



**Z - B R E 4 K**

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**Strategies and Predictive Maintenance models wrapped around physical systems for  
Zero-unexpected-Breakdowns and increased operating life of Factories**

**Z-BRE4K**

## **Deliverable D8.4**

Data Management Plan (DMP)

## **Work Package 8**

Dissemination/Communication/Exploitation

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## Executive Summary

<b>Abstract</b>	The present report is focused on the preparation of the Data Management Plan (DMP) for Z- Bre4k project within Task 8.5. DMP provides an analysis of the main elements of the data management policy that will be used throughout the project with regard to all the datasets that will be generated. In particular, DMP will define which data will be collected and generated, how this data will be managed and shared by the project partners, and also, how this information will be updated and preserved during and after the project duration.
<b>Keywords</b>	Data Management Plan, Open Research Data Pilot.

### ABBREVIATIONS

<b>DMP</b>	<b>Data Management Plan</b>
<b>ORD Pilot</b>	Open Research Data Pilot
<b>EU</b>	European Union
<b>EC</b>	European Commission
<b>ODF</b>	Open Document Format
<b>ODT</b>	Open Document Text
<b>WP</b>	Work Package
<b>GA</b>	Document of Grant Agreement
<b>DEM</b>	Dissemination and Exploitation Manager
<b>QIF</b>	Quality Information Framework

## Revision history

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1.0	Carlos Montoro García (TRIMEK), Silvia de la Maza (TRIMEK)	First draft	23/03/2018
1.1	Paloma Taboada (TRIMEK)	First update M18	01/03/2019
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1.3	ATLANTIS	Final review to M18 DMP	02/04/2019
1.4	CRIT	Contribution to M18 DMP	02/04/2019
2.0	Paloma Taboada (TRIMEK)	Final M18 version	02/04/2019

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## 2 SUMMARY

The present report is focused on the preparation of the Data Management Plan (DMP) for Z-Bre4k project. DMP provides an analysis of the main elements of the data management policy that will be used throughout the project with regard to all the datasets that will be generated. In particular, DMP defines what data is collected and/or generated, how this data will be managed and shared by the project partners, and also, how this information will be updated and preserved during and after the project duration.

DMP of Z-Bre4k project describes the life cycle of all modelling and observation data collected and processed in the project, giving an overview of available research data, access, the data management and terms of use. The DMP reflects the current state of the discussions, plans and ambitions of the partners, and will be updated and augmented with new datasets and results during the lifespan of Z-Bre4k.

The Open Research Data Pilot of the European Commission (EC) aims to improve and maximize access to and re-use of research data generated by projects focusing on encouraging good data management as an essential element of research best practice. Following the recommendation of the EC, Z-Bre4k project is participating on the Open Research Data Pilot and DMP is included as a deliverable (D8.4, Month 6) in charge of WP8.

### 3 INTRODUCTION

The amount of data generated is continuously increased while use and re-use of data to derive new scientific findings is more or less stable. This information would be useful in the future if data is well documented according to accepted and trusted standards which enable the recognition of suitable data by negotiated agreements on standards, quality level and sharing practices. For this purpose, DMP defines the strategies to preserve and store the data over a defined period of time in order to ensure their availability and re-usability after the end of Z-Bre4k project.

According to the Guidelines of Open Research Data Pilot in Horizon 2020, research data refers to information, in particular facts or numbers, collected to be examined and considered and as a basis for reasoning, discussion, or calculation. The overall objective of Z-Bre4k project is to develop predictive maintenance manufacturing strategies to increase the operating life of production systems. Z-Bre4k aims at contributing to the eradication of machine and component failures in manufacturing, providing a sustainable manufacturing system with high quality products, reducing resource consumption and waste generation. Thus, research activities are focused on obtaining data from the machines and field devices in order to develop a complete predictive maintenance system.

#### 3.1 Participation in the pilot on open research data

The European Commission (EC) is running a flexible pilot under Horizon 2020 called the Open Research Data Pilot (ORD pilot). The ORD pilot aims at improving and maximizing access to and re-use of research data generated by Horizon 2020 projects and takes into account the need to balance openness and protection of scientific information, commercialization and Intellectual Property Rights (IPR), privacy concerns, security as well as data management and preservation questions. The 2017 work programme of ORD pilot has been extended to cover all the thematic areas of Horizon 2020.

Following the recommendation of the EC, Z-Bre4k project is participating on the Open Research Data Pilot and the DMP is considered as a Deliverable (D.8.4) due in Month 6. DPM of Z-Bre4k project has been prepared by taking into account the document

template of the “Guidelines on Data Management in Horizon 2020” ([http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-data-mgt\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf)). This document will be updated and augmented with new datasets and results according to the progress of activities of Z-Bre4k project. Also, DMP will be updated including changes in consortium composition and policies over the course of the project.

The procedures that will be implemented for data collection, storage and access, sharing policies, protection, retention and destruction will be according to the requirements of the national legislation of each partner and in line with the EU standards.

### **3.2 Building a DMP in the context of H2020**

The EC provided a document with guidelines for project participants in the pilot. The guidelines address aspects like research data quality, sharing and security. According to the guidelines, projects participating will need to develop a DMP. This document has been produced following these guidelines and aims at providing a consolidated plan for Z-Bre4k partners in the data management plan policy that the project will follow.

The consortium will comply with the requirements of Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data. The consortium will preserve the right to privacy and confidentiality of data of the participants in the surveys by providing all participants to the survey with two documents: The Participant Information Sheet and the Consent Form. These documents will be sent electronically and will provide information about how the answers will be used and what is the purpose of the survey.

The participants will be assured that their answers will be used only for the purposes of the specific survey. The voluntary character of participation will be stated explicitly in the Consent Form. The consortium will examine before conducting the survey following the requirements of the national legislation in line with the EU standards whether the proposed data collection requires special local/national ethical/legal permission.

An ethical approach will be adopted and maintained throughout the fieldwork process. The responsible partners will assure that the EU standards regarding ethics and Data Management are fulfilled. Each partner will proceed with the survey according to the provisions of the national legislation that are adjusted according to the respective EU Directives for Data Management and ethics.

The recruitment process to be followed by the consortium for the engagement of stakeholders (including inclusion/exclusion criteria for all the surveys) will be transparent and such criteria will be included and explained in the Participant Information Sheet.

Participants to the survey will be invited by each partner by email. The third parties that will be invited to participate in the survey will have no role in Z-Bre4k and no professional relationship with the consortium. The consortium will also examine whether personal data will be collected and how to secure the confidentiality in such a case.

The Steering Committee of the project will also ensure that EU standards are followed. The issue of informed consent for all survey procedures, all participants will be provided with a Participant Information Sheet and Consent Form to provide informed consent. The default position for all data relating to residents and staff will be anonymous.

## **4 DATA MANAGEMENT PLAN (DMP)**

### **4.1 General description**

This document consists of the first version of the project's DMP. The DMP is contained as Deliverable (D8.4, Month 6) in charge of WP8 Dissemination/Communication/Exploitation.

The main purpose of a DMP is to provide an analysis of the main elements of the data management policy that will be used by the consortium with regard to all the datasets that will be generated by the project.

This document describes the Research Data with the metadata attached an overview of the datasets to be produced by the project, their characteristics and their management processes to make them discoverable, accessible, assessable, usable beyond the original purpose and exchangeable between researchers. It also presents the specifications of the dedicated Data Management Portal developed by the project in the context of the Open Research Data Pilot, allowing the efficient management of the project's datasets and providing proper open access on them for further analysis and reuse. In addition, DMP of Z-Bre4k project reflects the current status of discussion within the consortium about the data that will be produced.

### **4.2 Activities of Data Management Plan**

The DMP is a dynamic document, updated throughout the whole project lifecycle. The final version of this report will be delivered before the end of the project (M30), reflecting on lessons learnt and describing the plans implemented for sustainable storage and accessibility of the data, even beyond the project's duration.

A Knowledge Management system will be developed, which incorporates, in a structured way, the technical and business knowledge created during the project. The activities of the Z-Bre4k concerning the data management are planned as follows:

- Knowledge management – to be led by the Dissemination and Exploitation Manager (DEM), in which the DMP will be delivered.

- A knowledge management document will be created, based on DMP, describing how the acquired data and knowledge will be shared and/or made open, and how it will be maintained and preserved. The identifiable project data will be provided in a manner to define the relevant knowledge, increase partners' awareness, validate the result, and timeframe of actions.
- Technology watch - All partners will be responsible for periodically updating the Knowledge management system with outcomes of research work conducted by other groups and any new patents, i.e. to ensure that ongoing relevant technological developments and innovations are identified, analysed, and hopefully built upon during the course of the project.

#### **4.3 Register on numerical data sets generated or collected in Z-Bre4k**

The intention of the DMP is to describe numerical model or observation datasets collected or created by Z-Bre4k activities during the runtime of the project. The register on numerical data sets has to be understood as living document, which will be updated regularly during project lifetime.

The operational phase of the project started in January 2018, so there was no dataset generated or collected before the first delivery date of this DMP (Month 6). However, this is not a fixed document so it will be updated and augmented with new datasets and results during the duration of Z-Bre4k project.

The information listed below reflects the conception and design of the individual partners in the different work packages at the beginning and mid-term of the project. The data register will deliver information according to information detailed in *Annex 1 (Part A) of the Grant Agreement Document (GA)*:

- Data set reference and name: identifier for the data set to be produced.
- Data set description: descriptions of the data that will be generated or collected, its origin or source (in case it is collected), nature, scale, to whom it could be useful and whether it underpins a scientific publication. Information on the existence (or not) of similar data and the possibilities for integration and reuse.

- Partners activities and responsibilities: partner owner of the device, in charge of the data collection, data analysis and/or data storage, and WPs and tasks it is involved.
- Standards and metadata: reference to existing suitable standards of the discipline. If these do not exist, an outline on how and what metadata will be created. Format and estimated volume of data.
- Data exploitation and sharing: description of how data will be shared, including access procedures and policy, embargo periods (if any), outlines of technical mechanisms for dissemination and necessary software and other tools for enabling re-use, and definition of whether access will be widely open or restricted to specific groups. Identification of the repository where data will be stored, if already existing and identified, indicating in particular the type of repository (institutional, standard repository for the discipline, etc.) and if this information will be confidential (only for members of the Consortium and the Commission Services) or public. In case of dataset cannot be shared, the reasons for this should be mentioned (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related).
- Archiving and preservation (including storage and backup): description of the procedures that will be put in place for long-term preservation of the data. Indication of how long the data should be preserved, what is its approximated end volume, what the associated costs are and how these are planned to be covered.

Each of these sections cover the main principles of FAIR data, that is, the research data should be “FAIR”: findable, accessible, interoperable and re-usable. In this context, Z-Bre4k partners have been identified their implementation choices regarding their research data.

#### **4.4 Metadata for Data Management**

An initial plan of research data has been explored in *Annex 1* of the GA. The datasets list is provided in the table below, while the nature and details for each dataset are

presented in the next section. The initial list has been updated with new research data identified throughout project development.

*Table 1. Research data that will be collected and generated during Z-Bre4k*

Research Data	Partners
Data structures with machine system signatures (healthy and deteriorated conditions)	ATLANTIS
Machine Systems deterioration thresholds for predicting failures	ATLANTIS
RCA data structures for identifying the root cause of a failure mode (FM)	ATLANTIS
Common-cause failures (CCF) and the FMs with most severe effects; Data structures of a Criticality Matrix; KRIs	ATLANTIS
Thresholds for trends forecasting in relation to condition monitoring and FM prediction	ALL PARTNERS
Failure mode detection/prediction efficiency data: false alarm rate, precision, recall, F-Measure	ALL PARTNERS
Failure prediction efficiency data: positive prediction rate	ALL PARTNERS
Failure Modes and data structures with associated condition monitoring parameters, as well as ambient environment parameters (usage, environmental conditions, materials, quality of resources, etc).	ALL PARTNERS
Data structures and method for retrofitting physically based models of machinery systems	FRAUNHOFER
Data from the comparative assessment (i.e. with and without Z-Bre4k) in the 3 use cases: difference in efficiency, effectiveness, production planning	SACMI-CDS, PHILIPS, GESTAMP

and schedule, failure predicted/prevented, remedy actions	
Discrete Event Modelling – cost function generation to optimize prediction and failure analysis	BRUNEL
Improved functionalities of i-Like knowledge management and DSS suite	HOLONIX
Metrological information for predictive maintenance strategies	TRIMEK
Production data for predictive maintenance	CORE

As aforementioned, partners have characterized their research data and associated software and/or used in the project whether these are:

- Findable / Discoverable: can be discovered by means of an identification mechanism such as Digital Object Identifier.
- Accessible: define in what modalities, the scope of the action, stablish the licenses and define the IPR.
- Assessable and intelligible: allow to third parties to make assessments.
- Useable beyond the original purpose for which it was collected or usable to third parties after the collection of the data for long periods (repositories, preservation and curation).
- Interoperable to specific quality standards allow data exchange between researchers, institutions, organizations countries, re-combinations with different datasets, data exchange, compliant with available software applications.

#### 4.5 Data description

In order to collect the information about the research data that will be generated in Z-Bre4k from the different activities of the project, we have elaborated a template to be completed by the consortium partners. This template includes the following information items:

- Data set reference and Name: Name, Homepage, Publisher, and Maintainer.
- Data Set description: Description, Provenance, Usefulness, Similar Data, Re-Use and integration.
- Standards and Metadata: Metadata description, Vocabularies and Ontologies.
- Data Sharing: License, URL Data Set Description, Openness, Software Necessary, Repository.
- Archiving and preservation: Preservation, Growth, Archive, Size.

#### 4.5.1 Data Set per partner

All partners have identified the data that will be produced in the different project activities;

S_UC1_DS.ATLANTIS.FMECA	
Data Identification	
Data set description	<p>CCM malfunctions of the hydraulic system, the refrigeration system, the moulds, or the plastic extruder cause the system to react and collect data for the DSS.</p> <p>Also, quality issues of closures produced within the CCM can be originated by the lack of plastic quality due to excess of recycled plastics, pollutants and/or wrong percentage of additives, cause the system to react.</p>
Source (e.g. which device?)	<p>The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the FMECA component</p>

<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (SACMI), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to FMECA (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP3 and more specifically within activities of T3.1, T3.2, T3.3 and T3.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis

	and incident detection methods of the Z-Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

P\_UC1\_DS.ATLANTIS.FMECA

**Data Identification**

Data set description	<p>Die modules consist of several cutting steps. The rough cutting of the shaving cutter legs is the most critical one. The cutting is done by hard metal (brittle) punches which cut through the metal strip.</p> <p>Possible failures are caused by:</p> <ol style="list-style-type: none"> <li>1. Blunt punch or worn parts</li> </ol>
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	<p>2. Strip feed not correct or blunt punch</p> <p>3. Wear or not enough oil.</p> <p>4. If the punches are blunt, there will be a larger burr on the product.</p> <p>The appropriate data will be collected if one of those failures is triggered and sent to the DSS component as input.</p>
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the FMECA component
<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (PHILIPS), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to FMECA (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP3 and more specifically within activities of T3.1, T3.2, T3.3 and T3.4

<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z – Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will

	be utilized to ensure data reliability and performance improvement and to avoid data losses.
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P_UC2_DS.ATLANTIS.FMECA	
Data Identification	
Data set description	Die module 2 is a flatten die. This die flattens the cutter legs to the right thickness. All process parts consist of hard metal parts.  The main failure cause that will lead to data collection for DSS is Fatigue. Also, the speed of the mechanical press could be a cause.
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the FMECA component
Partners activities and responsibilities	
Partner owner of the device	The device will be owned to the industry (PHILIPS), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.

Partner in charge of the data storage (if different)	ATLANTIS will store data related to FMECA (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP3 and more specifically within activities of T3.1, T3.2, T3.3 and T3.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z – Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.

Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

<b>G_UC1_DS.ATLANTIS.FMECA</b>	
<b>Data Identification</b>	
Data set description	The wire feeder is the system that provides wire to the par to be assembled. Wire speed is a key welding parameter in every arc welding process, such as GMAW. This welding parameter must be constant to ensure welded parts with sound joints. If the wire speed is slower than the nominal, then many welding defects may occur. On the other hand, if this parameter is faster than the nominal, not only welding defects may occur, but also the system may breakdown.
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the

	Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the FMECA component
<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (GESTAMP), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to FMECA (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP3 and more specifically within activities of T3.1, T3.2, T3.3 and T3.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs

Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z-Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

**G\_UC2\_DS.ATLANTIS.FMECA**

**Data Identification**

Data set description	GMAW processes require gas flow in order to achieve sound joints by protecting the melted pool from the
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	<p>atmosphere. Such protection is achieved by the correct gas type, flow pressure and torch geometry. This welding parameter must be kept to an optimal value to ensure welded parts with sound joints. If gas flow lower than the nominal, then many welding defects may occur. On the other hand, if this parameter is higher than the nominal welding defects may also occur. Finally, gas low pressure may also affect welding quality.</p>
Source (e.g. which device?)	<p>The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, CO1, CO2 components, AUTOWARE platform and then it will end up to the FMECA component</p>
<b>Partners activities and responsibilities</b>	
Partner owner of the device	<p>The device will be owned to the industry (GESTAMP), where the data collection is going to be performed.</p>
Partner in charge of the data collection (if different)	<p>Various partners related to the specific incident and/or operation.</p>
Partner in charge of the data analysis (if different)	<p>Various partners related to the specific incident and/or operation.</p>
Partner in charge of the data storage (if different)	<p>ATLANTIS will store data related to FMECA (various partners can handle the rest of the data).</p>

WPs and tasks	The data are going to be collected within activities of WP3 and more specifically within activities of T3.1, T3.2, T3.3 and T3.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z-Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None

<b>Archiving and preservation (including storage and backup)</b>	
<p>Data storage (including backup): where?                      For how long?</p>	<p>Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.</p>

<b>G_UC3_DS.ATLANTIS.FMECA</b>	
<b>Data Identification</b>	
<p>Data set description</p>	<p>The contact tip of the welding gun is a key component of a GMAW system. This component has a calibrated hole where the wire passes through. The contact tip is responsible for transferring the welding current to the wire as it passes through the bore, creating the arc. The position of the contact tip within the nozzle, referred to as the contact tip recess, is just as important. It can influence quality, productivity and costs in the welding operation. It can also affect the amount of time spent performing non-value-added activities, such as grinding or blasting parts that do not contribute to the operation’s overall throughput or profitability. Also, too much heat generally reduces the working life of the contact tip. The result is higher overall consumable costs and</p>

	<p>greater downtime for contact tip changeover. Poor shielding gas coverage leads to porosity, spatter and insufficient penetration.</p> <p>If one of the above happens, malfunction data is collected and sent to the FMECA component.</p>
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, CO1, CO2 components, AUTOWARE platform and then it will end up to the FMECA component
<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (GESTAMP), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to FMECA (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP3 and more specifically within activities of T3.1, T3.2, T3.3 and T3.4
<b>Standards</b>	

Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z-Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and

	performance improvement and to avoid data losses.
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S_UC1_DS.ATLANTIS.DSS	
Data Identification	
Data set description	<p>CCM malfunctions of the hydraulic system, the refrigeration system, the moulds, or the plastic extruder cause the system to react and collect data for the DSS.</p> <p>Also, quality issues of closures produced within the CCM can be originated by the lack of plastic quality due to excess of recycled plastics, pollutants and/or wrong percentage of additives, cause the system to react.</p>
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the DSS component
Partners activities and responsibilities	
Partner owner of the device	The device will be owned to the industry (SACMI), where the data collection is going to be performed.

Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to DSS (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP4 and more specifically within activities of T4.1, T4.2, T4.3 and T4.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include:  (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset,  (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	

Data exploitation  (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z – Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level  (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution  (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where?  For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

**P\_UC1\_DS.ATLANTIS.DSS**

**Data Identification**

Data set description	Die modules consist of several cutting steps. The rough cutting of the shaving cutter legs is the most critical one. The
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	<p>cutting is done by hard metal (brittle) punches which cut through the metal strip.</p> <p>Possible failures are caused by:</p> <ol style="list-style-type: none"> <li>1. Blunt punch or worn parts</li> <li>2. Strip feed not correct or blunt punch</li> <li>3. Wear or not enough oil.</li> <li>4. If the punches are blunt, there will be a larger burr on the product.</li> </ol> <p>The appropriate data will be collected if one of those failures is triggered and sent to the DSS component as input.</p>
<p>Source (e.g. which device?)</p>	<p>The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the DSS component</p>
<p><b>Partners activities and responsibilities</b></p>	
<p>Partner owner of the device</p>	<p>The device will be owned to the industry (PHILIPS), where the data collection is going to be performed.</p>
<p>Partner in charge of the data collection (if different)</p>	<p>Various partners related to the specific incident and/or operation.</p>
<p>Partner in charge of the data analysis (if different)</p>	<p>Various partners related to the specific incident and/or operation.</p>
<p>Partner in charge of the data storage (if different)</p>	<p>ATLANTIS will store data related to DSS (various partners can handle the rest of the data).</p>

WPs and tasks	The data are going to be collected within activities of WP4 and more specifically within activities of T4.1, T4.2, T4.3 and T4.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include:  (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z – Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners

Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

P_UC2_DS. ATLANTIS.DSS	
Data Identification	
Data set description	Die module 2 is a flatten die. This die flattens the cutter legs to the right thickness. All process parts consist of hard metal parts.  The main failure cause that will lead to data collection for DSS is Fatigue. Also, the speed of the mechanical press could be a cause.
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the DSS component
Partners activities and responsibilities	
Partner owner of the device	The device will be owned to the industry (PHILIPS), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.

Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to DSS (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP4 and more specifically within activities of T4.1, T4.2, T4.3 and T4.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z – Bre4k project and all the tasks, activities and methods that are related to it.

Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

<b>G_UC1_DS.ATLANTIS.DSS</b>	
<b>Data Identification</b>	
Data set description	The wire feeder is the system that provides wire to the par to be assembled. Wire speed is a key welding parameter in every arc welding process, such as GMAW. This welding parameter must be constant to ensure welded parts with sound joints. If the wire speed is slower than the nominal, then many welding defects may occur. On the other hand, if this parameter is faster than the nominal, not only welding defects may

	occur, but also the system may breakdown.
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the DSS component
<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (GESTAMP), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to DSS (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP4 and more specifically within activities of T4.1, T4.2, T4.3 and T4.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include:  (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset,

	(b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z-Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

G\_UC2\_DS.ATLANTIS.DSS

**Data Identification**

Data set description	GMAW processes require gas flow in order to achieve sound joints by protecting the melted pool from the atmosphere. Such protection is achieved by the correct gas type, flow pressure and torch geometry. This welding parameter must be kept to an optimal value to ensure welded parts with sound joints. If gas flow lower than the nominal, then many welding defects may occur. On the other hand, if this parameter is higher than the nominal welding defects may also occur. Finally, gas low pressure may also affect welding quality.
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the DSS component
<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (GESTAMP), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.

Partner in charge of the data storage (if different)	ATLANTIS will store data related to DSS (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP4 and more specifically within activities of T4.1, T4.2, T4.3 and T4.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z – Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.

Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.

<b>G_UC3_DS.ATLANTIS.DSS</b>	
<b>Data Identification</b>	
Data set description	The contact tip of the welding gun is a key component of a GMAW system. This component has a calibrated hole where the wire passes through. The contact tip is responsible for transferring the welding current to the wire as it passes through the bore, creating the arc. The position of the contact tip within the nozzle, referred to as the contact tip recess, is just as important. It can influence quality, productivity and costs in the welding operation. It can also affect the amount of time spent performing non-value-added activities, such as grinding or blasting parts that do not contribute to the operation's overall

	<p>throughput or profitability. Also, too much heat generally reduces the working life of the contact tip. The result is higher overall consumable costs and greater downtime for contact tip changeover. Poor shielding gas coverage leads to porosity, spatter and insufficient penetration.</p> <p>If one of the above happens, malfunction data is collected and sent to the DSS component.</p>
Source (e.g. which device?)	The dataset, initially, will be collected from the shopfloor, through the Industrial Data Spaces, C01, C02 components, AUTOWARE platform and then it will end up to the DSS component
<b>Partners activities and responsibilities</b>	
Partner owner of the device	The device will be owned to the industry (GESTAMP), where the data collection is going to be performed.
Partner in charge of the data collection (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data analysis (if different)	Various partners related to the specific incident and/or operation.
Partner in charge of the data storage (if different)	ATLANTIS will store data related to DSS (various partners can handle the rest of the data).
WPs and tasks	The data are going to be collected within activities of WP4 and more specifically

	within activities of T4.1, T4.2, T4.3 and T4.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	The dataset will be accompanied with a detailed documentation of its contents. Indicative metadata include: (a) description of the experimental setup (e.g. location, date, etc.) and procedure that led to the generation of the dataset, (b) annotated detection asset's vitals, asset's RULs
Standards, Format, Estimated volume of data.	The data will be stored at XML/JSON format and are estimated to be 1GB per day.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	The collected data will be used for the development of the activities analysis and incident detection methods of the Z-Bre4k project and all the tasks, activities and methods that are related to it.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential and only the members of the consortium will have access on it.
Data sharing, re-use and distribution (How?)	The sharing of this data is yet to be decided along with the industrial partners
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	

Data storage (including backup): where? For how long?	Data will be stored in a DB. RAID and other common backup mechanism will be utilized to ensure data reliability and performance improvement and to avoid data losses.
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<b>DS.CRIT. Data Collection from Demonstration and Evaluation.</b>	
<b>Data Identification</b>	
Data set description	Collect feedback on demonstration activities within the three use cases of the project: SACMI, PHILIPS and GESTAMP
Source (e.g. which device?)	Some data may also be collected from other customers.
<b>Partners activities and responsibilities</b>	
Partner owner of the device	Demonstrators
Partner in charge of the data collection (if different)	CRIT
Partner in charge of the data analysis (if different)	
Partner in charge of the data storage (if different)	
WPs and tasks	WP6 / T6.5
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	Data collection procedure will be definitively established around Month 28.  It is expected to use each end user system for data collection and

	generation and to use also users' acceptance questionnaires, impact check lists and data collection forms.
Standards, Format, Estimated volume of data.	Primarily doc files and .xls files. Rtf documents for user acceptance questionnaires/online instruments, data of ERP-MES-SCADA repositories, spreadsheets with data for technical KPIs, reports and presentations on KPI's
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	Reports for the deliverables, descriptions of the activities performed within the three use cases, stakeholders involved, main findings, input for exploitation material will be public. Trend results will be shared but numeric and detailed data will not be available.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	Data are expected to be confidential, only accessible for Z-break consortium. These data will be helpful for preparing the deliverables of the project.
Data sharing, re-use and distribution (How?)	Yes, some historical data will be reused as starting point for the project as well as comparison.
Embargo periods (if any)	Unknown
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Unknown

DS.SACMI.DEMO#1	
Data Identification	
Data set description	Data collection from pilot demonstrations: technical, user acceptance and factory impact indicators. Demonstration activities and the data originated by them are related to the WP6 and mainly T 6.1
Source (e.g. which device?)	Use Case 1
Partners activities and responsibilities	
Partner owner of the device	SACMI-CDS
Partner in charge of the data collection (if different)	There is the possibility: we could collect data also from other customers.
Partner in charge of the data analysis (if different)	
Partner in charge of the data storage (if different)	
WPs and tasks	W6 / T6.1 (CDS)
Standards	
Info about metadata (Production and storage dates, places) and documentation?	The operating modes will be defined in the next months (about M28). The instruments to be used could be: users'

	acceptance questionnaires, impact check lists and data collection forms.
Standards, Format, Estimated volume of data.	For the reports: .xls files, .ppt files and .doc files.  Rtf documents for user acceptance questionnaires/online instruments, spreadsheets with data for technical KPIs, data of ERP-MES-SCADA repositories.
<b>Data exploitation and sharing</b>	
Data exploitation  (purpose/use of the data analysis)	Report for deliverable 6.1.: description of activities performed, stakeholders involved, main findings, input for exploitation material. We could share trend results obtained by demonstration activities, but we won't give detailed and numeric data.
Data access policy / Dissemination level  (Confidential, only for members of the Consortium and the Commission Services) / Public	Sensitive data only for SACMI.
Data sharing, re-use and distribution  (How?)	Yes. Historical data collected in the previous years.
Embargo periods (if any)	
<b>Archiving and preservation (including storage and backup)</b>	

Data storage (including backup): where? For how long?	At least 10 years. Unknown
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DS.TRIMEK. Metrological Measurements.	
Data Identification	
Data set description	Data comes from the M3 Gage component used for the digitalization of a physical object in order to obtain its metrology information through Point-of-Clouds (POC). The point-cloud is the virtual image of the physical object, it is presented as a list of 3D points.
Source (e.g. which device?)	Data coming from the M3 Gage which is collected by the M3 Box (SoN) and shared via the IDS connector to be used for the predictive maintenance apps
Partners activities and responsibilities	
Partner owner of the device	TRIMEK
Partner in charge of the data collection  (if different)	TRIMEK (M3 Platform)
Partner in charge of the data analysis  (if different)	TRIMEK
Partner in charge of the data storage	TRIMEK and Z-Bre4k repository

(if different)	
WPs and tasks	WP2/T2.4, WP3/T3.4 and WP6/T6.2
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	<p>The metadata will include all the info related to the content of the metrological information like:</p> <ul style="list-style-type: none"> <li>• Production location</li> <li>• Machine ID</li> <li>• Part ID</li> <li>• Dates and timestamp</li> </ul>
Standards, Format, Estimated volume of data.	<p>The M3 software component used for the organization, analysis and reporting operations of the metrology information is compatible with .QIF, .DMI, .DMO, .CSV and .M3 file extensions.</p> <p>Quality Information Framework (QIF) will be followed for the metrological results in order to ensure traceability and interoperability.</p>
<b>Data exploitation and sharing</b>	
Data exploitation  (purpose/use of the data analysis)	This data will be exploited by Z-Bre4k consortium.
Data access policy / Dissemination level  (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential, but the reports and semantic model will be public.

Data sharing, re-use and distribution (How?)	The data will be accessible to Z-BRE4K consortium members including the commission services.
Embargo periods (if any)	No sharing allowed
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	M3 Platform

<b>DS.TRIMEK. Condition Monitoring</b>	
<b>Data Identification</b>	
Data set description	Data comes from the sensor installed in the M3 Gage component which is used for the digitalization of a physical object in order to obtain its metrology information. These sensor enables to gain knowledge about the normal operation of the
Source (e.g. which device?)	Data coming from the M3 Gage which is collected by the M3 Box (SoN) and shared via the IDS connector to be used for the predictive maintenance apps
<b>Partners activities and responsibilities</b>	
Partner owner of the device	TRIMEK
Partner in charge of the data collection	TRIMEK (M3 Platform)

(if different)	
Partner in charge of the data analysis  (if different)	TRIMEK
Partner in charge of the data storage  (if different)	TRIMEK and Z-Bre4k repository
WPs and tasks	WP2/T2.4, WP3/T3.4 and WP6/T6.2
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	Metadata will include: machine info, sensors info, dates and timestamps...
Standards, Format, Estimated volume of data.	Log files  Volume unknown yet
<b>Data exploitation and sharing</b>	
Data exploitation  (purpose/use of the data analysis)	This data will be exploited by Z-Bre4k consortium.
Data access policy / Dissemination level  (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential, but the reports and semantic model will be public.
Data sharing, re-use and distribution  (How?)	The data will be accessible to Z-BRE4K consortium members including the commission services.

Embargo periods (if any)	No sharing allowed
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	M3 Platform

DS. HOLONIX. Condition Monitoring Module	
Data Identification	
Data set description	Data come from machines/sensors through AUTOWARE middleware, containing information about working status and condition of machines/systems.
Source (e.g. which device?)	AUTOWARE IDS data repository
Partners activities and responsibilities	
Partner owner of the device	HOLONIX
Partner in charge of the data collection (if different)	End users (SACMI, PHILIPS, GESTAMP)
Partner in charge of the data analysis (if different)	HOLONIX, EPFL, BRUNEL
Partner in charge of the data storage (if different)	INNOVALIA
WPs and tasks	WP3-5
Standards	
Info about metadata (Production and storage dates, places) and documentation?	Not established yet

Standards, Format, Estimated volume of data.	Data exchange format will be JSON, volume still unknown
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	Machine/components status monitoring in order to predict failures and plan maintenance
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	In a first stage, data will be available only for members of Z-Bea4k consortium. A possible disclosure must be agreed with the consortium member
Data sharing, re-use and distribution (How?)	Data will be shared outside Z-Bre4k consortium only if explicitly agreed by consortium.
Embargo periods (if any)	No
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in servers owned by HOLONIX for the duration required by Z-Bre4k project

<b>DS. EPFL. Semantic Framework</b>	
<b>Data Identification</b>	
Data set description	Semantic model for the annotation and description of the knowledge to represent manufacturing system performance.
Source (e.g. which device?)	Z-BRE4K Repository
<b>Partners activities and responsibilities</b>	
Partner owner of the device	EPFL
Partner in charge of the data collection (if different)	EPFL

Partner in charge of the data analysis (if different)	N/A
Partner in charge of the data storage (if different)	Responsible for the Z-BRE4K Repository
WPs and tasks	The data will be collected within the activities of WP3 and in particular Tasks T3.1 & T3.5
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	Data from Z-BRE4K repository (data concerning machines, processes, production data logs, actors, and activities etc.)
Standards, Format, Estimated volume of data.	Generated output will be the Semantic enrichment of shopfloor data for modelling not only the actors and procedures at the shopfloor, but also machinery and their critical components, their failure modes and their criticality, their signatures of healthy and deteriorated conditions, etc. e.g. as RDF Triplets (to be used by Z-BRE4K Knowledge Base System in T3.2) & Semantic rules (e.g. SPARQL-based rules) for data browsing/analysis. <b>Standards:</b> W3C-OWL, RDF. Less than 1GB.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	Data is required for the Z-BRE4K ontology development. The ontology as a semantic model will be used in order to drive the

	semantic framework. Furthermore, it will be used for data integration, visualization, and inferencing/reasoning. The ontology will describe the basic entities of the project and model relevant structures of manufacturing systems and processes in terms of maintenance domain.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	The full dataset will be confidential, but the reports and semantic model will be public.
Data sharing, re-use and distribution (How?)	The Ontology will be uploaded in a server where it will be accessible to Z-BRE4K consortium members including the commission services.
Embargo periods (if any)	None
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Data will be stored in a dedicated repository. No expiry date – revisions will be kept.

DS.PHILIPS. Demonstrator	
Data Identification	
Data set description	All input data for Z-bre4k analysis
Source (e.g. which device?)	Philips, Press, Brankamp, 2 inline measurement devices.
Partners activities and responsibilities	
Partner owner of the device	PHILIPS
Partner in charge of the data collection (if different)	

Partner in charge of the data analysis (if different)	
Partner in charge of the data storage (if different)	
WPs and tasks	All
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	All Philips standards, maybe data will be made anonymous.
Standards, Format, Estimated volume of data.	All Philips standards, maybe data will be made anonymous.
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	Data analytics to demonstrate Z-bre4k System.
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	Confidential
Data sharing, re-use and distribution (How?)	By AUTOWARE.
Embargo periods (if any)	No sharing allowed.
<b>Archiving and preservation (including storage and backup)</b>	
Data storage (including backup): where? For how long?	Philips server.

#### DS. CORE. Predictive Maintenance

##### Data Identification

Data set description	Data come from machines/sensors through HOLONIX i-Like machines/Orion broker
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Source (e.g. which device?)	SACMI/CDS Machines
<b>Partners activities and responsibilities</b>	
Partner owner of the device	SACMI/CDS
Partner in charge of the data collection (if different)	HOLONIX
Partner in charge of the data analysis (if different)	CORE, BRUNEL
Partner in charge of the data storage (if different)	HOLONIX/SACMI/CDS
WPs and tasks	Task 3.4
<b>Standards</b>	
Info about metadata (Production and storage dates, places) and documentation?	Not established yet
Standards, Format, Estimated volume of data.	Web services in JSON format
<b>Data exploitation and sharing</b>	
Data exploitation (purpose/use of the data analysis)	Machine/components status monitoring in order to predict anomalous behaviour
Data access policy / Dissemination level (Confidential, only for members of the Consortium and the Commission Services) / Public	In a first stage, data will be available only for members of Z-Bea4k consortium. A possible disclosure must be agreed with the consortium members
Data sharing, re-use and distribution (How?)	Data will be shared outside Z-Bre4k consortium only if explicitly agreed by consortium
Embargo periods (if any)	No
<b>Archiving and preservation (including storage and backup)</b>	

Data storage (including backup): where? For how long?	Data will be stored in servers owned by HOLONIX and CORE for the duration required by Z-Bre4k project
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#### 4.6 Policies for access, sharing and re-use

Data generated during Z-Bre4k project will be confidential, ownership and management of intellectual property and access will be limited. For this purpose, policies for access, sharing, and re-use have been established.

However, considering the description and instructions of the ORD pilot, Z-Bre4k consortium agrees on making publications and the research data related to the scientific publications open. More information about the open data is available in section 4.8.3.1

#### 4.7 Partners Background

Partners have been identified their background for the action (data, *know-how* or information generated before they acceded to the Agreement), which will be accessible to each other partners to implement their own tasks (under to legal restrictions or limits previously defined). The partners should be able to access, mine, exploit, reproduce and disseminate the data. This should also help to validate the results presented in scientific publications. The partner's background, acquired prior to the starting date of the project, will remain the sole property of the originating partner, provided that it was presented in the CA.

#### 4.8 Data Ownership and Access

In principle, the full dataset will be confidential and only the members of the consortium will have access on it. As described in GA, data generated are expected to be used internally as input by the other WPs. All the partners will have free-access to the results generated during the project, the information needed for implementing their own tasks under the action and for exploiting their own results. Also, this information will be available to EU institutions, bodies, offices or agencies, for developing, implementing or monitoring EU policies. However, such access rights are limited to non-commercial and non-competitive use.

### **4.8.1 Naming rules**

All data files will be saved using a standardized, consistent file naming protocol agreed by the project partners, which will include relevant metadata to ensure their accessibility. The metadata standard proposed is the CERIF (Common European Research Information Format).

### **4.8.2 Storage Information**

Research data will be stored at the non-free access repository – Z-Bre4k sharepoint - created and maintained by AIMEN. The research data and documents generated during the project will remain at this repository for the whole project duration, as well as for 5 years after the end of the project.

Finally, after the end of the project, the portal is going to be accommodated with other portals at the same server, so as to minimize the needed costs for its maintenance.

### **4.8.3 Data sharing and dissemination**

Data will be re-used for corrective actions on the deployed strategies and actions will be suggested based on correlations by the automatic decision support mechanism. Research data results will be disseminated according to the Consortium Agreement in the form of conference, articles in a journal, specialist magazine/website outlets or conference proceedings for dissemination purposes.

#### **4.8.3.1 Open Access**

Open Access can be defined as the practice of providing on-line access to scientific information that is free of charge to the reader. In the context of R&D, open access typically focuses on access to 'scientific information' or 'research results', which refers to two main categories:

- Peer-reviewed scientific research articles (primarily published in academic journals).
- Research data.

All patents and all other publications will require prior agreement in respect to the content and the publication media. To this end, each partner should notify the

consortium members about the content and material they wish to publish/disseminate and a 30 days evaluation period will be provided. Every scientific publication will be provided in open access mode, making it available to maximise access and re-use of the findings.

Regarding the research data, only the research data related to the scientific publications will be open; after studying each dataset separately and confirming there are not good reasons to keep it closed. In addition, in some situations, the research data will be anonymised in order to preserve the confidentiality and know-how.

Both scientific information and open research data will be available and published on a public repository. In particular, ZENODO will be used within Z-Bre4k project for this purpose. The data published on ZENODO will then also made available on the OpenAIRE portal that is based on European OA repository infrastructure.

#### **4.8.4 IPR management and security**

As an innovation action close to the market, Z-Bre4k project covers high-TRL technologies and aims at developing marketable solutions. The project consortium includes eleven industrial partners from the private sector, in particular, ATLANTIS, INNOVALIA, INOVA, CORE, CRIT, CDS, PHILIPS (demonstrator), SACMI (demonstrator), GESTAMP (demonstrator), TRIMEK and HOLONIX. Those partners obviously have Intellectual Property Rights on their technologies and data, on which their economic sustainability is at stake. Consequently, the Z-Bre4k consortium will protect that data and crosscheck with the concerned partners before every data publication.

The sharepoint is equipped with authentication mechanisms, so as to handle the identity of the persons/organizations that download them, as well as the purpose and the use of the downloaded dataset.

#### **4.8.5 Data expire date**

Copyright statements of the Z-Bre4k will protect any written material produced during the project. As described in GA, the information supplied by any of the partners and the

data and documents produced during the project will be protected for a period of five years after the project completion unless there are agreements between the partners.

The partners will keep for five years (after the end of the project) the original documents, digital and digitalized documents, records and other supporting documentation in order to prove the proper implementation of the action and the costs they declare as eligible.

## **5 DATA MANAGEMENT RELATED TO PREDICTIVE MAINTENANCE**

The quality and performance data of the Manufacturing enterprises will be considered private and will only be available after granting permission. On the other hand, the research data about modelling procedures, KPI validation, event modelling, inspection and real-time quality control, as well as the system optimization, which will be collected/generated during Z-Bre4k will be distributed freely.

## 6 DATA MANAGEMENT PORTAL

The Data Management Portal or internal sharepoint, a web based portal has been developed within the Z-Bre4k project for the purposes of the management of the research data that will be produced by the project. Regarding the dissemination and exploitation of Z-Bre4k results, the Z-Bre4k website has been created to support these activities: a dedicated section “Public deliverables and dissemination assets” will include the public deliverables, once approved by the project officer, and the scientific papers generated by the project partners within Z-BRE4K context. This website provides up-to-date information about the project. Finally, public data, as aforementioned (deliverables, scientific papers, datasets...), will be published on the open repository ZENODO. Special attention is going to be given on ensuring that the data made publicly available violates neither IPR issues related to the project partners, nor the regulations and good practices around personal data protection.

### 6.1 Functionalities

On the one hand, the sharepoint is implemented through a web based platform which enables its users to easily access and effectively manage the various documents and datasets created throughout the development of the project.

Regarding the user authentication, as well as the respective permissions and access rights, the following three user categories are foreseen:

- **Admin;** the Admin has access to all of the datasets and the functionalities offered by the DMP and is able to determine and adjust the editing/access rights of the registered members and users (open access area). Finally, the Admin is able to access and extract the analytics, concerning the visitors of the portal.
- **Member;** when someone successfully registers to the portal and is given access permission by the Admin, she/he is then considered as a “registered Member”. All the registered members will have access to and be able to manage most of the collected datasets.

The sharepoint will be easily and effectively managed by the members. A variety of graphs, pie charts etc. is going to be employed for helping members to easily understand and elaborate the data. In particular, the architecture of the portal presents special interfaces organized to comply the information.

All tasks and datasets available in the DMP will be accompanied by a short description of the item.

On the other hand, Z-Bre4k website (<https://www.z-bre4k.eu/>) is an open website whose main objective is to disseminate the project purpose, strategies, activities and the outcomes of the research. This communication tool is continuously updated with project progress and dissemination activities/information.

The website has different areas: Project, Partners, News & events, Public Deliverables and dissemination assets, and Contacts. Public deliverables and dissemination assets section will include articles and publications so as to be available for all the visitors.

## 7 CONCLUSIONS

This report includes the Data Management Plan (DMP) and describes the Research Data Information that is being generated during Z-Bre4k project and the challenges and constraints that need to be taken into account for managing it. In addition, it describes the updated procedures and the infrastructure implemented by the project to efficiently manage the produced data. The DMP is identified as starting point for the discussion with the community about the Z-Bre4k data management strategy and reflects the procedures planned by the work packages at the mid-term of the project.

In this updated version, the elaborated questionnaire has been updated by the consortium partners, including the data they are collecting, and generating or they expect to produce and collect during the project. From this information, it has become clear that currently only WP 2, 3, 4 and 6, are planning to generate or collect data that can be classified as relevant information according to the definition of the European Commission. Nonetheless, DMP is not a fixed document and it can be the case that this situation evolves during the lifespan of the project. Thus, the DMP will be again updated and augmented with new datasets and results during project lifetime, submitting the final version in M30.

Regarding storage information, all the documents generated during the project will be stored in the sharepoint which is the document management system of the project. This information, data and documents produced during the project will be protected for a period of five years after the project completion, as it is described in GA.

## 8 GLOSSARY

### **Participant Information Sheet**

The information sheet is an important part of recruiting research participants. It ensures that the potential participants have sufficient information to make an informed decision about whether to take part in your research or not.

(<http://www.kcl.ac.uk/innovation/research/support/ethics/training/infosheet.aspx>)

### **Consent Form**

A form signed by a participant to confirm that he or she agrees to participate in the research and is aware of any risks that might be involved.

### **Metadata**

Metadata is data that describes other data. Meta is a prefix that in most information technology usages means "an underlying definition or description." Metadata summarizes basic information about data, which can make finding and working with particular instances of data easier. (<http://whatis.techtarget.com/definition/metadata>)

Or <http://www.data-archive.ac.uk/media/54776/ukda062-dps-preservationpolicy.pdf>

### **Repository**

A digital repository is a mechanism for managing and storing digital content. Repositories can be subject or institutional in their focus.

(<http://www.rsp.ac.uk/start/before-youstart/what-is-a-repository/>)

## 9 BIBLIOGRAPHY

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