Open-Digital-Industrial and Networking pilot lines using modular components for scalable production

Grant Agreement No	:	**101017141**
Project Acronym	:	**ODIN**
Project Start Date	:	**1st January, 2021**
Consortium	:	**UNIVERSITY OF PATRAS – LABORATORY FOR MANUFACTURING SYSTEMS AND AUTOMATION**
		FUNDACION TECNALIA RESEARCH & INNOVATION
		KUNGSLIGA TEKNISKA HOEGSKOLAN
		TAMPEREEN KORKEAKOULUSAATIO SR
		COMAU SPA
		PILZ INDUSTRIEELEKTRONIK S.L.
		ROBOCEPTION GMBH
		VISUAL COMPONENTS OY
		INTRASOFT INTERNATIONAL SA
		GRUPO S21SEC GESTIÓN, S.A.
		FUNDACION AIC AUTOMOTIVE INTELLIGENCE CENTER FUNDAZIOA
		DGH ROBOTICA, AUTOMATIZACION Y MANTENIMIENTO INDUSTRIAL SA
		PSA AUTOMOBILES S.A.
		AEROTECNIC COMPOSITES SL. U.
		WHIRLPOOL EMEA SPA
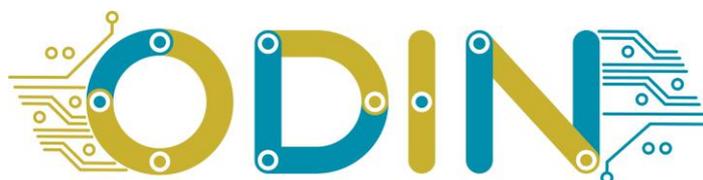
Title	:	Data Management Plan
Reference	:	D6.7
Availability	:	Public
Date	:	23/07/2021
Author/s	:	LMS, TECNALIA, KTH, TAU, COMAU, PILZ, ROBOCEPTION, VIS, INTRA, S21SEC, DGH, AIC, PSA, AEROTECNIC, WHEMEA
Circulation	:	EU

Summary:

The purpose of this document is to provide the detailed ODIN Data Management Plan. This plan, aiming to facilitate the efficient data management during and after the end of the project, describes the lifecycle of the data captured/generated as well as an analysis on the plan to make them FAIM while ensuring data security and protection in the context of ODIN.

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EXECUTIVE SUMMARY

This deliverable presents the ODIN Data Management Plan (DMP) elaborated by the ODIN consortium. The goal of ODIN first DMP version, is to consider the various aspects of data management, metadata generation, data preservation, and analysis at the project start; this ensures that data are well-managed in the present and prepared for preservation in the future. Eventually, the purpose of the DMP is to support the data management life cycle of all data that will be collected, processed or generated by the project.

The DMP will be a living document during the course of ODIN, considering the latest development and results at each version. Different kind of data sets, metadata and related information will be generated and collected along the design, development, validation, and assessment phases of ODIN. Personal information will be anonymised and made available as consolidated statistical and socio-demographic data on the ODIN platform usage. Self-created information (interviews, questionnaires, focus groups, etc.); and contributions (documents, videos, etc.) will be made accessible as research raw data to be potentially reused. Scientific papers and publications will preferably follow an open publishing (Gold Open Access) policy; while the long-term preservation and archiving of research data, and information will be guaranteed through the usage of a repository.

The document structure and contents are based on the guidelines from EU on FAIR Data Management [1] and the Guidelines on Open Access to Scientific Publications and Research Data [2] in Horizon 2020. In particularly, ODI DMP is structured in the following 7 sections:

- Section 1 provides an introduction in ODIN DMP, detailing its purpose and objectives.

- In Section 2, a summary of the data to be collected / generated during ODIN is provided. ODIN activities are categorized into clusters. Following, the estimated datasets to be collected/generated in the context of each cluster are identified.

- Section 3 presents ODIN methodology towards making the data FAIR, that is finable, accessible, interoperable, and re-usable.

- Section 4 focuses on the ODIN approach and planned procedures towards ensuring data security across the data entire lifecycle.

- In Section 5, the ODIN strategy towards complying to the data protection related EU legislations is presented. This is linked to the preparation of ODIN Data Collection and Sharing Information Sheet and ODIN Informed Consent Form templates.

- Section 6 draws the conclusions on next steps towards keeping up to date ODIN DMP during the course of the project.

1. INTRODUCTION

During the lifetime of the ODIN project, various types of raw data will be generated through the different experiments and pilots that will be executed. These data will contain both machine and sensor data. ODIN goal is to provide, where possible, accurate and high-quality data to the research community so that the project will contribute to future advancements in the field of robotics. However, since data may contain personal information about human participants, a focus is also given to possible ethical issues and access restrictions regarding personal data so that no regulations on sensitive information are violated. The DMP, as it is currently formed, is not fixed but will be refined in subsequent revisions of the present deliverable, depending on the needs that may arise in due course. This first version of the ODIN DMP mainly depicts the direction of the project regarding the collection of the data.

1.1. Purpose of the Data Management Plan

Computer applications have multiple data sources defined depending on the supported functionalities and their purpose. Source data constitute a valuable source of information. Data sources can be a database, a dataset, a spreadsheet, or even hardcoded data.

Although raw data, often mentioned as source data, have the potential to become information, meaning useful digital information for a specific application and purpose, it requires selective extraction, organization, analysis and formatting for presentation. Once processed data may reveal valuable information and characteristics of their origin or even enable certain predictive analytics forecasting, for example, future trends. Thus, it becomes clear that the acquisition, preservation and proper management of data may enable more efficient data-driven decision-making approaches for companies, forecasting, analysis of their current practices, and identification of potential bottlenecks as well as the verification of scientific and commercial published research results.

Data Management Plans (DMPs) are a key element of good data management. A DMP describes the data management life cycle for the data to be collected, processed and/or generated by a 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 and after the end of the project,
- what data will be collected, processed and/or generated,
- which methodology and standards will be applied,
- whether data will be shared/made open access and,
- how data will be curated and preserved (including after the end of the project).

A DMP is required for all projects participating in the extended ORD pilot, unless they opt out of the ORD pilot. However, projects that opt out are still encouraged to submit a DMP on a voluntary basis. This particular document has been created in order to present and analyse the first steps towards the creation of the ODIN project DMP.

In addition, the deliverable focuses on the available web-based solutions for archiving, accessing and preserving Project's data made publicly available. At this point, it should be stated that the data to be made available to the public audience will be first examined for confidentiality issues and, if possible, made anonymous

2. DATA SUMMARY

During the course of ODIN, different sets of data will be collected as well as generated. These data will be non-sensitive data, not falling into the special categories of personal data as described in the General Data Protection Regulations (GDPR) [3]. The nature of these data will vary from functional and technical specification documents to raw sensor and machine related data with respect to the needs for the project. These collected/generated data sets will be analysed from the ODIN consortium targeting in the successful deployment of ODIN large scale pilot lines. The current section presents these identified data sets, describes the applicable data types and formats and concludes to the interested stakeholders that may re-use and exploit these data during and after the end of the project.

2.1. Data collection/generation and its relation to the project's objectives

ODIN aims to bring together a set of ground-breaking robotic and Artificial Intelligence technologies integrated in a common platform and demonstrated under large scale pilot lines. To successfully realize this vision, ODIN follows an iterative implementation methodology involving different activity clusters running in parallel. For the facilitation of each activity cluster different data sets are needed to be collected/generated and analysed. These activity clusters are detailed in the table below.

Table 1: Project Activity Clusters related to collected / generated data

ID	Activity Cluster (A.C.)	Relation to ODIN objects
A.C.1	User requirements and stakeholders' specifications analysis	Given that ODIN is a pilot driven Research and Innovation action, the requirements of the industrial end users need to be analysed and considered throughout the implementation of the pilot cases. In addition, based on these requirements the technical specifications and experiences of ODIN core enabling technologies stakeholders will be captured so to enable the pilot driven design and development of ODIN solution.
A.C.2	ODIN enabling technologies development and validation	During the ODIN solution development phase, the core enabling technologies progress will be monitored and assessed based on the data and the recorded feedback from the technical partners and the end users during technical workshops and demonstrations.
A.C.3	ODIN Pilot Lines demonstration and validation	ODIN piloting activities will take place in an iterative way to ensure the successful integration and finetuning of ODIN solution. Demonstration material and validation data will be recorded during this activity cluster towards achieving the final implementation of the ODIN pilot lines. Considering the Open to Innovation nature of ODIN, public material from the demonstrators will be captured and shared during and after the end of the project.
A.C.4	Dissemination and Communication activities	Collecting specific data sets during these activities will allow the quantification of ODIN impact to external parties as well as allow feedback acquisition for ODIN solution finetuning.
A.C.5	Management activities	During the course of ODIN, data related to consortium beneficiaries as well as report on the project status and progress will be collected and maintained internally towards successfully fulfilling the administrative requirements of the project.

2.2. Data types and formats

This section provide an overview of the types and format of the data foreseen to be collected / generated in the context of the activity clusters presented in Table 1. An overview is listed below.

Data types: In the context of the activity clusters described above the following data types have been identified as the data to be collected / generated:

- *2D/ 3D data from the laser/vision systems.* The data will mainly be point clouds captured by the on-board sensors, representing the surrounding of the robots and will be used for applying the recognition algorithms and tracking mechanisms that will allow the robots to determine their dynamical changing environment.
- *Data from the MES/SCADA systems of the end users.* This type of data will be used to test developments, during the execution of the pilot cases. Raw data will involve product sequence, types and number of components etc.
- *3D data for the representation of the assembly stations and involved resources (robots, fixtures etc.).* The control algorithms that will be deployed for the flexible resources will need this data in order to orchestrate the task assignments and operations by the robots at the station/robot level.

Data formats / standards: Microsoft Office file format will be the reference for documents, spreadsheets and presentations. Data coming from measurements will be filed in original format – depending from the sensor/application used to get the measure – then exported to ASCII file using TXT and CSV formats. Moreover, images will be stored in JPEG compressed format and videos in MPEG codec / AVI container. Last but not least, ISO-STEP-according to ISO10303 and ISO 14649 10-17 – will be the standard for CAx data, where this is inapplicable "ab origin" data will be stored in original software toll used and exported in ISO-STEP.

2.2.1. A.C. 1 Data sets

Following the definition of the first activity cluster, the identified data sets to be collected / generated are listed in the table below.

Table 2: A.C. 1 List of identified datasets

A.C. no.	Data set no.	Dataset description
1	1	Product and process description
	2	Visual material from the factory
	3	Reports on the user requirements

2.2.2. A.C. 2 Data sets

Following the definition of the second activity cluster, the identified data sets to be collected / generated are listed in the table below.

Table 3: A.C. 2 List of identified datasets

A.C. no.	ODIN Component	Dataset no.	Data set description
2	OPEN	4	Collaborative Robot control data
		5	Mobile Robot control data
		6	Robot End Effectors control data
		7	Rc_visard raw sensor data

A.C. no.	ODIN Component	Dataset no.	Data set description
		8	Process perception
		9	Human detection & Intention estimation
		10	Human detection and object localization
		11	Easy robot programming
		12	Dynamic projector-based UI
		13	AR based Operator Support
		14	VR based Operator Training
	DIGITAL	15	Digital Resource Description
		16	Digital Twin
		17	Digital Simulation
		18	AI Task Planning
	NETWORKED	19	Open Flow
		20	Cyber security
	INDUSTRIAL	21	Safety System

2.2.3. A.C. 3 Data sets

Following the definition of the third activity cluster, the identified data sets to be collected / generated are listed in the table below.

Table 4: A.C. 3 List of identified datasets

A.C. no.	Data set no.	Dataset description
3	22	Demonstration material
	23	Validation reports

2.2.4. A.C. 4 Data sets

Following the definition of the fourth activity cluster, the identified data sets to be collected / generated are listed in the table below.

Table 5: A.C. 4 List of identified datasets

A.C. no.	Data set no.	Dataset description
4	24	Non sensitive personal data from interested third parties
	25	Publishable material (newsletters, videos, flyers etc.)

2.2.5. A.C. 5 Data sets

In terms of project management activities, LMS, as the Project Coordinator, will be responsible for collecting/generating a set of data that will serve the administrative aspects of the project.

A.C. no.	Data set no.	Dataset description
5	26	Reports, deliverables and ODIN internal meeting presentations:
	27	Non sensitive personal data of the beneficiaries for administrative purposes upon their agreement:
	28	Financial information

These involve:

- **Reports, deliverables and ODIN internal meeting presentations**: The Project coordinator will be responsible for collecting the required documents towards fulfilling the project's obligations in terms of reporting including the deliverables defined in the Grant Agreement as well as the Project Periodic Report. In addition, the consortium will be meeting on a 6-month basis for the General Assembly meeting as well as more regularly in WP level and all partners level regular online meeting and workshops. The material collected from these activities will be collected in various formats, depending on its nature, and upload it in the project's internal web portal with access only to the project beneficiaries. In principle, Microsoft (MS) Office file format will be the reference for documents (WORD), spreadsheets (EXCEL) and presentations (POWERPOINT). A set of official templates has been defined at the project start concerning all relevant type of documents expected during project execution – deliverables, technical specifications, spreadsheets – covering file names, fonts expected contents. All approved documents will be compliant with templates defined at project's start. All files will be classified following as default the explicit indication given in the Description of Work under the list of deliverables. Files classified as public will be accessible and downloadable by any registered user for at least five years after the end of the project. Files classified as internal and/or confidential will be accessible only to subscriber of the Grant Agreement in the same repository for at least five years after the end of the project.

- **Non sensitive personal data of the beneficiaries for administrative purposes upon their agreement**: To facilitate the communication and interaction among the partner, Project Coordinator will collect information involving the beneficiaries contact name, surname, contact phone number and contact email addresses. These will be stored in MS WORD (.doc or .docx) and MS EXCEL (.xls) files and will be available only internally to the project partners,

- **Financial data**: These data will be collected at the end of each project period by the Project Coordinator in a confidential nature. The relevant data will be reported in MS EXCEL spreadsheets (.xls) and will be uploaded in the EC Participant Portal by each partner individual, prior to the periodic report final submission.

2.3. Data Summary for ODIN Data sets

2.3.1. Data set No. 1

Data set No. 1	Partner Legal Name: STELLANTIS, AEROTECNIC, WHEMEA	WP1
Name	Product and process description	
Purpose of the data	Collect information regarding the different process and products in the ODIN pilot cases in order to be fed as input in the ODIN modules such as the AI-based decision-making module.	
Type and Format data	- Document providing descriptions in text format - Excel file for Bill of Processes or Bill of Material - CAD files of the different products (igs, stp, step, catpart, sldpart, stl, wrl, 3dxml, etc.)	
Reused-Data	No reused data will be used	
Data origin	- Word, Excel, Acrobat Reader - Solidworks - NX - CATIA - AutoCAD	
Data size	Depending on the file format the size may vary (10-20 GB)	
Data Security and Storage	- Institute Central Data storage - ODIN internal web portal - ODIN OpenFlow database	
Data value (Long term)	Data will be used by the ODIN technology/solution providers in order to deploy the individual modules of the ODIN solution.	

2.3.2. Data set No. 2

Data set No. 2	Partner Legal Name: STELLANTIS, AEROTECNIC, WHEMEA	WP1
Name	Visual material from the factory	
Purpose of the data	Collect visual data from the involved processes/environments in order to be used for the perception functionalities.	
Type and Format data	Images (png, jpeg, tiff, etc.) Videos (mpeg, mp4, mov, mkv, ect.)	
Reused-Data	No reused data will be used	
Data origin	- Industrial cameras - Laser scanners	
Data size	10 GB	
Data Security and Storage	Hard drive in the end user's premises	
Data value (Long term)	Data will be used by the ODIN perception modules	

2.3.3. Data set No. 3

Data set No. 3	Partner Legal Name: STELLANTIS, AEROTECNIC, WHEMEA	WP1
Name	Reports on the user requirements	
Purpose of the data	Give a clear view of the needs associated to the three end-users involved in the project for its correct implementation.	
Type and Format data	Reports/deliverables (.doc, .docx), Spreadsheet (.xls, , .csv)	
Reused-Data	No reused data will be used	
Data origin	Word, Excel	
Data size	100MB	
Data Security and Storage	ODIN internal web portal	
Data value (Long term)	Data will be useful for each technology/solution provider involved in the ODIN solution. The end user requirements will be used as a basis in order to deploy the required modules.	

2.3.4. Data set No. 4

Data set No. 4	Partner Legal Name: LMS, COMAU	WP2
Name	**Collaborative Robot control data**	
Purpose of the data	Provide information regarding the execution of robots' tasks	
Type and Format data	Spreadsheet (.xls, , .csv), csv, json, xml, txt, ROS msg, etc.	
Reused-Data	No reused data will be used	
Data origin	Robot controller, external sensors	
Data size	1GB	
Data Security and Storage	- Institute Central Data storage - ODIN internal web portal - ODIN OpenFlow database	
Data value (Long term)	Data will be used for the control of the collaborative robots through the ODIN OpenFlow architecture.	

2.3.5. Data set No. 5

Data set No. 5	Partner Legal Name: TECNALIA, COMAU	WP2
Name	**Mobile Robot control data**	
Purpose of the data	Provide input from the robot sensors to control the robot movement.	
Type and Format data	Data of the type of sensor readings consisting of sets of numbers, stored in a plain text format.	
Reused-Data	NO	
Data origin	The origin of the data will be the sensors mounted in the robot.	
Data size	2 GB of each experiment	
Data Security and Storage	Only few concrete experiment´s data will be stored. For those cases it will be stored in Institute Central Data storage	
Data value (Long term)	Roboticist developing new robot control algorithms. The value of reusing data would be reducing the number of real experiments required to be done with the robots	

2.3.6. Data set No. 6

Data set No. 6	Partner Legal Name: LMS	WP2
Name	**Robot End Effectors control data**	
Purpose of the data	Provide information regarding the control of involved end effectors such as grippers, screwdrivers, etc.	
Type and Format data	Spreadsheet (.xls, , .csv), json, xml, txt, ROS msg, etc.	
Reused-Data	No reused data will be used	
Data origin	Robot controller, gripper driver, screwdriver software	
Data size	100MB	
Data Security and Storage	ODIN OpenFlow database	
Data value (Long term)	Data will be used for the control of the robots' end effectors through the ODIN OpenFlow architecture.	

2.3.7. Data set No. 7

Data set No. 7	Partner Legal Name: ROBOCEPTION	WP2
Name	**Rc_visard raw sensor data**	
Purpose of the data	Evaluation of the sensors performance and testing of the work cell setup	
Type and Format data	Form: snapshots of the environment and the state of the sensor Format: images (.png) text files (. json, .csv, .txt) point cloud (.ply)	
Reused-Data	no	
Data origin	Roboception's sensors	
Data size	4 – 50 Mb per scene	
Data Security and Storage	Office computer, Roboception's network drive. Images will not contain any personal data. They will be stored on the servers in the Roboception's office in Munich. Roboception offers partners the possibility to upload and view the data upon credentials creation.	
Data value (Long term)	Data will be deleted after the evaluation	

2.3.8. Data set No. 8

Data set No. 8	Partner Legal Name: ROBOCEPTION	WP2
Name	**Process Perception**	
Purpose of the data	Testing of the perception pipelines	
Type and Format data	Form: snapshots of the environment and the state of the sensor Format: images (.png) text files (.json .csv .txt) point cloud (.ply)	
Reused-Data	Testing during further development of the detection algorithms	
Data origin	Roboception's sensors	
Data size	4 – 50 Mb per scene	
Data Security and Storage	Office computer, Roboception's network drive. Images will not contain any personal data. They will be stored on the servers in the Roboception's office in Munich. Roboception offers partners the possibility to upload and view the data upon credentials creation.	
Data value (Long term)	Data might be useful during further development of the detection algorithms	

2.3.9. Data set No. 9

Data set No. 9	Partner Legal Name: KTH	WP2
Name	**Human detection & Intention estimation**	
Purpose of the data	To locate an operator working in close distance with a robot for human motion prediction and to control the robot accordingly to assist the human during assembly.	
Type and Format data	Data to be collected from a Kinect sensor showing the skeleton of the human. Data format is according to the Kinect sensor hardware.	
Reused-Data	None. All data will be collected and used right away. No data will be stored.	
Data origin	Motion data of humans captured by Kinect sensor in real time in simplified skeleton form.	
Data size	In a few MB of each experiment but the data will not be stored in any database.	
Data Security and Storage	All data will be collected and processed in real time in one computer. Since the data will not be stored, there is no security concerns.	
Data value (Long term)	Data are only valuable for the time being of motion prediction. Since the data will not be stored, there is no long-term value in data.	

2.3.10. Data set No. 10

Data set No. 10	Partner Legal Name: TAU	WP2
Name	**Human detection and object localization**	
Purpose of the data	Provide information regarding the perception of humans and localizing objects (pose of them) in and near the workspace of HRC cell.	
Type and Format data	Images, json, xml, txt, ROS msg, etc.	
Reused-Data	No reused data will be used	
Data origin	cameras, laser scanners, ODIN OpenFlow	
Data size	100MB	
Data Security and Storage	ODIN OpenFlow database	
Data value (Long term)	Data will be further consumed by other ODIN modules during execution.	

2.3.11. Data set No. 11

Data set No. 11	Partner Legal Name: TECNALIA	WP2
Name	**Easy robot programming**	
Purpose of the data	Provide input from the robot sensors to use in automatic program generation	
Type and Format data	Data of the type of sensor readings consisting of sets of numbers, stored in a plain text format.	
Reused-Data	NO	
Data origin	The origin of the data will be the sensors mounted in the robot.	
Data size	2 GB of each experiment	
Data Security and Storage	Only few concrete experiment´s data will be stored. For those cases it will be stored in Institute Central Data storage	
Data value (Long term)	Roboticist developing new easy robot programming software. The value of reusing data would be reducing the number of real experiments required to be done with the robots	

2.3.12. Data set No. 12

Data set No. 12	Partner Legal Name: TAU	WP2
Name	Dynamic projector-based UI	
Purpose of the data	Provide dynamic buttons/information in relation to best UI practices, and adoptions towards industrial use.	
Type and Format data	json, xml, txt, ROS msg, etc.	
Reused-Data	No reused data will be used	
Data origin	ODIN OpenFlow	
Data size	100MB	
Data Security and Storage	ODIN OpenFlow database	
Data value (Long term)	Data will be further consumed to deploy dynamic safety zones, movable UI dynamic buttons and other functionalities which will be visualized to the human operator.	

2.3.13. Data set No. 13

Data set No. 13	Partner Legal Name: LMS	WP2
Name	AR based Operator Support	
Purpose of the data	Provide information to the human operator regarding the assembly instructions, the task execution, alerts, etc.	
Type and Format data	json, xml, txt, ROS msg, CAD files, etc.	
Reused-Data	No reused data will be used	
Data origin	Robot controller, external sensors, ODIN OpenFlow	
Data size	100MB	
Data Security and Storage	ODIN OpenFlow database	
Data value (Long term)	Data will be used for the visualization of multiple information in AR devices for the support of the human operator.	

2.3.14. Data set No. 14

Data set No. 14	Partner Legal Name: TAU	WP2
Name	VR based Operator Training	
Purpose of the data	Provide VR based approach for operator safety training and familiarization for HRC work cells.	
Type and Format data	CAD files, json, xml, txt, ROS msg, etc.	
Reused-Data	No reused data will be used	
Data origin	ODIN OpenFlow, robot controller, external sensors	
Data size	100MB	
Data Security and Storage	ODIN OpenFlow database	
Data value (Long term)	Data will be further used to so that operators can be trained before they confront the real devices.	

2.3.15. Data set No. 15

Data set No. 15	Partner Legal Name: TAU	WP3
Name	**Digital Resource Description**	
Purpose of the data	Capture all necessary information from ODIN devices in standardized form, so that other ODIN tools can utilize it as source of ODIN device information.	
Type and Format data	CAD, URDF, xml, etc.	
Reused-Data	No reused data will be used	
Data origin	ODIN OpenFlow, robot controller, external sensors, pilot cases' resources and products	
Data size	1GB	
Data Security and Storage	ODIN OpenFlow database	
Data value (Long term)	Resource description will be published through the ODIN OpenFlow in order to be further consumed by the ODIN modules.	

2.3.16. Data set No. 16

Data set No. 16	Partner Legal Name: KTH	WP3
Name	**Digital Twin**	
Purpose of the data	To establish synchronisation between a digital twin and a physical twin for planning, monitoring, control and trouble shooting.	
Type and Format data	Multimodal sensor data and control commands in the format of image, speech, force and native robot control language.	
Reused-Data	N/A	
Data origin	Data will be collected from sensors in real time and/or generated in computers on demand.	
Data size	Streaming data from sensors depend on the length of connection, ranging from a few KB to a few MB.	
Data Security and Storage	All data will be temporarily stored and processed in local computers during a session. Once a session ends, the data are deleted. Data security is protected by pilot institution's network security.	
Data value (Long term)	No long-term use of data is planned as data do not have long-term value and will not be reused.	

2.3.17. Data set No. 17

Data set No. 17	Partner Legal Name: VIS	WP3
Name	**Digital Simulation**	
Purpose of the data	Currently[1] not data has been created for ODIN purposes, nevertheless it is available the electronic Catalogue (eCat,) accessible through Visual Components 4.3 eCatalog interface. In the eCat are currently[2] available +2600 virtual components. The components are available for the Visual Components users and for accessing it is required a valid license for Visual Components 4.3 and the acceptance of the EULA. The virtual components available at the eCat are the base for the creation of the Digital Component (DC), WP3, as well as for building the digital twins of the pilots (WP5). During ODIN will be created additional virtual components targeting the pilots' requirements and the Open Components that will be stored in specific pilot libraries that will be accessible only to the project partners who require.	
Type and Format data	The virtual components are stored in Visual Components' formats: .vcmx and .vcm. The virtual components are generated starting from CAD data, and can be exported also to selected CAD formats (data formats supported for import/export detailed at https://www.visualcomponents.com/supported-cad-files/) The layout created as well as the simulation can be exported to other formats such as: + .pdf for documentation purposes + .pdf, 3D PDF for documentation and visualization purposes (feature only available in Adobe products) + .png, .jpg and XPS, images for visualization/documentation + .avi, .mp4 and .mov for visualization in video + .vcax for visualization in VR, computer and mobile devices (apps required available at https://www.visualcomponents.com/visual-components-experience/)	
Reused-Data	The eCat already contains virtual components, created by Visual Components, from the major robotics and automation technology providers, which are the base to start the work in ODIN as well as simulation libraries developed by Visual Components.	
Data origin	Visual Components and technology providers.	
Data size	~2GB	
Data Security and Storage	eCat is located in a secure server accessible through Visual Components 4.3 eCat interface. ODIN pilots' virtual components are stored in a separate secure server and accessible independently. Users can keep local copies in their equipment.	
Data value (Long term)	- Visual Components' users within the project will benefit from the existing eCat library to create new Open Components as well as to create the initial pilots' layouts. - Virtual components created to define the pilots' Open Components can be reused along the entire product life as the production cell can be reconfigured and existing Open Components can be reused.	

[1] 15-07-2021

[2] 15-07-2021

2.3.18. Data set No. 18

Data set No. 18	Partner Legal Name: LMS	WP3
Name	AI Task Planning	
Purpose of the data	Provide task planning and dynamic reconfiguration capabilities.	
Type and Format data	json, xml, txt, ROS msg, etc.	
Reused-Data	No reused data will be used	
Data origin	ODIN OpenFlow, input from user/digital twin/3D simulation, allocation of tasks as output	
Data size	100MB	
Data Security and Storage	- AI Task Planning internal database - ODIN OpenFlow database	
Data value (Long term)	Data will be used to find a close to optimal solution for the allocation of tasks in the available resources and communicate it to ODIN OpenFlow. Long term use from the research community will be achieved through scientific publications on the approach and the achieved results.	

2.3.19. Data set No. 19

Data set No. 19	Partner Legal Name: INTRA	WP4
Name	Open Flow	
Purpose of the data	The data will be used for the orchestration of the production during the pilot cases execution, in addition data will store the local ODIN software module configuration and settings. Data will be also generated automatically through dedicated code for testing and demonstration purposes.	
Type and Format data	The data will be in JSON Format	
Reused-Data	At the moment only ODIN generated data are planned to be used.	
Data origin	Data will be provided by the different ODIN modules and components connected to the Open Flow Framework.	
Data size	The details of the data size will be clearer in later stages of the project. At this moment it seems reasonable to expect around 250 MB of data per Pilot Case.	
Data Security and Storage	The data will be stored in local disk drives inside MongoDB databases during development and will be regenerated and deleted after each test. During the pilot cases execution data persistence will also be locally stored and under the control of the Pilot Case responsible.	
Data value (Long term)	These data will be mainly used and useful to information systems that consume them, in particularly the ODIN modules. In addition, these data can be useful to other software developers of similar systems. Furthermore, long term data storage of this data in a production system could provide great insight on the systems operation.	

2.3.20. Data set No. 20

Data set No. 20	Partner Legal Name: S21SEC	WP4
Name	Cyber security	
Purpose of the data	The purpose of the dataset will be the development of cybersecurity use cases framework protection models and the development of cybersecurity incident detection and response, in accordance to contribution to Objective 3. Security Operations Center based on Cyber Security Orchestration, Automation & Remediation.	
Type and Format data	The type of data generated for cybersecurity can be summarized in the following types in form and format of the data. Form: Data from laboratory tests and data from pilots. Deliverables, presentations, reports, log files, virtual machines, docker containers, among others. Format: JSON, LOG files, XML, YAML, *.vbox, *.ova, PDF, WORD, EXCEL, PPT.	
Reused-Data	Will not reuse existing data.	
Data origin	The origin/source of cybersecurity data will come from laboratory tests and from the integration and implementation phase with pilots. Data can be gathered from different sources but mainly associated to ODIN networked component.	
Data size	Approximately between in 80 GB and 200 GB considering data packaged inside a virtual machine for test use cases or pilot implementations.	
Data Security and Storage	Corporate Cloud Storage at S21sec Data security policy applied in accordance with S21sec security policy Company certifications and business excellence detailed at S21sec web site. https://www.s21sec.com/business-excellence/	
Data value (Long term)	- Data will be useful for Networks administrators on Industrial and Robotics sector OT/IT (Operational Technology and Information Technology). Operation Areas at Industrial Sector and Information Technology areas. - Data will be further used for research on implementing protection frameworks models and implementation of SOC (Security Operations Center) based on Cybersecurity Orchestration, Automation & Remediation on Industrial Robotics field.	

2.3.21. Data set No. 21

Data set No. 21	Partner Legal Name: PILZ	WP5
Name	Safety System	
Purpose of the data	1) Data for general ODIN project (WP1-6) 2) Data for the deliverables documents (WP5) 3) Data for the Safety Programmable Logic Computer (WP2) 4) Data for the Safety Human Machine Interface (WP2) 5) Data for the Laser Scanner (WP2) 6) Data for the Safety Eye (WP2)	
Type and Format data	1) Field notes and presentations (.txt / .doc / .pptx / .xlsm / .pdf) 2) Risk Assessment Document (.doc/.pdf) 3) PLC Program (.par) 4) HMI Program (.par) 5) Scanner Program (.xml) 6) Safety Eye Program (.pseye)	
Reused-Data	No reused data will be used	
Data origin	1) OneNote / Word / PowerPoint / Excel / Adobe Acrobat DC 2) Word / Adobe Acrobat DC 3) PAS4000 Software 4) PASvisu Software 5) PSEN Scan Configurator Software 6) Safety Eye Assistant Software	
Data size	All data we will be generating is less than 100MB	
Data Security and Storage	1) Pilz data storage server (main data storage) 2) Local hard drive of the office computer (temporary files) 3) Microsoft teams (temporary files) All the data that is sent and received in Pilz computers via email goes thought an firewall in order to detect virus or any other malware. Only some format files are accepted. It is not possible to use USB, Bluetooth or any other media for file transfer. If the files are to big, NetFiles can be used with a private link.	
Data value (Long term)	The data (2,3,4, 5 and 6) provided by Pilz needs to be properly stored by the Pilot Case leaders as a backup. The general date (1) will be used to keep track on the project development. The Risk Assessment documents (2) are used to prove that the system is in compliance with the machinery directive. The software programs (3,4, 5 and 6) are used in the system itself, in case of hardware problem they may be needed.	

2.3.22. Data set No. 22

Data set No. 22	Partner Legal Name: STELLANTIS, AEROTECNIC, WHEMEA	WP5
Name	Demonstration material	
Purpose of the data	Provide information and material regarding the demonstration of the three ODIN pilot cases.	
Type and Format data	Images (.png, .jpeg), videos (.mp4), presentations (.ppt), etc.	
Reused-Data	No reused data will be used	
Data origin	Cameras, PowerPoint, Word, Excel, Acrobat Reader	
Data size	10GB	
Data Security and Storage	ODIN internal/public web portal	
Data value (Long term)	Data will be used to spread the news regarding the demonstration of the ODIN pilot cases and achieved results towards acquiring public interest.	

2.3.23. Data set No. 23

Data set No. 23	Partner Legal Name: STELLANTIS, AEROTECNIC, WHEMEA	WP5
Name	**Validation Reports**	
Purpose of the data	Provide information regarding the validation of the three ODIN pilot cases.	
Type and Format data	Report / deliverables (.doc, .docx)	
Reused-Data	No reused data will be used	
Data origin	Word	
Data size	100MB	
Data Security and Storage	ODIN internal web portal	
Data value (Long term)	Data will be useful to validate the KPIs of the ODIN pilot cases.	

2.3.24. Data set No. 24

Data set No. 24	Partner Legal Name: INTRA	WP6
Name	**Non sensitive personal data from interested third parties**	
Purpose of the data	Collect data from third parties that they will provide their consent to receive the ODIN newsletters or to invite them in the various events that ODIN will organise within the context of its dissemination activities.	
Type and Format data	Name, surname, email, company (plain text)	
Reused-Data	Data will be reused to share the newsletters with subscribers throughout the project and/or invite potential participants in ODIN events.	
Data origin	Data will be provided by the subscribers via an online subscription form (consent form) or by possible contacts during the events that ODIN will participate	
Data size	Total size is not expected to exceed 20MB	
Data Security and Storage	For the newsletters, all relevant data will be stored in Moosend's data centres and if consent is not withdrawn at an earlier time, such data will be kept for up to the end of the project. The contact details of potential participants to ODIN events will be stored in INTRASOFT's data server.	
Data value (Long term)	Data to be received from online subscriptions will be used to disseminate the ODIN newsletters while contacts that wish to be invited in ODIN's future events will have to fill in a template to provide minimum data to be able to contact them as well as provide their consent.	

2.3.25. Data set No. 25

Data set No. 25	Partner Legal Name: INTRA	WP6
Name	**Publishable material (newsletters, videos, flyers etc.)**	
Purpose of the data	Collect data from the consortium partners to prepare the project's promotional material such as brochures, videos, flyers and factsheets.	
Type and Format data	Logos, partner descriptions, articles, images legally safe to use in plain texts, PDF, JPG, PNG	
Reused-Data	Data will be reused to update the promotional material of ODIN.	
Data origin	Data will be provided by the consortium partners	
Data size	Total size is not expected to exceed 50MB	
Data Security and Storage	All data will be stored in INTRASOFT's data server	
Data value (Long term)	Data will be used to design and produce the promotional material of ODIN	

2.3.26. Data set No. 26

Data set No. 26	Partner Legal Name: LMS	WP7
Name	**Reports, deliverables and ODIN internal meeting presentations:**	
Purpose of the data	Provide information regarding the progress of the different modules during the ODIN lifecycle.	
Type and Format data	Report / deliverables (.doc, .docx)	
Reused-Data	No reused data will be used	
Data origin	Word, PowerPoint	
Data size	1GB	
Data Security and Storage	ODIN internal/public web portal	
Data value (Long term)	Data will be useful to monitor the progress during the project's execution.	

2.3.27. Data set No. 27

Data set No. 27	Partner Legal Name: LMS	WP7
Name	**Non sensitive personal data of the beneficiaries for administrative purposes upon their agreement:**	
Purpose of the data	Provide information regarding the involved partners for project related aspects.	
Type and Format data	Documents (.doc, .docx), presentations (.ppt)	
Reused-Data	No reused data will be used	
Data origin	Word, PowerPoint	
Data size	100MB	
Data Security and Storage	ODIN internal web portal	
Data value (Long term)	Data will be useful to the project coordinator for the organization of internal meetings and other project related aspects.	

2.3.28. Data set No. 28

Data set No. 28	Partner Legal Name: LMS	WP7
Name	**Financial Information**	
Purpose of the data	Financial data to be used for the ODIN official reviews and cost statements.	
Type and Format data	Documents (.doc, .docx), Spreadsheets (.xls)	
Reused-Data	No reused data will be used	
Data origin	Word, Excel	
Data size	100MB	
Data Security and Storage	- ODIN internal web portal - Institute Central Data storage	
Data value (Long term)	Data will be useful to the project coordinator for the fulfilment of the required cost statements and other financial related aspects.	

3. DATA FAIR

According to Open AIRE description [4], "Open data is data that is free to access, reuse, repurpose, and redistribute. The Open Research Data Pilot (ORDP) aims to make the research data generated by selected Horizon 2020 projects accessible with as few restrictions as possible, while at the same time protecting sensitive data from inappropriate access". Open access to research data is applicable by default in H2020 where "*Grant beneficiaries under this work programme part will engage in research data sharing by default, as stipulated under Article 29.3 of the Horizon 2020 Model Grant Agreement (including the creation of a Data Management Plan). Participants may however opt out of these arrangements, both before and after the signature of the grant agreement*". Data should follow the "as open as possible, as closed as necessary" principle which does not necessary mean to open all research data. Sound and fair data management is an essential part of good research practice and research integrity, as set out in European Code of Conduct for Research Integrity. In general terms, research data should be 'FAIR' [1], that is findable, accessible, interoperable and re-usable. These principles precede implementation choices and do not necessarily suggest any specific technology, standard, or implementation-solution. The main goal of such an ORDP is to have the results of publicly funded research disseminated more broadly and faster, reaching a broader audience, not only within the researching community, but within the target/beneficiaries' groups of the society too.

In this context, having identified the data sets to be collected generated during ODIN activities (Section 3), the following subsections provide an overview on the procedures and policies that ODIN consortium will incorporate towards making the generated / collected data FAIR.

3.1. Making data findable, including provisions for metadata

ODIN consortium will pay special attention on facilitating the discoverability of the generated / collected data during the project. The ultimate goal is to enable the sharing and re-use of the generated information. To accomplish that, ODIN partners will exploit the open access capabilities offered by Zenodo [7] open data repository. Zenodo is a free of charge data repository funded by OpenAIRE and CERN [14] which provide a service to researches/institutions in order to distribute/share results and datasets publicly. Zenodo accepts different file formats and allows the creation of own collections of datasets as well as communities which are visible and findable by other stakeholders to download and reuse their data.

Moreover, as a digital repository, Zenodo registers Digital Object Identifiers (DOIs) for all submitted data through DataCite. These data are preserved using the safe and trusted foundation of CERN's data centre. This means that the data preserved in Zenodo will be accessible for years to come, and the DOIs will function as perpetual links to the resources. DOIs remain valuable since they are future proofed against Uniform Resource Locator (URL) or even protocol changes, through resolvers. At the same time, the datasets which will be not uploaded to Zenodo will be deposited in the ODIN web portal.

Furthermore, ODIN will establish a standard naming convention that integrates versioning and will take into account the possibility of creating multiple datasets during an activity. In particular, the naming convention employed by ODIN is described below.

ODIN _ {ActivityName} _ {DatasetName} _ {Date} _ {VersionID}

- **ODIN:** The name of the project.
- **ActivityName**: The selected name assigned to the activity including the dataset.
- **DatasetName**: The selected name assigned to a dataset.
- **Date:** The latest date on the updated dataset [YYYYMMDD].
- **VersionID**: The versioning number of a dataset.

3.2. Making data openly accessible

Depending on the different end users and industrial partners, the ODIN consortium will anonymously decide upon the openness of the collected data. Thus, the different datasets may be either open and publicly available or remain private for internal use.

3.2.1. Open data

Only anonymised and aggregated data will be made open to ensure that data subjects cannot be identified in any reports, publications and/or datasets resulting from the project. The project partner serving as the data controller in each case will undertake all the necessary anonymization procedures to anonymise the data in such a way that the data subject is no longer identifiable.

A first trial account for ODIN project purposes has been created in Zenodo. After the profile is registered and the account is activated the user can easily upload and manipulate his data files. A community for the ODIN project has been established (Figure 1), named ODIN Data under the following link: https://zenodo.org/communities/odin/

Another aspect of Zenodo is the creation of aforementioned communities which the dedicated storage space for a defined entity. This entity could be from research experiment to any other scientific procedure which demands data storage for archiving and reuse purposes.
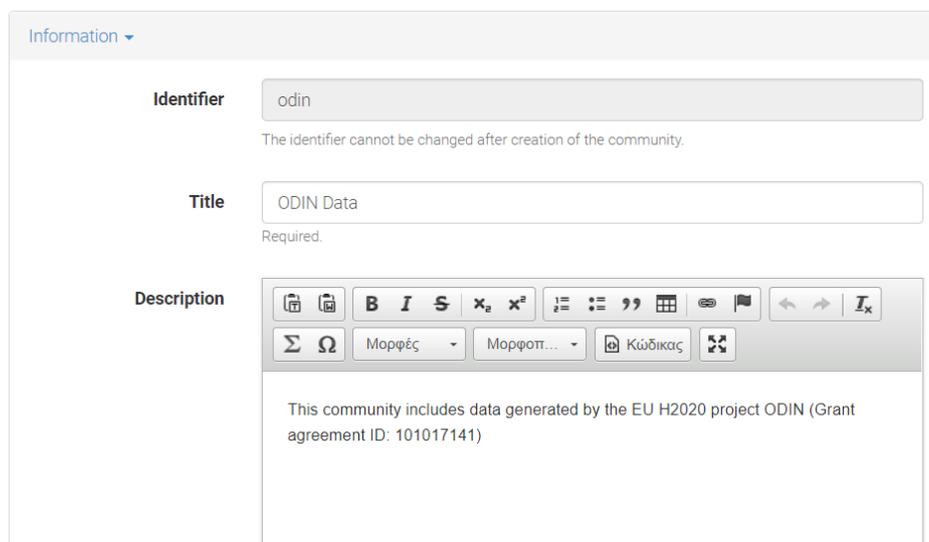
Figure 1. ODIN project community creation in ZENODO

After the creation of the community, the creator or administrator may access it and proceed to any of the following options:

- view the uploaded contents,
- manage them, and
- export the datasets

Moreover, any user with access to the community link may either search and download content or upload new datasets. In order to upload new datasets, the creation of a new account is required or use of an existing one from GitHub or ORCID (Figure 2).

Figure 2. Zenodo login screen

In order to download pre-existing files, no registration is required. The user can define the access rights of the files during the uploading process. Four types of access rights can be selected, depending on the confidentiality of the data. License type can be configured in the relative tab as well as funding related information to be provided (Figure 3).

Figure 3. Zenodo access rights and license options

Apart from the data uploaded in the Zenodo ODIN community, the ODIN consortium will be able to upload public material to the official ODIN public web portal (Figure 4) under the following link: http://odin-h2020.eu/. More specifically, the user can navigate to the tab "Knowledge Center" in order to view the uploaded deliverables, press releases, publications, newsletters, videos, etc.
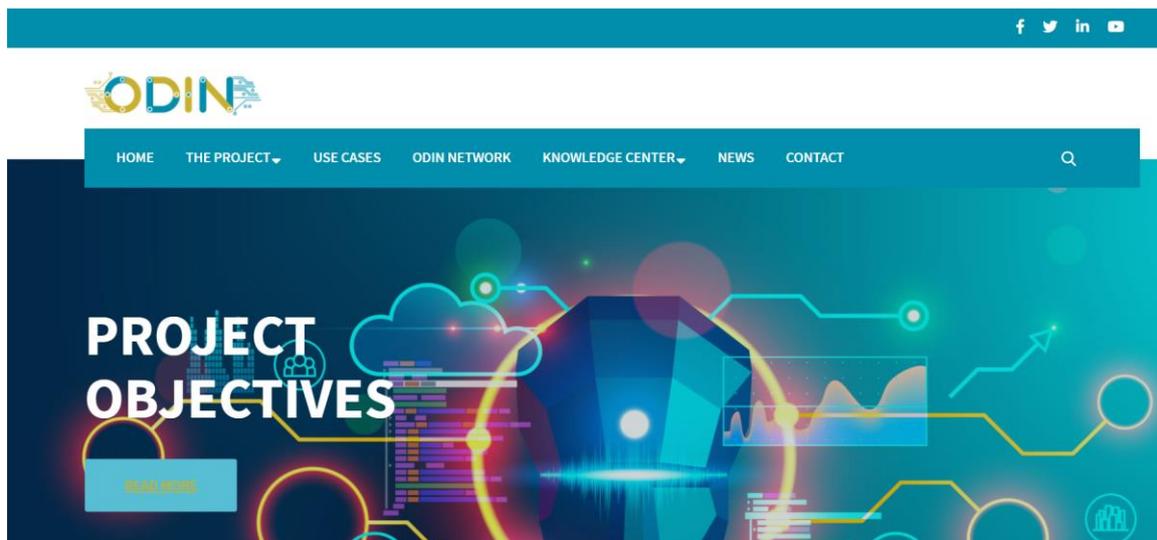
Figure 4. ODIN public web portal

3.2.2. Private data for use only in the consortium

The ODIN data providers will decide upon the openness of the provided data. Thus, in some cases the different ODIN results and datasets may be decided to be kept private for internal use only. In such cases, the ODIN internal portal provides a functionality for uploading different file formats in order to be easily distributed them among the ODIN consortium. The ODIN internal web portal () is accessible through the following link: http://www.odin-h2020.eu/private.

Figure 5. ODIN internal web portal

Furthermore, the ODIN consortium will be able to upload and manage the private datasets through the ODIN private GitHub space (https://github.com/ODIN-PROJECT-EU). The access is restricted and only allowed to approved members of ODIN. Under this pace, different repositories may be created and used internally for development purposes during the project lifecycle.
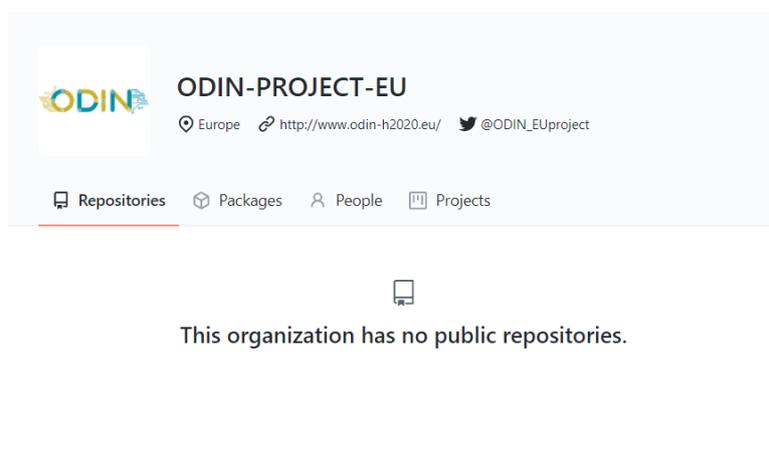
Figure 6. ODIN GitHub private space

3.3. Making data interoperable

The data which will be provided by the ODIN consortium, will be made available in interchangeable formats such as JSON. This will establish an easy exchange process among researchers and other third parties. The JSON format suggested can automate in the future the upload of data to Zenodo through a mechanism that will consume the JSON and take all the required info from the JSON fields. Such a mechanism can make the upload and manipulation of data a very efficient procedure and will be investigated in the future. A short description of the main data field elements included in the template is provided in Table 6.

Table 6. JSON fields

FIELD NAME	PURPOSE
ODIN activity	The activity name of each dataset referring to the ODIN community
datasetID	A unique identifier of the dataset
datasetDescription	A textual description of the dataset
sharingOptions	Includes the sharing options of the ODIN activity
origin	Defines the main source of the dataset, such as machine name
volume	Includes the size of the dataset in MBs or GBs
date	The date element includes the initial upload and any modification date.
contents	Under the content element, multiple elements may be included such as images, videos, documents as well as raw data either as plain text or in another format.
standards	This field defines any incorporated mechanism for encoding the specific dataset, along with the organization and the description of the standard.
metadata	The metadata element contains additional information over the dataset including the total number of downloads, the times that the dataset has been parsed, the last time it was updated, etc.

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

3.4.1. License schemes to permit the widest use possible

In order to ensure the widest use possible on the provided ODIN datasets, different licenses will be used. Thus, these licenses will permit any interested third-party to further re-use the project's data only for the restricted purposes. Specific terms of conditions are established by such licenses and ODIN aims to upload data under the Creative Commons licensing scheme. More specifically, among the different licenses supported by Zenodo, ODIN considers that Creative Commons Attribution 4.0 International (CC BY 4.0) is an appropriate licensing scheme which provides the following guidelines:

Any third party can freely copy, distribute, display and modify the datasets for any purpose. Third parties must give appropriate credit, provide a link to the license, and indicate if changes were made.

Figure 7. CC BY 4.0

3.4.2. Data quality assurance processes

A simple three step procedure for the assurance of data quality will be followed to ascertain the quality of the data and to ensure the elimination of errors:

- Training. All the personnel involved in testing will be specifically trained for data quality managements.
- Data completeness. Data will be analysed onsite in order to get immediate feedback on issues such as missing or out-of-range values and logical/physical inconsistencies
- Data consistency. Each experiment will be characterized in terms of accuracy and precision of the significant data measured during the test. Inconsistent, inaccurate and/or missing data will be managed by repeating the experiment. No data without information on consistency will be used for technical considerations/modelling.

4. DATA SECURITY

The datasets described in Section 3, are an estimation of the data that will be collected / generated during the project. These group of data may involve industrial partners' confidential data as well as personal non sensitive data. Due to this high value of the data, ODIN consortium will focus on preventing data leaks and any potential hack in the collected / generated information.

The approach that will be followed in terms of data security, will focus on protecting the ODIN datasets in terms of confidentiality, integrity, and availability. The security risks will be identified, analysed and assessed in terms of their impact. ODIN, having a dedicated task focusing on cybersecurity issues, will deploy a threat analysis and protection framework on top of ODIN OpenFlow architecture, protecting the data collected / generated and exchanged through ODIN platform. In particular, this framework will monitor for leaks, errors and failures while suggesting prospering recovering strategies. User requirements and personal information and data will also be included in the risk analysis associated to their processing activities. Security measures will consider including the implementation of PAKE protocols [15], such as the SRP protocol [16], and protection about bots such as captcha technologies [17]. As part of the EUI's Data Protection Directive, the following recommendations may be used to implement data security procedures:

1. Take the appropriate technical and organizational measures to prevent any unauthorized act with regards to the data.

2. Make sure that no one will access, read, copy, alter use in any way or process the data unless the person is authorized to do so according to a clear access rule.

3. Organize the processing in a way giving the best possible control while allowing an accurate tracking of procedures followed.

ODIN will consider all the necessary procedures for **archiving** and provision of **long-term preservation**. Suitable file formats and appropriate processes for organizing files will be followed as mentioned above. In organizing the different data files, the following steps could be considered:

- File version control.
- File structure.
- Directory structure and file naming conventions.

In addition, for the **long-term access** appropriate data documentation will be provided. Full understanding and analysis of the metadata that may be needed will be considered.

The external repositories can be used for the purposes of archiving and long-term storage.

These repositories are free therefore there will not be expenses for the ODIN consortium. In case of additional procedures are needed for the long-term maintenance the project consortium will cover the respective costs.

5. DATA PROTECTION

Data protection contributes to guaranteeing one's right to privacy. Data protection refers to the technical framework and security measures designed to guarantee that personal data are safe from unforeseen, unintended or malevolent use. Data protection therefore includes i.e. measures concerning access to data, processing, communication, and conservation of data. Also measures to assure the accuracy of the data can be included in a data protection strategy. In the context of research, privacy issues arise whenever data relating to persons are collected and stored, in digital form or otherwise. The main challenge for research is to use and share the data, while protecting personal privacy.

The European Union defines personal data as "any information relating to an identified or identifiable natural person". Under this context there have been several directives that can be applied on different applications. Considering the nature of the technologies investigated under the ODIN project the most relevant ones are:

- Directive 95/46/EC on protection of personal data (Data Protection Directive) [18].

- Directive 2002/58/EC on privacy and electronic communications (e-Privacy Directive) [19]

In order for ODIN personal data collection for research purposes to be in line with the Article 7 of the Data Protection Directive 17 the following requirement must be fulfilled:

The individual concerned, (the 'data subject'), has **unambiguously given his or her consent**, after being adequately informed.

Apart from the required consent the following basic principles will apply on personal data processing in order to further solidify privacy protection of participating individuals and assure the quality of collected information. The data processed should be:
1. adequate, relevant, and non-excessive (e.g. by minimizing collected information/database fields).

2. accurate and where necessary, kept up to date.

3. processed fairly and lawfully.

4. processed for specified, explicit and legitimate purposes and not further processed in a way incompatible with these purposes.

5. processed in line with data subjects' rights.

6. processed in a secure manner.

7. kept for no longer than necessary for the purposes for which the data was collected or for which it is further processed.

Especially for the safety related application where use of sensors is foreseen to capture data from the shopfloor, the following provisions are applicable:

Following directive 95/46/EC and the definition of personal data therein (§2(a)), none of the currently commercially available safety sensors envisioned to be employed in ODIN (2D safety laser scanners, light curtains) collect, process, retain or transfer any personal data of any kind. The 2D scan and 3D data allows the detection, tracking and possibly the classification of objects, but these data are not and cannot be personalized.

All personal data collection efforts of the project partners will be established after giving subjects full details on the experiments to be conducted through the ODIN Data Collection and Sharing Information Sheet and obtaining from them a signed informed consent form. Please see Annex for the ODIN template of these documents.

6. CONCLUSIONS

The ODIN consortium fully supports the endeavour to improve access to scientific information and research data in order to enhance the benefits of public investment. With regards to industrial third parties, ODIN aims to extract information that is sufficient to exemplify the concepts and define the challenges, while not disclosing ODIN consortium confidential information. The project is on the requirements definition process, thus only assumptions on the data generated through the design, development and validation phases and the foreseen ways of treating these data have been documented in this deliverable. A variety of data and information will be generated in ODIN, whereof a part will be generated by the consortium itself and will be made freely available e.g. via the website and public deliverables. However, this process also considers the confidentiality policies and data sharing restrictions of each company.

ODIN DMP will be a living document that will be updated at the end of each project period, when changes are applicable.

7. GLOSSARY   -32-

GDPR	General Data Protection Regulation
IPR	Intellectual Property Rights
IT	Information Technology
KPI	Key Performance Indicator
MES	Manufacturing Execution System
MP	Market Place
OA	Open Access
OpenAIRE	Open Access Infrastructure for Research in Europe
ORDP	Open Research Data Pilot
SCADA	Supervisory Control and Data Acquisition
SME	Small Medium Enterprise

8. REFERENCES

[1]   URL http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf, last accessed on 31st March 2021

[2]   URL   http://ec.europa.eu/research/participants/data/ref/h2020/other/hi-oa-pilot/h2020-hi-erc-oa-guide_en.pdf, last accessed on 31st March 2021

[3]   Regulation (EU) 2016/679 of the European parliament and of the council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32016R0679

[4]   URL https://old.openaire.eu/what-is-the-open-research-data-pilot, last accessed on 31st March 2019

[5]   URL   http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf, last accessed on 31st March 2021

[6]   URL http://indigo.uic.edu/, last accessed on 31st March 2021

[7]   URL https://zenodo.org/, last accessed on 31st March 2021

[8]   URL https://www.re3data.org/, last accessed on 31st March 2021

[9]   URL https://www.force11.org/node/6062, last accessed on 31st March 2021

[10]   Wilkinson MD, Dumontier M, Aalbersberg IjJ, Appleton G, Axton M, Baak A, et al. The FAIR Guiding Principles for scientific data management and stewardship. Scientific Data. 2016;3: 160018.

[11]   URL https://www.openaire.eu/item/open-research-data-pilot-in-h2020, last accessed on 31st March 2021

[12]   URL https://www.openaire.eu/, last accessed on 31st March 2021

[13]   URL https://www.eugdpr.org/, last accessed on 31st March 2021

[14]   URL https://home.cern/ , last accessed on 31st March 2021

[15]   URL https://en.wikipedia.org/wiki/Password-authenticated_key_agreement, last accessed on 31st March 2021

[16]   URL https://en.wikipedia.org/wiki/Secure_Remote_Password_protocol, last accessed on 31st March 2021

[17]   URL https://en.wikipedia.org/wiki/CAPTCHA, last accessed on 31st March 2021

[18]   Directive 95/46/EC of 24 October 1995 (http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:EN:NOT) on the protection of individuals with regard to the processing of personal data and on the free movement of such data, Official Journal L 281, 23/11/1995 p. 31-50.

[19]   Directive 2002/58/EC of 12 July 2002 (http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0058:en:HTML) concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications), Official Journal. L 201, 31/7/2002 p. 37-47.

ANNEX - INFORMED CONSENT PROCEDURE

Informed consent involving personal data collection is defined as:

"any **freely given specific and informed** indication of his wishes by which the data subject signifies his agreement to personal data relating to him being processed"

To further solidify this definition the following apply:

1. "… freely given …" Consent can only be valid if the data subject is able to exercise a real choice, and there is no risk of deception, intimidation, coercion or significant negative consequences if he/she does not consent. In this regard, the potential participant must be given sufficient information in order to be able to make a choice of whether or not to participate that is based on an understanding of the risks and alternatives in an environment which is free from any coercion;

2. "… specific …" To be specific, consent must be intelligible: it should refer clearly and precisely to the scope and the consequences of the data processing. It cannot apply to an open-ended set of processing activities. This means in other words that the context in which consent applies is limited and that blanket consent without specifying the exact purpose of the processing is not acceptable. Consent must be given in relation to the clearly identified aspects of the processing. It includes notably the kind of data which are processed and the purposes of the processing. Consent refers to reasonable processing which is reasonable and necessary in relation to the purpose. It is generally sufficient to obtain consent only once for different operations as long as they are covered by the data subject's reasonable expectations.

3. "… informed …" Prior information (appreciation and understanding of the facts and implications) is a precondition for valid consent. The individual concerned must be given, in a clear and understandable manner, accurate and full information of all relevant issues such as:

   1. nature of the data processed;

   2. purposes of the processing;

   3. recipients of possible transfers;

   4. rights of the data subject;

   5. consequences of not consenting to the processing question.

4. The participant's consent must be evidenced. The participant needs to agree that her/his data will be used for a specific research scope and must be aware of the meaning of such use.

ODIN Data Collection and Sharing Information Sheet

Research project title: ODIN
You are being invited to take part in this research project. Before you decide to do so, it is important you understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

1. Purpose of the project
This research project aims to investigate
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……………………………………………………………..……………………………………………
……………………………………………………………………………………………………..
……

…………………………………………………..………………………………………………………
……[3]

2. Why have I been chosen?

You have been chosen because

…….…
………
………
………………………………………………………………………………………….[4]

3. Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be able to keep a copy of this information sheet and you should indicate your agreement to the online consent form. You can still withdraw at any time. You do not have to give a reason.

4. Participation

We will be looking for answers for certain questions. We have several different ways that we will be using to collect and share data for ODIN project. We are providing this sheet so that participants can see the various ways that their contribution will fit into the work.

Interviews

We are conducting interviews with
………………………………………………………………………………………………………[5]

Each interview will last approximately …………………………………………………[6], and each participant will have to take part in …………[7] interviews.
………
………
………
………
………
………………………………………………………………………[8]
You will be given a copy of the questions beforehand.

Questionnaires

We will be collecting data through the use of questionnaires. The reason behind them is
………
………
………
………
………
………………………………………………………………[9]

5. Risks or disadvantages

Participating in the research is not anticipated to cause you any disadvantages or discomfort. The potential physical and/or psychological harm or distress will be the same as any experienced in everyday life.

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[3] State the purpose of the project
[4] State the why the subject has been selected
[5] State target group and geographical location
[6] State how long the interviews will last e.g. 30 minutes
[7] State number of interviews
[8] Describe what type of questions will be asked in the interview.

[9] State the reason for using questionnaires

6. What are the possible benefits of taking part?
Whilst there are no immediate benefits for those participating in the project, it is hoped that this work will have a beneficial impact on how the ODIN project.

7. What happens if the research study stops earlier than expected?
Should the research stop earlier than planned and you are affected in any way we will tell you and explain why.

8. What if something goes wrong?
If you have any complaints about the project in the first instance you can contact any member of the research team. If you feel your complaint has not been handled to your satisfaction you can contact the University of Sheffield's Registrar and Secretary to take your complaint further (see below).

9. Sharing our findings
The data we collect will be shared only with the ODIN consortium in order to support the research activities of the project. In case of publications that will have to reference them, your data will be fully anonymized so that your privacy is assured.

10. For more information
If you have any further questions or concerns about this study, please contact:
Name of researcher: …………………………………………………………
Full address: …………………………………………………………………
Tel: …………………………………………………………………………….
E-mail: ………………………………………………………………………
You can also contact (Researchers name) supervisor:
Name of researcher: ………………………………………………………...
Full address: …………………………………………………………………
Tel: …………………………………………………………………………….
E-mail: ………………………………………………………………………

What if I have concerns about this research?
If you are worried about this research, or if you are concerned about how it is being conducted, you can contact the ………………………………………………………………………………………

Informed Consent Form

The following form will be used to obtain informed consent from any natural persons engaged in the ODIN research activities involving capturing/storage/processing of personal data.

DECLARATION OF INFORMED CONSENT: DATA COLLECTION

1. About the project
While robots have very well proven their flexibility and efficiency in mass production and are recognized as the production resource of the future, their adoption in lower volume, diverse environment is heavily constrained. The main reason for this is the high integration and deployment complexity that overshadows the performance benefits of this technology.
If robots are to become well accepted across the whole spectra of production industries, real evidence that they can operate in an open, modular and scalable way is needed. Such an approach needs to demonstrate:
- Easy customization and deploy ability: allowing multiple core technologies (from additional robotic units to individual sensing/ perception/ networking systems) to be easily integrated

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- Autonomy through real collaboration of robots, allowing them to perform tasks in a non-sequential, non-preprogrammed and non-separated (fenceless) way of operation
- Appropriateness of robotic technology for different production tasks through support of different robot types and tooling that can be reconfigured for the particular production process
- Compatibility with existing production processes and already installed production systems
- Robustness through autonomy: ability to operate with very low degree of supervision.
ODIN aspires to fill this gap by bringing technology from the latest ground breaking research in the fields of a) collaborating robots and human robot collaborative workplaces b) autonomous robotics and AI based task planning c) mobile robots and reconfigurable tooling, d) Digital Twins and Virtual Commissioning and e) Service Oriented Robotics Integration and Communication Architectures. To strengthen the EU production companies' trust in utilizing advanced robotics, the vision of ODIN is:
"to demonstrate that novel robot-based production systems are not only technically feasible, but also efficient and sustainable for immediate introduction at the shopfloor".

2. Duration, funding and partners
The ODIN project is funded by the European Commission under Horizon 2020, running from January 2021 to December 2024. The project gathers partners from 8 European countries, and from all areas of manufacturing research. The research procedures in which you are involved will be carried out _____ at _____ under the responsibility of lead-researcher _____

3. Purpose of the data collection in which you are involved

The aim of collecting information is to learn more about the needs of users of _____

4. Data collection and storage

_____

5. Anonymity

_____

6. Refusal or cessation of participation
Participation in this study is voluntary. You do not have to participate in the study if you do not want to. If you choose to participate, you can nonetheless choose to withdraw or leave the study at any time without consequences for you and without being required to provide any explanations.

7. Additional information may be obtained by contacting ODIN project Coordinator at makris@lms.mech.upatras.gr.

Data subject information
Name:
_____

I hereby consent:

Name of Legal Guardian or Parent:
_____

Organization:
_____

Date:

_____

Signature:

_____

Name of Witness (1):

_____

Organization:

_____

Date:

_____

Signature:

_____

The witness must not be an employee or contractor of any of the organizations participating in the ODIN project and is not related by blood or marriage to the family.