allowed, will be obtained.

The data collected will be useful for anyone who is interested in recognition and synthesis of the modalities studied in the project and sign language in particular. However, access to the original data may be limited due to privacy and IP concerns.

Data will be provided by project partners, public broadcasters, government information services, CLARIN data centres³, and established data warehouses such as LDC⁴, ELRA⁵. Pre-existing data sets of SignON project partners are shared under the terms of the SignON Consortium Agreement, which all partners have signed up to. Since these data will contain personal data, compliance with [GDPR Art.14](#) will be ensured.

³ <https://www.clarin.eu/content/overview-clarin-centres>

⁴ <https://www ldc.upenn.edu/>

⁵ <http://www.elra.info/en/>

Models that are developed within the scope of the project will be stored in a common secure space within the B2DROP framework;⁶ experimental results and models that need and can be shared with the wider community will be shared via B2SHARE.⁷

3. FAIR data

3.1 Making Data Findable, Including Provisions For Metadata

All data that can legally be shared with the community, after approval by the Ethics Committees responsible, will be made available on Zenodo.org linked to the associated publications, tools, and software, or in a CLARIN data centre. Any Free Libre Open Source Software (FLOSS, GPLv3) produced within the project will also be made available on GitLab⁸ (see D2.1). The resulting models (acoustic models, language models, sign models) will be shared via B2SHARE⁹. Data, models, tools, and software will all be documented and all will have a DOI assigned by the hosting platforms.

If the original data underlying a publication cannot be made available due to lack of consent, then aggregate (and in this way anonymised) data will be made available (e.g. in the publication). In this, SignON will seek every possible strategy against re-identification.

Zenodo.org and CLARIN DATA CENTRES enforce a clear versioning scheme and this scheme will be used for versioning of data and tools.

All above platforms have provisions for assigning metadata. In our metadata schemes we will make clear whether the data are from deaf or hearing signers. Appendix 2 lists the metadata fields that we will use for new data that we collect involving signers.

⁶ B2DROP will be used to share models between the project partners; these models will not be accessible by external parties.

⁷ Both B2DROP and B2SHARE are services provided by the EUDAT Collaborative Data Infrastructure (EUDAT CDI, <http://eudat.eu>) - one of the largest infrastructures of integrated data services and resources supporting research in Europe.

⁸ <https://gitlab.com/signon-project>

⁹ <https://b2share.eudat.eu/>

3.2 Making Data Openly Accessible

SignON investigates sign language and speech from DHH people. Both at European and at national level, privacy regulations require that researchers secure ethical approval and informed consent before publication of data from human participants is permitted. As a result, participant data can only be shared on a case by case basis which mainly depends on whether informed consent as legal basis in the sense of the GDPR for sharing the data was given by the data subjects. All data that is outside the scope of the Ethics Committees of the participating institutes will be made openly available from Zenodo.org or CLARIN and indexed in OpenAIRE. Data will be of varying natures and published in commonly used, standard formats. All data will be accompanied with documentation of how to read and use it. If necessary, the required software tools will be described or included.

For educational purposes, the project records presentations of workshops and webinars when the presenter agrees to recording. These recordings will be made fully public on Zenodo after curation and signed approval by the presenters. For those recordings for which fully open publication is not possible, due to ethical or legal objections, or because the presenter does not consent to such-publication, other solutions will be sought. The presentation of recordings from data subjects in educational settings will depend on consent for this purpose given by the data subjects, and will be included as an option in the consent forms provided to them.

All data and publications will be stored on Zenodo.org, in CLARIN data centres which are supported by OpenAIRE and H2020. Models will be distributed via B2SHARE.

We are aware of the fact that while it may be intended to anonymise personal data, full anonymisation is not always possible in practice. Should this be the case, the data remains personal data for the purposes of GDPR, and data protection safeguards and requirements continue to apply. Similarly, pseudonymised data is regarded as personal data for the purposes of GDPR, and data protection requirements apply. Data that is not openly accessible will be available on-site, or using secure remote access, to individual researchers after approval by the relevant Ethics Committees. Data access will be decided by the Ethics Committees of the participating institutions. Decisions will be made on a case-by-case basis by the partners involved for data collections generated by the project. No SignON data access committee is needed.

An end-user licence agreement will be required for access to data that is not openly accessible¹⁰. Data is available upon request whenever the responsible Ethics Committees give their approval. Requests for access have to be sent to the Institution that hosts the data. The Ethics Committees will require a Data Transfer Agreement and end-user license agreement regulating the use of the data.

The resulting models (acoustic models, language models, sign models) will be shared via B2SHARE. For sharing models and data within the project, B2DROP will be used. SignON has requested its own group account for both B2DROP and B2SHARE. This account is being set up at the moment of writing this report and is expected to be operational in August 2021.

3.3 Making Data Interoperable

All data will be published in the formats commonly used in the research communities concerned. If available, public guidelines for metadata vocabularies, standards, or methodologies will be followed. Standard data formats for which there are FLOSS access options will be used for data. If other formats are necessary, software to access the data will be added to the repository. If the original data format used within the project is proprietary or has no FLOSS access options, this data format too will be made available alongside the open data format. For data that will be hosted in a CLARIN data centre the format requirements of the centre will be followed.

If available, standard vocabularies for all data types will be used whenever possible. If the use of non-standard ontologies or vocabularies is unavoidable, these will be documented and mapped to existing ontologies and vocabularies.

3.4 Increase Data Re-use (Through Clarifying Licences)

All data, text, and software will be published under Creative Commons or, for software, FLOSS licences, unless there are contractual or legal reasons that make this not possible. Data will be made available after the main publication based on the data having been published, or earlier if possible, but not longer than 6 months after completion and publication of the data. If an embargo is sought beyond these times, the reasons and duration for the embargo will be given.

¹⁰ The [EUDAT B2SHARE](#) tool includes a built-in license wizard that facilitates the selection of an adequate license for research data.

SignON strives to make all data usable by third parties from the start, unless sharing the data is not approved via consent forms, by the Ethics Committees of the participating institutions, or is prohibited by laws or regulations in the countries of the participants. Data available on Zenodo.org and CLARIN data centres will remain available without a time limit.

In order to share data after the lifetime of the project, consent of the data subjects will be sought by asking permission for re-use of the data for the following purposes:

- Train and test artificial intelligence systems for sign language recognition
- Train and test artificial intelligence systems for sign language synthesis
- Train and test artificial intelligence systems for sign language translation
- Train and test artificial intelligence systems for sign language understanding
- Translation studies from and to sign languages
- Linguistic studies about the properties of sign languages, spoken languages or written texts
- Train and test artificial intelligence systems for text-to-text translation, i.e. machine translation
- Train and test systems for generation of a virtual signer, i.e. a 3D avatar
- Train and test artificial intelligence systems for spoken language recognition or synthesis (audio modality)

This will be included in the informed consent forms.

4. Publications

Horizon 2020 requires that all publications arising from the work funded in the project must be published in Open Access (green and gold route). SignON will provide its results as either immediate open access (open access journal), or delayed open access, for 6 months (gold route), when it will be deposited in a suitable publication repository as defined in the DMP¹¹. Partners will also or alternatively (green route) self-archive via institutional repositories and Zenodo as recommended by OpenAire. Shorter reports and articles will be published without delay and made immediately available on the project's website. SignON participants are also encouraged to publish their papers, findings, articles, etc., on their professional and research social network (e.g. LinkedIn, ResearchGate).

The SignON project should be acknowledged as follows:

¹¹ As a recent alternative the Open Research Europe forum can be considered:
<https://open-research-europe.ec.europa.eu/>

“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101017255.”

5. Allocation of Resources

The monetary costs of making data FAIR in the project consist of the publication costs for Open Access publications and the costs of recording, curating, formatting, and hosting of the data generated by the project. Some institutions can offset article processing charges (APC) because they participate in negotiated blanket publication agreements with the publishers, see Appendix 1 for an overview . The remaining Open Access publication costs and the costs of producing and hosting recordings of SignON events (workshops, webinars) are paid out of the dissemination budget. There are no charges for using Zenodo or B2SHARE as repositories.

All participating institutions, as well as most journals and conferences, have rules and principles in place that require their researchers to make their data FAIR. As such, there are no extra costs to SignON consortium partners for making the data FAIR. The costs, in time and effort, to upload data and publications to Zenodo or CLARIN Data centres are marginal and covered by the project and its overhead provisions.

The Principal Investigators (PIs) of the project from the different institutions will be responsible for data management, including making data and publications FAIR. The coordinator will oversee the implementation. All publications and data that can be published will be stored at Zenodo, CLARIN or B2SHARE (for models). Data that cannot be published or has other restrictions will be stored at the institutions or on secure remote storage, at the choice of the hosting institution. Only descriptions and contact information of this latter data will be published to make them findable. All the institutions participating in SignON have made provisions for long term secure storage of data and publications in the form of repositories. Data that is uploaded to Zenodo and CLARIN data centres will be available without a time limit. Data that is not open will be stored according to the rules of the owning institution. The use of these long term repositories do not constitute a cost for the SignON project.

6. Data Security

SignON researchers are aware that, under GDPR, data subjects have the right to withdraw consent, and that consent must be as easy to withdraw as it was to give. They will therefore ensure that a mechanism is in place for tracking and managing consents, and any project contingencies which may be required as a result of consent being withdrawn. On the other hand, it must be stressed that data subjects cannot request the deletion of the collected data ([GDPR Art. 17 3 \(d\)](#)).

Unpublished data will be stored in the participating institutions, which have their own data security provisions. By law, such data will only be stored for a predetermined, limited term, at the participating institutes, for instance, for reasons of scientific integrity. Published data will be deposited in Zenodo.org or CLARIN data centres for long term preservation and curation. Zenodo and CLARIN data centres have adequate provisions for data security.

During the project, data generated by partners will be stored in the local secured network facilities of the member institutions. The specifics of this will need to be documented in a granular level of detail, and on a per-partner basis – this can be done separately to the DMP, but referenced therein. For exchanging models and data within the project, B2DROP will be used, and for which SignON will create its own group account. Data exchange between project partners will follow guidelines laid out in the templates for the project's Data Transfer Agreements (D7.9)¹² and will use encrypted file transfer facilities such as FileSender (<https://www.surf.nl/en/surffilesender-send-large-files-securely-and-encrypted>). D7.9 also provides a template for Data Transfer Agreements for joint controllers concerning data obtained from third parties such as broadcast companies.

Data protection support is provided by the DCU Data Protection Officer, Martin Ward, and the DCU Data Protection Coordinator, Joan O'Connell. They can be contacted at data.protection@dcu.ie. For queries around the protection of personal data with respect to the SignON project, please contact signon-data-protection@adaptcentre.ie.

7. Ethical Aspects

Privacy concerns limit, and often preclude sharing of personal data. There are strong legal and ethical limitations on the access of personal data. All other data will be shared under Creative Commons or

¹² See section 11 of SignON's Consortium Agreement

FLOSS licenses. If possible, informed consent for the long term preservation and sharing of the data will be sought from the data subjects. In agreement with GDPR all participants in any data collection process will have access to information in plain language and/or a signed language, as is their preference. The consortium takes the position that special data protection provisions above those required for personal data are not needed in this project. As outlined in section 2, we are not collecting any metadata that relates to the health of any individual - our focus is solely on participants' linguistic backgrounds and their experiences with and attitudes to MT.

New data that will be collected will require a two-stage process of ethics clearance. That is, when we seek to collect data (e.g. from participants in focus groups, or in creating additional data sets to supplement existing corpora), partners will prepare an ethics application for their home institution, or, if they are a non-university partner, an application for research ethics approval will be submitted via the coordinating partner institution, Dublin City University. Before submitting their application to their institutional research ethics committee, the application will be reviewed by the SignON Ethics Committee.

Ethical aspects are further covered in deliverables D9.1, D9.2, D9.3, D9.4.

8. Other Issues

SignON consortium members will follow local national or departmental procedures for data management that apply to their work. As most of the original data that is collected or analysed is regulated by the local Ethics Committees and the institution where the data is collected, these committees and the Board of Directors of the institutions set the procedures and rules of data collection, use, and management. In practice, this means that data collected from data subjects will be stored and managed by the institutions that own them. Use of other publicly available resources such as those obtained through LDC or ELRA will be managed at each institution as per the end user license agreements.

9. Conclusions

This deliverable has set out the principles for RDM in the SignON project. We have addressed the project's Open Access publication policy and how the project will meet the FAIR principles for sharing data, models and software after the lifetime of the project, how we deal with collecting and sharing

data in a GDPR compliant way during and after the lifetime of the project, data security issues and ethical aspects.

These principles will become manifest in the Data Management Plans which will be provided by individual SignON partners in D7.10. These will be delivered in D7.10 which is due in M36. In order to accommodate for the dynamic nature of the DMP, intermediate versions of D7.10 are scheduled for M12 and M24. These specific DMPs will be reviewed by SignON's Research Ethics Committee (REC), as introduced in D9.1. Project partners can use the DMP tools and templates provided by their own organisations as long as the guidelines outlined in this report are followed. They may also use the template that is provided by the EC¹³ in the Annex section and that is included in Appendix 3 of this report.

In brief, the SignON project will use:

- Open Access journals and green route (Zenodo) for publications
- Zenodo and CLARIN centres for data
- B2SHARE for research data and models
- B2DROP for internal exchange of data and models

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https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm

Appendix 1: List of Open Access Journals

Below is a list of websites with lists of Open Access Journals in which SignON partners can publish without or with reduced publishing costs.

Ireland: <https://libguides.tcd.ie/planS/publish>

The Netherlands: <https://www.openaccess.nl/en>

Appendix 2: Metadata Information

For materials containing signers we will record the following metadata fields:

- native vs. non-native signer
- first language vs. preferred language
- region or province
- type of signing: spontaneous signing- real-time interpreting from speech -- offline translation from text -- elicited signing -- ...?
- register: formal -- informal
- age cohort
- gender

The metadata listed here are personal data for the purposes of GDPR (indirect identifiers).

Appendix 3: Template for a DMP

Project partners can use the DMP tools and templates provided by their own organisations as long as the guidelines outlined in this report are followed. They may also use the template that is provided by the EC¹⁴ in the Annex section and that is included in this Appendix.

Data Summary

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

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

Will you re-use any existing data and how?

What is the origin of the data?

What is the expected size of the data?

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

FAIR data

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)?

What naming conventions do you follow?

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

Do you provide clear version numbers?

¹⁴

https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm

What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.

2. Making data openly accessible

Which data produced and/or used in the 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.

Note that in multi-beneficiary projects it is also possible for specific beneficiaries to keep their data closed if relevant provisions are made in the consortium agreement and are in line with the reasons for opting out.

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

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)?

Where will the data and associated metadata, documentation and code be deposited? Preference should be given to certified repositories which support open access where possible.

Have you explored appropriate arrangements with the identified repository?

If there are restrictions on use, how will access be provided?

Is there a need for a data access committee?

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

How will the identity of the person accessing the data be ascertained?

3. Making data interoperable

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)?

What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?

Will you be using standard vocabularies for all data types present in your data set, to allow inter-disciplinary interoperability?

In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies?

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

How will the data be licensed to permit the widest re-use possible?

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.

Are the data produced and/or used in the project useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.

How long is it intended that the data remains re-usable?

Are data quality assurance processes described?

Each data collection effort will publish its own data quality assurance processes.

Allocation of resources

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

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).

Who will be responsible for data management in your project?

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)?

Data security

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

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

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).

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