



Horizon Europe

Data Management Plan

D7.1. Data Management Plan



UP-SKILLING FOR INDUSTRY 5.0 ROLL-OUT

Grant Agreement Number 101070666

Deliverable name: Data Management Plan
Deliverable number: D7.1
Deliverable type: DMP – Data Management Plan
Work Package: WP7: Project Management
Lead beneficiary: MDU
Contact person: Chris Ivory – chris.ivory@mdu.se
Dissemination Level: Public
Due date for deliverable: November 30, 2022



**Funded by the
European Union**

1. Document Control Page

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Version number:	v.3
Contractual delivery date:	30/11/2022
Actual delivery date:	30/11/2022
Status:	Final

2. Revision History

Version	Date	Author/Reviewer	Notes
v.1	27/11/2022	Chris Ivory	Creation, First Draft
v.2	28/11/2022	Peter Rohlin; Chris Ivory	Comments/Ready for review
v.3	30/11/2022	Ewelina Kurczynska	Final version submitted

3. Acknowledgements

The work described in this publication was subsidised by Horizon Europe (HORIZON) framework through the Grant Agreement Number 101070666.

4. Disclaimer

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

5. Abbreviations

AI: Artificial Intelligence

ARU: Anglia Ruskin University

D: Deliverable

DiVA: Digitala Vetenskapliga Arkivet

DMP: Data Management Plan

FTE: Full Time Equivalent

GDPR: General Data Protection Regulation

IaaS: Infrastructure-as-a-Service

LUN: University of Lancaster

MDU: Malardalens University

PI: principal Investigator

SME: Small Medium Enterprise

StaaS: Storage-as-a-Service

UMIL: University of Milano

WP: Work Package

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6. Project Summary

The aim of the research project is to examine what happens when new, ‘intelligent’ technologies are introduced into organizations. Specifically, we are interested in how technologies such as AI and robots change the work people do, the skills they use at work, and how workers respond to and interpret them. The research will also map wider changes that may occur in the organizations under study, such as the creation of new roles or different ways of managing them.

We have invited several manufacturing organizations across Europe to take part. All of them are using intelligent technologies of various kinds and for different purposes. Comparing the effects of these new technologies on work, skills and organizations will enable us to find out when and how they can best be used to support workers and managers and what future skills, firm strategies and management approaches are needed to achieve this.

In practical terms, a researcher will visit each site for 1-3 days per week over the course of one year. Over that time, with prior agreement, the researcher will collect various types of qualitative and quantitative data.

The researcher may observe work being done, even taking on some of the work themselves, to learn how people use intelligent technologies and the skills they need to do so effectively. They will record their observations by writing fieldnotes.

With prior agreement, the researcher may also record videos or take photos of work being done.

The researcher will also conduct open-ended interviews with workers, managers, and others affected by the technology, to examine implications of using the technology. With permission, interviews will be recorded and transcribed. Alternatively, we can record the main points of interviews using handwritten notes.

The research will take care is not intrusive in the workplace. In some cases, the researcher may take on a role within the organisation and may undertake some training in order to understand the work better.

Data will be collected by four institutions at number of manufacturing organisations of different sizes – Malardalen University (Sweden), Anglia Ruskin University (UK), Lancaster University (UK) and University of Milan (Italy). We anticipate 2 large companies, two SMEs and 3 micro-organisations. Ethnographic methods will be used at all sites. Manufacturing process data will be collected from two sites.

7. Data Summary

7.1. The purpose of the data collection is to gain insights into:

1. The skills, knowledge and practices adopted and developed by workers as they adapt to new technology
2. The history of the development of existing skills, knowledge and practices
3. Organisational adaption
4. Emerging management practices implicated in managing machine-human value augmentation
5. The implications for and consequences of adoption strategies
6. Implications for training future workers, existing workers and existing and future managers.

7. Assess technology implementations instigated by the project

7.2. The project will collect a variety of data:

1. Ethnographic observational methods that will include recording, note taking, sound recording and photography
2. Ethnographic interviews and interviews involving the taking of notes and the creation of interview recordings
3. The collection of secondary materials
 - a. company and technology supplier training manuals and other support documentation relating to machinery under scrutiny.
 - b. company documents pertaining to company policy, training, strategy.
4. The collection of data from installed equipment via sensors and other machine data outputs (in this case Webber and The Ford Motor Company) that pertains to the material performance of that machinery
5. The project will also create training materials for students, existing workers and managers.

The project will not specifically collect or re-use existing data sets as part of the study. Data of this sort, as it appears in academic publications, may be used to inform the research design.

8. Data size

The case study data sets will be commensurate with observations and interviews conducted over 2.5 days per week over a year (x10-30 weeks) by the equivalent of 3 FTE researchers. There will be 4 case studies of varying length.

Data collected as video, photographs and sound recordings will be substantial but supportable by university infrastructures.

Training materials will be in the form of online teaching materials (power-points) and other documents.

Data collected from machinery via sensors will be from a maximum of two case studies. Data will be stored on University of Lancaster secure servers only.

9. Data users

The data collected through the research case studies will be of interest to academics, policy makers, the participating firms and the public. The raw unprocessed ethnographic data (notes, recoded interviews and other media) will not be made available to partners outside the project. Once processed it will, however, be made available in the form of anonymised extended case studies, vignettes, reports to companies, white papers and academic papers.

Machine performance data will not be made available outside the project other than being included in academic outputs. Reports written for companies will be confidential.

10. FAIR data

10.1. Making data findable and accessible

Case studies will be findable and accessible as fully anonymised case studies through:

- University partner sector standard electronic stores (publicly accessible) – e.g. DiVA at MDU and Symplectic at ARU.
- All dissemination materials will be stored on Zenodo for easy access and referencing. Zenodo is part of the OpenAire programme and consequently the European Commission is automatically notified of any uploads
- The Up-Skill platform to be developed by our project partner IRIS (here the anonymised case study documents will be searchable)
- The project website will make shorter versions of the case studies available as key-finding vignettes.
- The case study material will also be available through anonymised academic publications.
- The case studies will be given pseudonyms, and these will be used consistently across different outputs to ensure that they are easily traced back to the anonymised searchable extended case documents held on the Up-Skill platform. Reasonable efforts will be made to protect the anonymity of the firms forming the data for the case studies.
- Academic papers, book chapters and conference papers will be available through universities participating on the project following their accessibility policies. All partners adhere to European standard open access policies.
- Published outputs will also be available through public platforms like ResearchGate to the full extent that publishers allow.
- As a project team we will ensure that all materials, other than raw interview and observational data, will be available publicly and easily findable through a minimum of at least one on-line publicly and freely available platform.

10.2. Open access

The Up-Skill platform and the project website will make clear which person and institution is responsible for the curation of the case studies.

The MDU project team will be responsible for overall data management. Professor Chris Ivory is the PI and the responsible person.

10.3. Distribution of costs

The costs of maintaining accessibility of the case study material will be shared by the project and the partner institutions.

Cost	Costed into the project?	MDU responsible for maintenance	ARU responsible	UMIL responsible	LUN responsible
Up-Skill platform	Yes.	-	-	-	-
Up-skill platform post-post project	No	-	-	-	-
Website development	Yes				
Website maintenance post project	No	Yes			
Institutional repositories (open access)	No	Yes	Yes	Yes	Yes
Training materials during and post project	No	Yes			
Zenodo	Yes				

11. Security

Data security will be assured by the existing security protocols of each institution.

All ethnographic notes, interviews, photographs and video will be stored primarily on the participating University's (MDU, ARU, LUN, MIL) secure drive storage and on occasion and only where necessary for technical reasons (non-availability of an internet connection at a particular location or for ease of analysis) held temporarily on individual password-protected personal computers or laptops. No material appertaining to confidential material relating to the cases will be stored on services that pass data through the US.

Ethnographic data will also be held in university controlled NVivo software on secure servers within each institution.

Performance data collected direct from machinery will be stored and processed on-site and held by the company from where the data was collected. It may also be stored temporarily on password protected ULAN and TWI laptops and on university servers and at TWI on their GDPR compliant and secure systems.

To ensure the security and on-going availability of data MDU will store copies of all research materials from the ethnographies, publications and other dissemination documents.

11.1. Details of MDU data storage:

1. Enterprise level servers, fire suppression: Servers for Sunet Drive are owned by Sunet and operated as part of a joint venture by Safespring. A detailed description about Safespring Private Cloud Security Controls can be found here: <https://www.safespring.com/documents/sunet/safespring-sunet-private-cloud-security-controls.pdf>
2. **Personnel control:** Background checks, Data center staff, Trusted consultants, Third party vendors
3. **Data center security:** Availability, Fire Protection, Facility Access Controls, Physical Intrusion Controls
Network Access Controls: Public Network Access, Management Network Access Systems Management, Auditing, Process Description and Configuration Management,
4. **Infrastructure & Storage as a Service:** IaaS high level architecture, Network exposure management, IaaS/STaaS – Auditing, Data Privacy
5. **Third Party Review** ISO27001 certification is an ongoing project.
6. **Back-up** Servers for Sunet Drive are hosted in two datacentres in Stockholm that are physically separate (i.e., kilometres distance between the datacentres). Sunet Drive uses the datacentres with the abbreviations Sto4 (main site) and Sto3 (backup/mirror site). Sunet Drive includes S3-backup using duplicity from Sto4 to Sto3. Full backups are taken monthly, diff-backups are taken nightly. The data retention time for Malardalen University is 6 months. Data restore can be requested via mail. Files are being restored from the backup S3 bucket to a new S3 bucket which will then be connected to Sunet Drive, so that the administrators and/or users can restore their data. Sunet Drive has a built-in recycle bin functionality that can be accessed by the user.

12. Ethical issues related to data availability

Raw ethnographic data with references to persons and organisations will be stored securely on approved platforms using institutional resources. OneDrive will be used to ensure compliance with GDPR.

It is our intention to make anonymised case-studies publicly available to the extent that this is practical and does not reveal personal data. As it will be possible for outside users to figure out which organisations comprise the case studies, e.g. by following the trail from papers acknowledging the project and other outputs to the project website where partners are named, it will be necessary to accord those organisations the right of veto. Each organisation will be provided with an anonymised ‘Case Study Summary’ during months 22-26.

All partners collecting data for research purposes (LAN, ARU, MDU and MIL) will follow their own institutional processes in securing ethical approval for the research they are conducting.