

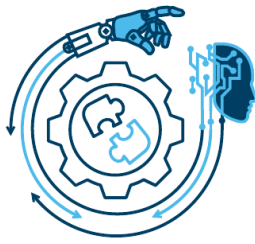


INTELLIMAN

AI-powered manipulation system for advanced
robotic service, manufacturing and prosthetics

DMP — Data Management Plan

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INTELLIMAN

AI-powered manipulation system for advanced robotic service, manufacturing and prosthetics

IntelliMan

AI Powered Manipulation System for Advanced Robotic Service, Manufacturing and Prosthetics

D1.1 – DMP

Deliverable information	
Project Acronym and Name	IntelliMan – AI Powered Manipulation System for Advanced Robotic Service, Manufacturing and Prosthetics.
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Version	1.0

Project Consortium

No.	Institution Short name	Institution Full name	Country
1	UNIBO	ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA	IT
2	DLR	DEUTSCHES ZENTRUM FÜR LUFT - UND RAUMFAHRT EV	DE
3	FAU	FRIEDRICH-ALEXANDER- UNIVERSITÄT ERLANGEN NÜRNBERG	DE
4	UPC	UNIVERSITAT POLITECNICA DE CATALUNYA	ES
5	UNIGE	UNIVERSITÀ DEGLI STUDI DI GENOVA	IT
6	UCLV	UNIVERSITÀ DEGLI STUDI DELLA CAMPANIA LUIGI VANVITELLI	IT
7	EUT	FUNDACIO EURECAT	ES
8	INAIL	ISTITUTO NAZIONALE ASSICURAZIONE INFORTUNI SUL LAVORO INAIL	IT
9	ELVEZ	ELVEZ, PROIZVODNJA KABLSKE KONFEKCIJE IN PREDELAVA PLASTICNIH MAS DOO	SI
10	BAYFOR	BAYERISCHE FORSCHUNGSALLIANZ (BAVARIAN RESEARCH ALLIANCE) GMBH	DE
11	IDIAP	FONDATION DE L'INSTITUT DE RECHERCHE IDIAP	CH
12	UZH	UNIVERSITÄT ZÜRICH	CH
13	OCADO	OCADO INNOVATION LIMITED	UK

Document Control Sheet

Version	Date	Summary of changes	Partner(s)
0.1	15/12/2022	First draft circulated to partners	UNIBO
0.2	20/01/2023	First draft integrated with partners' revisions	All partners
0.3	16/02/2023	Second draft revised by the internal reviewer(s)	UNIBO
0.4	23/02/2023	Second draft integrated with partner's revisions	All partners
1.0	27/02/202	Final submitted version	UNIBO

Scheduled Data Management Plan (DMP) Updates

The DMP is a document that evolves during the lifespan of the project and registers all relevant changes in the life-cycle of all the research datasets. Updated versions of the DMP have already been planned (see table below). Moreover, this document will be updated whenever important changes in the data or the data management policy occur.

	Expected by project month (M)
Initial DMP	28/02/2022 (M6)
Intermediate DMP	M18
Final DMP	M36

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The Data Management Plan (DMP)

This DMP is a document that provides details on all the research data collected and generated within the IntelliMan project. In particular, it explains the way research data are handled, organized, licensed and made available to the public, and how they will be preserved after the project is completed. The DMP also provides motivations when versions or parts of the project research data cannot be openly shared.

This DMP reflects the current state of the art of the IntelliMan project. However, the details and the final number of datasets may vary during the research project. The variations will be recorded in updated versions of this DMP.

Data Summary

The aim of the IntelliMan project is focusing on the question of “How a robot can efficiently learn to manipulate in a purposeful and highly performant way”. IntelliMan’s activities will range from learning individual manipulation skills from human demonstration, to learning abstract descriptions of a manipulation task suitable for high-level planning, to discovering an object’s functionality by interacting with it, to guarantee performance and safety. IntelliMan aims at developing a novel AI-Powered Manipulation System with persistent learning capabilities, able to perceive the main characteristics and features of its surrounding by means of a heterogeneous set of sensors, able to decide how to execute a task in an autonomous way and able to detect failures in the task execution in order to request new knowledge through the interaction with humans and the environment. IntelliMan further investigates how such AI-powered manipulation systems are perceived by the users and what factors enhance human acceptability.

The reuse of pre-existing data is not foreseen, as the Intelliman project is investigating areas for which no already generated data are available.

The project will produce different types of data which can be grouped in three macro-categories defined according to the different methodologies used for their generation:

1. Experimental and observational data;
2. Data underlying designs, results and outcomes related to the studies carried out during the project;
3. Data from surveys, questionnaires, interviews.

Research teams have agreed to convert research data from proprietary formats to well-known and documented open formats in order to facilitate accessibility and reusability (Tab.1).

Table 1 - Summary of data formats

Type of data	Formats used during data processing	Formats for sharing, reuse and preservation
Textual data	Plain text (.txt), Rich Text Format(.rtf), JavaScript Object Notation (.json), Matab (.m), R (.r), C++ (.cpp, .hpp), Python (.py, .ipynp), Web Ontology Language (.owl), CYPHER (.cypher), TypeDB (.typedb), SQL (.sql)	Plain text (.txt), Rich Text Format(.rtf), JavaScript Object Notation (.json), Matab (.m), R (.r), C++ (.cpp, .hpp), Python (.py, .ipynp), Web Ontology Language (.owl), CYPHER (.cypher), TypeDB (.typedb), SQL (.sql)
Tabular data with minimal metadata	Rosbag (.bag), comma-separated value (.csv), Matlab (.mat), Numpy file (.npy)	Rosbag (.bag), comma-separated value (.csv), Matlab (.mat), Numpy file (.npy)
Image data	TIFF (.tif), JPEG (.jpeg), PNG (.png)	TIFF (.tif), JPEG (.jpeg), PNG (.png)
Video data	MPEG-4 (.mp4), MOV (.mov)	MPEG-4 (.mp4)
CAD files	Platform dependent format: STEP (.stp), X3D (.x3d), AutoCAD DWG (.dwg), EAGLE PCB (.sch, .brd)	Platform dependent format: STEP (.stp), X3D (.x3d), AutoCAD DWG (.dwg), EAGLE PCB (.sch, .brd)
3D/VR environments	Unity - Scenes (.unity), Materials (.mat), Animations (.anim), 3D files (.fbx, .prefab)	Unity package (.unitypackage) including Scenes (.unity), Materials (.mat), Animations (.anim), 3D files (.fbx, .prefab)

README files¹ explaining all relevant details regarding data collection, processing methodologies and quality assurance will be deposited along with the datasets in .odt, .rtf or .pdf format.

The expected size of the data is in the range of GB. Considering the early stage of the project, the effective size may vary with respect to what is declared here. Potential variations will be addressed in further versions of this document.

The data produced can be of interest to different potential users. They may include every person, body, corporation, company or institution interested in carrying out research in the same field of the IntelliMan project.

FAIR Data

This DMP follows EU guidelines² and describes data management procedures according to FAIR principles³. The acronym FAIR stands for “findable, accessible, interoperable and re-useable”,

¹ A “README” file is a document containing relevant information about dataset authorship, terms of reuse and responsibilities, explaining dataset content and structure, collection procedures and analysis (such as file specifics, methodologies, codebooks of variables, data sources, and further necessary notes). (See Annex III to visualize the suggested README file template).

² Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

³ The FAIR data principles (GOFAIR): <https://www.go-fair.org/fair-principles/>

and describes data management practices that allow maximum knowledge circulation and return on investment.

Making data findable, including provisions for metadata

To improve the findability of research data produced during the project, they will be organized in datasets, collection of data assembled with a common purpose, and organized to reflect the results of the research activity. The datasets will be deposited in trusted data repositories if and when appropriate. Whenever project results are published, the team members deposit and describe the relative underlying datasets in trusted data repositories in order to guarantee their discoverability, access and preservation beyond the project end.

The chosen repositories (see Table 2) attribute a unique persistent identifier (PID) to the deposited items. The unique identifiers will be used to cite the datasets within the DMP document and within research publications, when appropriate. The chosen repositories also support standard descriptive metadata (AMSacta, Zenodo and CORA support both Dublin Core⁴ and DataCite Metadata Schema⁵, CORA also supports Data Documentation Initiative⁶) to ensure datasets indexing and discoverability. In particular, they comply with the OpenAIRE requirements for data archives. As a consequence, the project data sets will be visible via the OpenAIRE portal, facilitating project reporting procedures.

Specific keywords derived, when possible/appropriate, from thesauri and controlled vocabularies will be associated to each data set to enhance semantic discoverability.

Research data are organized in datasets, which are named collections of data units with the same focus and scope. In this DMP we set out common rules for dataset naming, in order to improve data visibility, discoverability, citation and permanent online tracking.

The recommended dataset title structure consists of:

PROJECT ACRONYM, Work Package Number, Work Package Name, TaskNumber, Task Name, Brief description of dataset content, version number

Example:

IntelliMan_WP4_Adaptive Shared Autonomy_T4.1_Hierarchical shared autonomy models for adaptive behaviours_EMG data collected from amputees_v0.zip

The version number of the dataset will be added at the end of the title in case of data revisions to help identify the dataset updates especially in repositories that do not track versioning automatically (see Annex I).

This DMP also recommends the following rules for file naming:

- for dataset file(s)
<project acronym>_<WP-Task>_<partner>_<date(YYYYMMDD)>_<subject>_<data_type>_<version>.<file_type>

Example:

⁴ Dublin Core Metadata Schema: <https://www.dcc.ac.uk/resources/metadata-standards/dublin-core>

⁵ DataCite Metadata Schema: <https://www.dcc.ac.uk/resources/metadata-standards/datacite-metadata-schema>

⁶ Data Documentation Initiative Metadata Schema: <https://www.dcc.ac.uk/resources/metadata-standards/ddi-data-documentation-initiative>

INTELLIMAN_WP3-T3-2-1_UNIBO_20221215_interview-Stakeholder01_audio.mp3

- for README file(s)

<project>_<WP-Task>_<partner>_<date(YYYYMMDD)>_<subject>_README.rtf

Example:

INTELLIMAN_WP3-T3-2-1_UNIBO_20221215_interview-Stakeholder01 - README.rtf

Making data accessible

As a guiding principle, IntelliMan seeks to make all research data openly available as soon as possible and ensure open access — via the repository — in order to allow dissemination, validation and re-use of research results.

To this purpose, all possible and legitimate actions and strategies are adopted to allow data sharing including:

- converting the files to standard open formats;
- providing all relevant documentation and explanation for the data and the datasets;
- obtaining copyright permissions from third party data owners to be allowed to re-use, reproduce and distribute the collected data;
- anonymizing and aggregating the data;
- in case of copyright on raw data derived, collected or elaborated from pre-existing databases or from other original sources (i.e. papers, journal articles, book chapters, reports, video and audio sources), collected data will be made available if the reproduction and sharing are allowed by expressed permission of the right holders or by applicable copyright exceptions and exemptions. Otherwise, only aggregate data resulting from the analysis will be openly published. When the sources are freely available on-line in their original repositories, but direct reproduction is not allowed, a detailed account on how the dataset was created from the original data will be provided, together with the specification of open repositories from where the original datasets are available. Raw data consisting in full texts will not be made available without the copyright holders' permission.

Restrictions to access are applied only in the following cases:

- collected data belong to third party which have denied permission for sharing on account of confidentiality and proprietary issues;
- data anonymization is not possible;
- data availability would jeopardize the project's main aim.

For data that fall under some of the restrictions described above and for which it is not possible to take any action to make them shareable, the EU allows complete closure or restricted access to them. The main reason for limited access to data produced in the IntelliMan project will be the protection of intellectual property rights (IPR); an embargo will be applied for the time needed for the patent submission and/or to keep them as an industrial secret during the exploitation phase.

See Annex I for details on the accessibility of each dataset. In all cases, metadata will be made openly available and licensed under a “No Rights Reserved” CC0 license or equivalent, as per the Grant Agreement, and will contain information on how to access the data.

The chosen data repositories support different access levels to the deposited datasets, beyond guaranteeing long term preservation and attributing persistent unique identifiers to the archived datasets. They also support open licenses and they adopt descriptive metadata standards such as Dublin Core and DataCite Metadata Schema, as required by the OpenAIRE guidelines⁷, allowing cross-linking between publications and the relevant datasets. Please see the table below for more detail.

Table 2 – Summary of repositories.
The following table shows the repositories for datasets publication and preservation.

Partner	Repository name	Type	URL	PID	OpenAIRE compatibility?
UNIBO	AMS Acta	Institutional	https://amsacta.unibo.it/	DOI	Yes
DLR FAU UNIGE UCLV EUT INAIL IDIAP OCADO	ZENODO	Multi-disciplinary	https://zenodo.org/	DOI	Yes
UZH	OSF	Multi-disciplinary	https://osf.io/	DOI	Yes
UPC	CORA - Repositori de Dades de Recerca	Institutional	https://dataverse.csuc.cat/	DOI	Yes

Making data interoperable

All datasets will be described using standard descriptive metadata (e.g. Dublin Core and DataCite Metadata Schema), in order to ensure metadata interoperability for indexing and discoverability. For each deposited dataset, relevant documentation explaining data collection procedures and analysis is made available along with the data, in order to guarantee intelligibility, reproducibility and the validation of the project findings.

To increase interoperability, data exchange and re-use among researchers, institutions, organizations, countries, etc., partners will convert all shareable data from proprietary formats and will make them available in well-known and documented open formats (see Tab.1 for details) or when not possible in well-known proprietary formats, as much as possible compliant with available (open) software applications.

⁷ OpenAIRE: <https://guidelines.openaire.eu/en/latest/>

If specific software is used during data processing, full explanation and instructions will be included in the deposited documentation. See Table 3 below for a summary of the tools and software necessary to reuse our data.

Table 3 – Summary of tools and software for enabling re-use of the datasets

Tools/software
Open spreadsheet and document editors, such as OpenOffice ⁸ or LibreOffice ⁹
free CSV file viewers, such as CSV viewer ¹⁰
Robot Operating System (ROS) ¹¹
Matlab ¹²
Python ¹³
FreeCAD ¹⁴
Meshlab ¹⁵
OpenOffice ¹⁶
Microsoft Office ¹⁷
VLC media player ¹⁸
Unity Framework ¹⁹
Blender ²⁰

Increasing data re-use

IntelliMan license data under licenses that allow re-use of the data and of the data sets in their entirety by other scholars and stakeholders. Whenever the nature of the data allows it and at the appropriate timing, the datasets will be made available, unless otherwise stated, under Creative Commons Attribution (CC BY) 4.0 license.

The research data that are made openly available are deposited in open formats in institutional/multi-disciplinary OpenAIRE-compatible repositories that guarantee long term preservation to archived items, therefore they will be re-usable by third parties after the end of the project. As per Grant Agreement, metadata will be open available under a Creative Commons “No Rights Reserved” (CC0) license or equivalent.

We envision that an embargo period will be applied to some datasets to allow full commercial exploitation of research results by the team. Any embargoes applied to the datasets will be specified in Annex I.

⁸ OpenOffice: <http://www.openoffice.org/>

⁹ LibreOffice: <https://www.libreoffice.org/>

¹⁰ CSV viewer: <https://csvviewer.com/>

¹¹ ROS: <https://www.ros.org/>

¹² Matlab: <https://it.mathworks.com/products/matlab.html>

¹³ Python: <https://www.python.org/>

¹⁴ FreeCAD: <https://www.freecadweb.org/>

¹⁵ MeshLab: <http://www.meshlab.net/>

¹⁶ OpenOffice: <https://www.openoffice.org/>

¹⁷ Microsoft Office: <https://www.office.com/>

¹⁸ VLC: <https://www.videolan.org/>

¹⁹ Unity Framework: <https://unity.com/>

²⁰ Blender: <https://www.blender.org/>

In general, data are made openly available as underlying data necessary to validate the research results immediately at the time of publication of public reports and scientific papers.

Data are given full citation from official project publications and web site and they are made available through the chosen institutional or public data repositories compliant with OpenAIRE requirements. (See Table 2)

Back-up copies of the research data will be preserved in local storages by each partner. The quality of the data will be carefully assured by specifying the method and the instrumentation used to acquire them.

Other research outputs

Other research outputs that will not be contained in the project's datasets include the physical demonstrators that will be developed along the project. Such research outputs will be properly described and documented in the related deliverables, reports and linked publications, also including photos and/or video.

Allocation of resources

Making data FAIR requires an investment of money and researchers' time.

Costs related to data management and documentation preparation, conversion of proprietary data files into open formats, and deposit procedures [e.g. preparation of the data management plan and the datasets descriptive documentation, of the conversion of data files to open formats and data sets self-archiving procedures] can be estimated about 3-5% of the amount of Person-Months assigned to each Partner for the research activities. Moreover, the activities related to the DMP (such as providing guidance on data management and open access issues, coordinating the Partners, and preparing the DMP) will cost about 3 Person-Months a year for the whole duration of the project. No cost is envisioned in relation with data long term preservation as all the repositories chosen for the data deposition and storage are free of charge.

Responsibility for data management usually sits with each dataset creator (generally the team leader, but see Table 4 below). Table 5 identifies all contributors participating in data management activities and specifies their roles.

Table 4 – Summary and contacts of people responsible for data management

Team	Name	ORCID (if available)	E-mail
UNIBO	Gianluca Palli	0000-0001-9457-4643	gianluca.palli@unibo.it
DLR	Maximo Roa	0049-8153-28-1175	maximo.roa@dlr.de
FAU	Claudio Castellini	0000-0002-7346-2180	claudio.castellini@fau.de
UPC	Jan Rosell	0000-0003-4854-2370	jan.rosell@upc.edu

UNIGE	Giovanni Berselli	0000-0003-0093-3006	giovanni.berselli@unige.it
UCLV	Salvatore Pirozzi	0000-0002-1237-0389	salvatore.pirozzi@unicampania.it
EUT	Magí Dalmau	0000-0003-3119-7347	magi.dalmau@eurecat.org
INAIL	Cosimo Gentile	0000-0003-2726-0534	c.gentile@inail.it
ELVEZ	Ziga Gosar	0000-0003-0872-0355	Ziga.Gosar@elvez.si
BAYFOR	Dan Gutu	N/A	Gutu@bayfor.org
IDIAP	Sylvain Calinon	0000-0002-9036-6799	sylvain.calinon@idiap.ch
UZH	Bigna Lenggenhager	0000-0003-0418-9931	bigna.lenggenhager@uni-konstanz.de
OCADO	Jelizaveta Konstantinova	0000-0002-4499-345X.	j.konstantinova@ocado.com

Table 5 – Summary of team members involved in the datasets collection and management.

Team	Name	ORCID (if available)	Role
UNIBO	Gianluca Palli	0000-0001-9457-4643	Project coordinator
	Roberto Meattini	0000-0003-0085-915X	Project member
DLR	Maximo Roa	0049-8153-28-1175	Project member
	Werner Friedl	0049-8153-28-1180	Researcher
	Oliver Neumann	0049-8153-28-1956	Researcher
	Ashok Meenakshi Sundaram	0049-8153-28-1152	Researcher
FAU	Claudio Castellini	0000-0002-7346-2180	Project member
UPC	Jan Rosell	0000-0003-4854-2370	Project member
UNIGE	Giovanni Berselli	0000-0003-0093-3006	Project Member
UCLV	Salvatore Pirozzi	0000-0002-1237-0389	Project member
EUT	Magí Dalmau	0000-0003-3119-7347	Project member
INAIL	Cosimo Gentile	0000-0003-2726-0534	Project member
ELVEZ	Ziga Gosar	0000-0003-0872-0355	Project member
IDIAP	Sylvain Calinon	0000-0002-9036-6799	Project member
UZH	Bigna Lenggenhager	0000-0003-0418-9931	Project member
OCADO	Jelizaveta Konstantinova	0000-0002-4499-345X	Project member

See Annex I for details about data management responsibilities related to each dataset.

Data security

During active data management (e.g., during data collection and analysis), research data stored in computers, laptops, intranets or hard-drives are accessible only after logging in with username and password (periodically modified according to national law provisions for data security) and are protected by updated antiviruses. They are also regularly backed-up in order to avoid accidental losses. None of the project data will ever be left inadvertently available. If external devices are used to store data files (e.g., backup files), they will be kept in a safe place accessible only to the researchers involved or will be encrypted with ad-hoc software.

BayFOR will provide an internal cloud-based data storage and data exchange platform based on OwnCloud technology. The OwnCloud solution will be used for sharing data outside the consortium, e.g., with members of the Commission. However, OwnCloud will not be used to make data sets publicly available. In this case, too, regular backup of the data will be performed to ensure data recovery.

Long term preservation of public data will be ensured by the chosen data repositories that have specific preservation policies.

Ethical or legal aspects

All activities within the IntelliMan project will comply with all necessary legal requirements and ethical principles applicable under international, EU and national law, the ethics provisions set out in the Grant Agreement, and will follow the highest ethical standards. The partners adhere to current ethics legislation and regulations in the countries where their research will be carried out, both in terms of ethics and data protection. All lead investigators will be responsible for ensuring that ethical standards compatible with and equivalent to those of Horizon Europe will be applied, regardless of the country in which the research is carried out.

Potential ethical issues related to the development of Trustworthy Artificial Intelligence (AI) systems will be studied by UZH in the context of the WP6 and Task T6.4, also considering the acceptability in the general population of the outcomes of the IntelliMan project. Key requirements will be considered, also on the basis of the Ethics Guidelines for Trustworthy Artificial Intelligence²¹ (AI). In this context, the considered key requirements will be among: human agency, safety, diversity, non-discrimination, transparency. The aim is to ensure that users benefit from AI without being exposed to unnecessary risks or unethical biases.

Special categories of personal data, such as personal data disclosing health, will be collected by the partners who will recruit the participants to the study. Collected personal data will be managed and stored in compliance with the General Data Protection Regulation²² (GDPR). Written consent to participate in the study and on the processing of personal data will be obtained by each participant, who will also receive information relating to the research methods and to the processing of personal data. These activities will be carried out after the competent Ethics Committee approves the models of research participation, privacy information sheets, and the forms for the expression of consent that will be designed for the purpose. The participants will be also asked to answer anonymous questionnaires.

In all cases, no personal data will be transferred among the partners but only anonymous and aggregated data and results will be deposited in aggregated form.

²¹ Ethics Guidelines for trustworthy Artificial Intelligence: <https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai>

²² General Data Protection Regulation: <https://gdpr.eu/>

Annex I: Datasets

The analytic description of each expected dataset of the IntelliMan project is included in this Annex.

1	M48	<i>IntelliMan_WP2_Application Requirements and Integration_T2.1_ Upper Arm Prosthetics use case analysis, integration and validation_v0</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Cosimo Gentile (INAIL), Roberto Meattini (UNIBO), Claudio Castellini (FAU)	
Contributor/s	Cosimo Gentile (INAIL), Roberto Meattini (UNIBO), Claudio Castellini (FAU)	
Contact Person/s	Cosimo Gentile [INAIL, c.gentile@inail.it]	
Contents	The dataset will contain the data related to experiments and results for the implementation and testing of the control strategy on amputees.	
Data format	text file (.txt) and/or mat files (.mat)	
Data volume	Not yet available (~1GB)	
Accessibility	Openly available, subject to internal review and clearance	
Related publication/s	Not yet available	

2	M12	<i>IntelliMan_WP2_Application Requirements and Integration_T2.4_ Fresh food handling use case analysis, integration and validation_OCADO_Fruit packing_v0</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v00	
Creator/s	Jelizaveta Konstantinova [OCADO]; Mykhaylo Marfeychuk [OCADO]	
Contributor/s	Neil Merry [OCADO]	
Contact Person/s	Jelizaveta Konstantinova [OCADO, j.konstantinova@ocado.com]	
Contents	Images and recordings from RGB-D camera of people performing grasping and packing fruits and vegetables from a crate to punnets. All the personal data will be removed.	
Data format	Image data: JPEG, PNG Video data: mp4, PCD to decide Point cloud data: mp4, ROS bags: .BAG	
Data volume	Not yet available [~GBs]	
Accessibility	Openly available, subject to internal review and clearance	
Related publication/s	Not yet available	



3	M24	<i>IntelliMan_WP3_Interactive Learning and Perception_T3.1_Fusion of control and sensing data as a product of experts_Control_and_Sensing_Data_experiments_v0.zip</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Sylvain Calinon (IDIAP), Tobias Löw (IDIAP), Cem Bilaloglu (IDIAP), Yan Zhang (IDIAP)	
Contributor/s	Sylvain Calinon (IDIAP), Tobias Löw (IDIAP), Cem Bilaloglu (IDIAP), Yan Zhang (IDIAP)	
Contact Person/s	Sylvain Calinon [IDIAP, sylvain.calinon@idiap.ch]	
Contents	Content: The dataset will contain proof-of-concept and/or experiment level implementations of the developed algorithm. The dataset will contain the visual and/or sensory and/or control command data collected during the experiments. Additionally, evaluations of the experiments and their results would be provided.	
Data format	Bag files (.bag) and/or text file (.txt/ .csv/ .json) and/or Python Scripts (.py/ ipynb) and/or C++ files (.cpp/.hpp) and/or video (.mov/ .mp4) and/or pictures and graphics (.jpg/ .png)	
Data volume	~ GB	
Accessibility	The data will be available under Creative Common Attribution (CC BY) 4.0 license	
Related publication/s	Not yet available	

4	M35	<i>IntelliMan_WP3_Interactive Learning and Perception_T3.5 Portable Reinforcement Learning for Grasping and Manipulation_Multi-domain_Skill_Demonstrations_v0.zip</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Dalmau, Magí [EUT]	
Contributor/s	Dalmau, Magí[EUT], Verdaguer, Aaron [EUT], Hidalgo, Néstor [EUT]	
Contact Person/s	Dalmau, Magí[EUT, magi.dalmau@eurecat.org]	
Contents	Multi-domain skills demonstrations from synthetic and real-world data.	
Data format	.mp4 and/or .rosvbag, and/or .csv	
Data volume	~5GB	
Accessibility	The data will be available under Creative Common Attribution (CC BY) 4.0 license	
Related publication/s	Not yet available	

5	M24	<i>IntelliMan_WP4_Adaptive shared autonomy_T4.1_ Hierarchical shared autonomy models for adaptive behaviours_Grasping shared autonomy models_v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Roberto Meattini (UNIBO), Cosimo Gentile (INAIL), Claudio Castellini (FAU)
Contributor/s		Roberto Meattini (UNIBO), Cosimo Gentile (INAIL), Claudio Castellini (FAU)
Contact Person/s		Roberto Meattini [UNIBO, Roberto.meattini2@unibo.it]
Contents		The dataset will contain the data related to experiments and results for the implementation and testing of shared autonomy models for a hierarchical organization of the grasp blending autonomy and non-autonomy. In particular, the human reaction to non-invasive sensorial feedbacks based on the processing of electromyographic and/or force measurements.
Data format		Bag files (.bag) and/or text file (.txt) and/or mat files (.mat)
Data volume		Not yet available (~1GB)
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

6	M32	<i>IntelliMan_WP4_Adaptive shared autonomy_T4.2_ Human-robot interaction strategies and interface modalities_HRI modalities for shared autonomy.v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Claudio Castellini (FAU), Roberto Meattini (UNIBO), Pirozzi Salvatore (UCLV), Ziga Gosar (ELVEZ)
Contributor/s		Claudio Castellini (FAU), Roberto Meattini (UNIBO), Pirozzi Salvatore (UCLV), Ziga Gosar (ELVEZ)
Contact Person/s		Claudio Castellini (FAU) – claudio.castellini@fau.de
Contents		The dataset will contain the data on the experiments (and their evaluation and results) related to human-robot-interaction strategies and interface modalities for shared autonomy. The dataset will contain biosignals, user interaction data with the robotic system, and sensor information from the respective robots. In the case of virtual user studies, this dataset will also include the 3D environment used for the experiments.
Data format		Bag files (.bag) and/or text file (.txt/ .csv) and/or MatLab files and/or Python Scripts (.py/ ipynb) and/or Unity Assets (.unitypackage) and/or video (.mov/ .mp4) and/or pictures and graphics (.jpg/ .png)
Data volume		Not yet available (~1GB)
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

7	M37	<i>IntelliMan_WP4_Adaptive shared autonomy_T4.3_Human intent detection for autonomy arbitration_intent detection for shared autonomy_v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Claudio Castellini (FAU), Roberto Meattini (UNIBO), (EUT), (IDIAP), Gianluca Satta (UZH)
Contributor/s		Claudio Castellini (FAU), Roberto Meattini (UNIBO), (EUT), (IDIAP), Gianluca Satta (UZH)
Contact Person/s		Claudio Castellini (FAU) – claudio.castellini@fau.de
Contents		The dataset will contain the data on the experiments (and their evaluation and results) related to human intent detection for autonomy arbitration. The dataset will contain biosignals, user interaction data with the robotic system, and sensor information from the respective robots. In the case of virtual user studies, this dataset will also include the 3D environment used for the experiments.
Data format		Bag files (.bag) and/or text file (.txt/ .csv) and/or MatLab files and/or Python Scripts (.py/ ipynb) and/or Unity Assets (.unitypackage) and/or video (.mov / .mp4) and/or pictures and graphics (.jpg/ .png)
Data volume		Not yet available (~1GB)
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

8	M40	<i>IntelliMan_WP4_Adaptive shared autonomy_T4.4_Algorithms for autonomy arbitration_Online autonomy arbitration_v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Roberto Meattini (UNIBO), Cosimo Gentile (INAIL), Claudio Castellini (FAU)
Contributor/s		Roberto Meattini (UNIBO), Cosimo Gentile (INAIL), Claudio Castellini (FAU)
Contact Person/s		Roberto Meattini [UNIBO, Roberto.meattini2@unibo.it]
Contents		The dataset will contain the data related to experiments and results for the interpretation of the information provided by sensors and data fusion techniques in order to detect the necessity of an adaptation of the shared autonomy to improve the system performance.
Data format		Bag files (.bag) and/or text file (.txt) and/or mat files (.mat)
Data volume		Not yet available (~1GB)
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

9	M18	<i>IntelliMan_WP5_Grasping, Manipulation and Arm-Hand Coordination_T5.1_Data Fusion and Sensing Technology_sensing system design for grippers_v0</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Pirozzi Salvatore, N.N., [UCLV]	
Contributor/s	Not yet available [UCLV]	
Contact Person/s	Pirozzi Salvatore [UCLV, salvatore.pirozzi@unicampania.it]	
Contents	The dataset will contain the CAD files of the mechanical components and the Printed Circuit Board of the electronic parts developed in T5.1 for the implementation of the multi-sensorized fingers (tactile sensors, proximity sensors and endoscopic cameras) to integrate into grippers used in IntelliMan UC3 and UC4.	
Data format	CAD files: STEP (.stp) and/or X3D (.x3d) and/or DWG (.dwg) PCB files: schematic (.sch) and board (.brd) Image data: TIFF (.tif) and/or JPEG (.jpeg)	
Data volume	Not yet available (~ MB)	
Accessibility	The data will be available under Creative Commons Attribution (CC BY) 4.0 license	
Related publication/s	Dataset not underlying a publication	

10	M24	<i>IntelliMan_WP5_Grasping, Manipulation and Arm-Hand Coordination_T5.1_Data Fusion and Sensing Technology_characterization of sensing system for grippers_v0</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Pirozzi Salvatore, N.N., [UCLV]	
Contributor/s	Not yet available [UCLV]	
Contact Person/s	Pirozzi Salvatore [UCLV, salvatore.pirozzi@unicampania.it]	
Contents	The dataset will contain the data acquired from the multi-sensorized fingers developed in T5.1 and integrated into grippers used in IntelliMan UC3 and UC4. The data contain tactile data, proximity data and endoscopic camera data for the evaluation of sensor performance with respect to IntelliMan use cases requirements.	
Data format	Sensor data: Bag files (.bag) and/or text file (.txt) and/or mat files (.mat) Image data: JPEG (.jpeg) and/or PNG (.png)	
Data volume	Not yet available (~ GB)	
Accessibility	The data will be available under Creative Commons Attribution (CC BY) 4.0 license	
Related publication/s	Not yet available	

11	M24	<i>IntelliMan_WP5_Grasping, Manipulation and Arm-Hand Coordination_T5.1_Data Fusion and Sensing Technology_Characterization of Sensing System for DLR CLASH hand and HCG gripper_v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Werner Friedl (DLR), Oliver Neumann (DLR), Ashok Meenakshi Sundaram (DLR), Maximo Roa (DLR)
Contributor/s		Werner Friedl (DLR), Oliver Neumann (DLR), Ashok Meenakshi Sundaram (DLR), Maximo Roa (DLR)
Contact Person/s		Werner Friedl [DLR, Werner.Friedl@dlr.de]
Contents		The dataset will contain the data acquired from the multi-sensorized modular finger tips developed in T5.1 and integrated into DLR CLASH hand and HCG gripper used in IntelliMan UC2 and UC4. The data contain tactile data and proximity data for the evaluation of sensor performance with respect to IntelliMan use cases requirements.
Data format		Sensor data: Numpy file (.npy) and/or text file (.txt) and/or mat files (.mat) Image data: JPEG (.jpg) and/or PNG (.png)
Data volume		Not yet available (~ GB)
Accessibility		The data will be available under Creative Commons Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

12	M24	<i>IntelliMan_WP5_Grasping, Manipulation and Arm-Hand Coordination_T5.1_Data Fusion and Sensing Technology_characterization of sensing system for anthropomorphic hand_v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Christian Gianoglio, Yahya Abbass [UNIGE]
Contributor/s		Not yet available [UNIGE]
Contact Person/s		Yahya Abbass [UNIGE, ahya.abbass@edu.unige.it]
Contents		The dataset will contain the data acquired from the high spatial density flexible tactile sensing arrays developed in T5.1 and integrated into the fingertips and palm of the anthropomorphic hand, used in IntelliMan UC1 and UC2. The data contain tactile data for the evaluation of sensor performance with respect to IntelliMan use cases requirements.
Data format		Sensor data: Bag files (.bag) and/or text file (.txt) and/or mat files (.mat)
Data volume		Not yet available (~ 100 GB)
Accessibility		The data will be available under Creative Commons Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

13	M40	<i>INTELLIMAN_WP5_Grasping, Manipulation and Arm-Hand Coordination_T5.4_Experience- and model-based Grasp Synthesis and Manipulation_v0</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Rosell, Jan [UPC]
Contributor/s		Rosell, Jan [UPC], Ruiz, Oriol [UPC]; Suárez, Raúl [UPC]
Contact Person/s		Rosell, Jan [UPC, jan.rosell@upc.edu]
Contents		The datasets will contain the OWL files that code the ontologies describing the knowledge and the graph database files with the data and their relations that describe the situations.
Data format		.owl and/or .csv and/or .cypher and/or .typedb, and/or .ttl
Data volume		~MB
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

14	M42	<i>IntelliMan_WP6_Human_Acceptability_T6.1_Evaluation_of_the_human_acceptability_v0.zip</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Bigna Lenggenhager [UZH]
Contributor/s		Bigna Lenggenhager [UZH], Rosell, Jan [UPC], Cosimo Gentile [INAIL], Dalmau, Magí [EUT], Ziga Gosar [ELVEZ], Jelizaveta Konstantinova [OCADO]
Contact Person/s		Bigna Lenggenhager [UZH, bigna.lenggenhager@uni-konstanz.de]
Contents		The dataset will contain the data on the experiments (and their evaluation and results) related to human acceptability of the technology. The dataset will contain psychological models, questionnaires, biosignals, user interaction data with the robotic system, and sensor information from the respective robots. In the case of virtual user studies, this dataset will also include the 3D environment used for the experiments.
Data format		Bag files (.bag) and/or text file (.txt/ .csv) and/or MatLab files (.m/.mat) and/or Python Scripts (.py/ .ipynb) and/or statistical R files (.r) and/or Unity Assets (.unitypackage) and/or video (.mov/ .mp4) and/or pictures and graphics (.jpg/ .png)
Data volume		~GB
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

15	M12	<i>IntelliMan_WP6_Human_Acceptability_T6.2_Simulating_aspects_of_human_machinery_interactions_in_VR_v0.zip</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Bigna Lenggenhager [UZH]	
Contributor/s	Bigna Lenggenhager [UZH], Roberto Meattini (UNIBO)	
Contact Person/s	Bigna Lenggenhager [UZH, bigna.lenggenhager@uni-konstanz.de]	
Contents	The dataset will contain the data on the experiments (and their evaluation and results) related to human acceptability of the technology. The dataset will contain psychological models, questionnaires, biosignals, user interaction data with the robotic system, and sensor information from the respective robots. In the case of virtual user studies, this dataset will also include the 3D environment used for the experiments.	
Data format	Bag files (.bag) and/or text file (.txt/ .csv) and/or MatLab files (.m/.mat) and/or Python Scripts (.py/ .ipynb) and/or statistical R files (.r) and/or Unity Assets (.unitypackage) and/or video (.mov/ .mp4) and/or pictures and graphics (.jpg/ .png)	
Data volume	~GB	
Accessibility	The data will be available under Creative Common Attribution (CC BY) 4.0 license	
Related publication/s	Not yet available	

16	M38	<i>IntelliMan_WP6_Human_Acceptability_T6.3_Acceptability_in_the_case_of_prostheses_users_v0.zip</i>
Status	Not yet available	
ID [ID type]	Not yet available [DOI]	
Version	v0	
Creator/s	Bigna Lenggenhager [UZH]	
Contributor/s	Bigna Lenggenhager [UZH], Cosimo Gentile [INAIL], Claudio Castellini (FAU), Roberto Meattini (UNIBO)	
Contact Person/s	Bigna Lenggenhager [UZH, bigna.lenggenhager@uni-konstanz.de]	
Contents	The dataset will contain the data on the experiments (and their evaluation and results) related to human acceptability of the technology. The dataset will contain psychological models, questionnaires, biosignals, user interaction data with the robotic system, and sensor information from the respective robots. In the case of virtual user studies, this dataset will also include the 3D environment used for the experiments.	
Data format	Bag files (.bag) and/or text file (.txt/ .csv) and/or MatLab files (.m/.mat) and/or Python Scripts (.py/ .ipynb) and/or statistical R files (.r) and/or Unity Assets (.unitypackage) and/or video (.mov/ .mp4) and/or pictures and graphics (.jpg / .png)	
Data volume	~GB	
Accessibility	The data will be available under Creative Common Attribution (CC BY) 4.0 license	
Related publication/s	Not yet available	

17	M21	<i>IntelliMan_WP6_Human_Acceptability_T6.4_General_perception_of_AI_empowered_HMI_v0.zip</i>
Status		Not yet available
ID [ID type]		Not yet available [DOI]
Version		v0
Creator/s		Bigna Lenggenhager [UZH]
Contributor/s		Bigna Lenggenhager [UZH], Ziga Gosar [ELVEZ], Sylvain Calinon [IDIAP], Claudio Castellini (FAU), Roberto Meattini (UNIBO)
Contact Person/s		Bigna Lenggenhager [UZH, bigna.lenggenhager@uni-konstanz.de]
Contents		The dataset will contain the data on the experiments (and their evaluation and results) related to human acceptability of the technology. The dataset will contain psychological models, questionnaires, biosignals, user interaction data with the robotic system, and sensor information from the respective robots. In the case of virtual user studies, this dataset will also include the 3D environment used for the experiments.
Data format		Bag files (.bag) and/or text file (.txt / .csv) and/or MatLab files (.m/.mat) and/or Python Scripts (.py / .ipynb) and/or statistical R files (.r) and/or Unity Assets (.unitypackage) and/or video (.mov / .mp4) and/or pictures and graphics (.jpg / .png)
Data volume		~GB
Accessibility		The data will be available under Creative Common Attribution (CC BY) 4.0 license
Related publication/s		Not yet available

Annex II: Open Access status of project publications

In the following table we will describe the open access status of the project publications and the underlying datasets, once they are available.

Table 7 – Publications and related datasets.

Publications	
Bibliographic citation of the publication	
Link to copy archived in repository	
Related dataset/s	
Bibliographic citation of the publication	
Link to copy archived in repository	
Related dataset/s	
Bibliographic citation of the publication	
Link to copy archived in repository	
Related dataset/s	
Bibliographic citation of the publication	
Link to copy archived in repository	
Related dataset/s	

Annex III: “README” file template

A “README” file is a document that will be deposited with each dataset, containing relevant information about dataset authorship, terms of reuse and responsibilities, explaining dataset content and structure, collection procedures and analysis (such as file specifics, methodologies, codebooks of variables, data sources, and further necessary notes).

This is a template of the README file that we will use.

README file

Dataset Title: “[insert title as defined in the DMP]”

Dataset Author/s: Name Surname (Affiliation), ORCID (if available);

Dataset Contributor/s: Name Surname (Affiliation), ORCID (if available);

Dataset Contact Person/s: Name Surname (Affiliation), ORCID (if available), email;

Dataset License: this dataset is distributed under a [insert LICENSE]

Publication Year: [insert YEAR]

Project Info: IntelliMan ([project full title], funded by European Union, Horizon 2020 Programme. Grant Agreement num. [insert grant agreement number]; [insert project website url])

Dataset Contents

The dataset consists of:

[EXAMPLE 1

- 1 textual qualitative file saved in .rtf format: “ProjectAcronym_WP3_T3-2_ItalyInterviews_20161221_v01.rtf”
- 1 README file: “README_ProjectAcronym_WP3_T3-2_ItalyInterviews_20161221_v01.rtf”

EXAMPLE 2

- 1 tabular quantitative file saved in .csv format: “ProjectAcronym_WP7_T7.3_Questionnaire_Sweden_20170905.csv”
- 1 README file: “README_ProjectAcronym_WP7_T7-3_Questionnaire_Sweden_20170905.txt”]

Dataset Documentation

Abstract:

[Insert dataset abstract]

Content of the files:

- file [Insert filename] contains ...
- file [Insert filename] contains ...
- ...

File specifics

[Please indicate instruction/technical info in order to allow potential users to correctly visualize and reuse your data (e.g. specific software, ...). In case of data converted in open formats it could be useful to provide some further information. For example, if you deposit for long term preservation a .csv file derived from an excel you can describe the conversion. Here is an example of description of conversion using libre office calc software:

To create the .csv files, “LibreOffice Calc” version: 5.1.4.2 (portable) was used, with the following specifics:

- Character set Europa occidentale (Windows-1252/WinLatin1)
- Field delimiter « , » (comma)
- Text delimiter « " » (quotes)]

Notes

[Related to the whole dataset or to single files of a multi-file dataset (Optional)]

Data sources

[Optional]

Methodologies

[If necessary to understand how to reuse data]

Codebook of variables

[If necessary to understand the meaning of the variables]