D8.1

DMP (Data Management Plan)

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Abstract:	This deliverable briefly describes the data management plan and policy for exploitation and protection of results. The DMP is based on article 29 of the GA. ADMONT DMP is following Horizon 2020 guidelines version 16 from Dec. 2013
Keywords:	data management plan, scientific and research data, grant agreement, exploitation and protection of results

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- Austrian Ministry for Transport, Innovation and Technology (BMVIT) under the program ICT for future.
- Swedish Governmental Agency for Innovation Systems.

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Executive Summary

The deliverable D8.1 briefly describes the data management plan and policy for exploitation and protection of results of the ADMONT project. The DMP is based on article 29 from GA and article 8.4 from consortium agreement. The ADMONT DMP is following Horizon 2020 guidelines version 16 from Dec. 2013.

ADMONT is multi-KET pilot line project under ECSEL Joint Undertaking 2014-2 “Innovation action”. ADMONT includes prototyping, testing, demonstrating, piloting and system qualification between TRL4 and TRL8. The overall goal of ADMONT is to implement a distributed More-than-Moore pilot line for products and services based on a wide-ranging set of technologies or essential capability modules (ECM) not available within one single manufacturing facility. In order to allow development and industrialization of innovation projects, a virtual facility capable to provide divers process flows as a ‘one-stop-shop’ needs to be carefully specified, planned and implemented. ADMONT is based on results from R&D project and focused on engineering and development work to reach the TRL7/8 close to production.

ADMONT is not generating research data and is only dealing with engineering and limited number of scientific data. The DMP plan includes rules and policy to deal with data for scientific publications, exploitation and protection of results.

The draft V1.0 from our DMP is not the final version and will be updated during project lifespan.

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Chapter 1 “Introduction”

This deliverable briefly describes the data management plan and policy for exploitation and protection of results. The DMP is based on article 29 from GA and article 8 from consortium agreement. ADMONT DMP is following Horizon 2020 guidelines version 16 from Dec. 2013.

Article 29 from our GA described “Dissemination of Results, Open Access and Visibility of Support”. Article 29.1 described “Obligation to dissemination results” and in article 29.2 “Open access to scientific publications”. The article 29.3 “Open access to research data” is not applicable for ADMONT.

Being more specific, it outlines how data will be handled, what methodology and standards will be used, whether and how the data will be exploited or made accessible for verification and re-use and how it will be curated and preserved during and even after the ADMONT project is completed. The DMP can be considered as a checklist for the future, as well as a reference for the resource and budget allocations related to the data management.

However, to explain the reason why a DMP gets elaborated during the lifespan of a research project, the European Commission’s vision is that information already paid for by the public purse should not be paid again each time it is accessed or used. Thus, other European companies should benefit from this already performed research.

To be more specific, “data” refers to information, in particular facts or numbers, collected to be examined and considered and as a basis for reasoning, discussion, or calculation. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recording and images. The focus is on research data that is available in digital form.

The DMP is not a fixed document. It will evolve and gain more precision and substance during the lifespan of the ADMONT project.

Article 8 of the ADMONT Consortium Agreement describes the rules and policy for ownership, rights, transfer and dissemination of results. Article 9 implements access rights for use and exploitation of results, including specific provisions for access rights to software.

In chapter 2, we provide our data management plan (DMP) and policy to ensure open access to data from scientific publications.

In chapter 3, we provide our policy for ownership, rights and dissemination from our Consortium Agreement.

Chapter 2 “Data Management Plan (DMP)”

Regarding to the Grant Agreement article 29.2 we have to ensure open access to data from scientific publications. We are following the guidelines on Data Management in Horizon 2020 Version 16 December 2013 under use from Annex 1: Data Management Plan template”.

The term ‘Data Management’ stands for an extensive strategy targeting data availability to target groups within an organized and structured process converted to practice. Before making data available to the public, the published data needs to be defined, collected, documented and addressed properly.

2.1 Data set reference and name

In our multi-KET pilot line project we generate data along the value chain during our pilot production or demonstrator preparation. Also during material, process and module development, we produce different kind of data or metadata. Normally, the partners deliver to the customer a set of standard data after wafer processing, test or packaging. This data package is defined in the business model along the pilot line. In table 1, a summary of the standard data and data format is defined. This data set covers the normal foundry or subcontracting business.

Quality & Process Data	Data Format
PCM measurement data	csv
Wafer map data	Customer format
AVI map data	Customer format
In-line data	csv
Test data	Customer format
Shipment information	Word, pdf
Packaging information	Word, pdf
Process deviation, findings	Word, pdf

Table 1: Standard Data and Data Format for Customer

Additional to standard data the following data are produced:

- Lab analysis data (electrical, physical, chemical, optical)
- Characterization data (material, devices, modules, systems)
- Reliability data (devices, IP, modules, systems)
- Simulation and modelling data (passive, active and parasitic devices, module and system data)
- Mask and design data
- Field application data
- Product data sheets and application manual
- PDK (Process Design Kit) data

This list will be extended during the project lifespan.

2.2 Data set description

In all modern FABs, a lot of different data types with different data structures need to be collected and processed and are used to control the material flows, to determine process quality and to trigger preventive actions in case of abnormality behavior.

For the virtual pilot line, some data sets are needed to ensure and control next processing steps in the “next” FAB.

Typically data sets are:

- Electrical data from micro or nano technology devices
- Design data from micro or nano technology devices
- Mask data from micro or nano technology devices
- Material analysis data with concentration, composition, distribution, morphology
- Reliability data for lifetime estimation, failure rate calculation, parameter degradation
- Outgoing maps to indicate yield and ink-positions (final maps)
- Technology and device simulation, process simulation, system simulation, mechanical stress simulation, reliability simulation,
- Electrical test data from modules, systems and sub-systems
- Field application reports

This list will be extended during the project lifespan.

2.3 Standards and metadata

For design and mask data in micro and nano technology, the GDSII format is common. PCM test and electrical test data are provided in csv format. All modern lab measurement or analysis tools support the data transfer in international standard formats. Also the data transfer to user or customer specific format is common. In general we are following the international standard to generate and collect data and metadata.

The data exchange in the virtual pilot lines needs to be standardized. Some data sources are already producing industry standards, such as GDSII-Data for design and mask data.

For other data sources a standard data format will be declared in detail. The baselines for this standardization are:

- WIP, PCM test and electrical test data will be exchanged as ASCII-Files.
- Wafer and substrate mapping will be exchanged in SEMI-Standard E142.
- Wafermaps will be exchanged in SEMI-Standard G85-0703.

To support this data formats, the virtual pilot line partners need to implement internal and external format converters and interfaces for data reading and delivery.

An overall decentral data exchange mechanism needs to be implemented to ensure reliable data exchange.

2.4 Data sharing

Basically, the ADMONT consortium agreed to follow the instructions of GA 29.2 for open access to scientific publications. The consortium is aware of the importance of providing access to generated data in order to advance science and maximise the research investments. Data sharing in ADMONT is an important issue within the consortium as well as sharing data with consortium-external interest groups.

The project internal data sharing is regulated by our CA (chapter 3) and realized by our password protected SVN data management system. Every project partner has open access to all project related collected and archived data. By signing the GA and CA all partners agreed and accepted instruction GA 29 for data sharing. Every partner is responsible to guaranty the open access to scientific data.

The project consortium will incorporate interim project results into scientific publications and present it on fairs, workshops and conferences. The level of detail will be defined in correlation with the coordinator. For scientific publication our CA foresees the acceptance of the project partners before publication. Basically, the consortium-internal golden rule for making data available to project external parties is that the publication of the data will not negatively impact the project goals and outcomes.

All project results and deliverables are classified with a dissemination level according to our DOA, differentiating between confidential or public. Confidential project data will only be available for consortium members including the Commission Services, while Public results will be launched on the project website and are downloadable for all stakeholders. As the project website will be kept even after the project lifetime, it can be assured that the data will still be available after project end.

In particular, it must:

(a) As soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

(b) Ensure open access to the deposited publication — via the repository — at the latest:

(i) On publication, if an electronic version is available for free via the publisher, or

(ii) Within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.

(c) Ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:

- the terms “ECSEL”, “European Union (EU)” and “Horizon 2020”;
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.

2.5 Data archiving and preservation

Generally, the partners believe that it won't be necessary to destroy any data. However, it might be the case that some confidential data may need to be restricted. This will be decided on a case by case basis. At this early stage, some partners could not yet identify whether data destroying will be necessary at all, as this also depends on the software and hardware targets that still need to be decided.

On our ADMONT webpage the data will be stored three years longer over project lifespan. After this time the data access is possible about the author, institute or company where the author was working for up to submission his scientific publication. Standard storage time for data is 10 years after generation. Every partner is following his own data management and data security policy.

Along with the project progress it will be agreed what data will be kept and what data will be destroyed. This will be done according to the ADMONT project rules, agreements and discussion within the consortium. So far, the partners have already expressed that data that is relevant for scientific evaluation and publication should certainly be kept.

The data generated will serve as basis for future scientific research work and projects. For the consortium it is clear that foreseeable research uses for the data can be for instance performance comparisons, in ADMONT particularly with future systems and other hardware and software. Furthermore, the data may even define the starting point for new standards and provide benchmarks for research.

Regarding the retention and preservation of the data, ADMONT partners will retain and/or preserve the produced data for several years, three years at least.

As to the location of the storage, the ADMONT partners prefer to hold data in internal repositories and/or servers. Further, they can be hold in marketing repositories. Another option indicated by the partners is the storage in public or institutional websites. Furthermore, it has been suggested to establish a commodity cloud by using internal cloud infrastructure or, depending on the confidentiality, an external platform.

For ADMONT the costs for data storage and archiving will occur, in particular for server provision (infrastructure) and maintenance. Technikon has already foreseen this in the project budget. At a later stage of the project it can be better assessed, if further costs for data storage will occur. These costs will then be covered by the partners with their own resources.

Chapter 3 “Ownership, rights and dissemination of results”

Article 8 in the ADMONT Consortium Agreement describes the rules and policy for ownership, rights, transfer and dissemination of results and article 9 describes access rights for use and exploitation of results, including specific provisions for access rights to software.

Copy from ADMONT Consortium Agreement

Even though IPR issues mainly arise during the project lifetime or even after project end due to the dissemination (scientific and non-scientific publications, conferences etc.) and exploitation (licensing, spin-offs etc.) of project results, the ADMONT consortium considered the handling of IPR right from the very beginning, already during the project planning phase. Therefore a Consortium Agreement (CA) clearly states the background, foreground, and side ground of each partner and defines rules regarding patents, copyrights, (un-) registered designs and other similar or equivalent forms of statutory protection.

Within the ADMONT project most data will be generated within internal processes at partner level through measurement analysis. Close cooperation within the consortium may lead to joint generation of data, which is clearly handled in terms of IPR issues within the CA.

No third party data is reused in the current project phase. In case third-party data will be reused, confidentiality restrictions might apply in specific cases, which will be analyzed per case in detail.

No time lag or restriction for publication of results is planned. Publishable data will be posted and published in due course.

Section 8: Results

For the application of the present article and for clarification purposes regarding this Agreement as such, a third party with a legal link to a beneficiary (e.g. in case of Joint Research Units) is considered as a third party with the related rights and obligations according to the Grant Agreement. It does not have the same rights according to this Consortium Agreement as a Beneficiary who is Party to this Consortium Agreement.

8.1 Ownership of Results

Results are owned by the Party that generates them.

8.2 Joint ownership

Where Results are generated from work carried out jointly by two or more Parties and it **is not** possible to separate such joint invention, design or work for the purpose of applying for, obtaining and/or maintaining the relevant patent protection or any other intellectual property right, the Parties shall have joint ownership of this work. The joint owners shall, within a six (6) month period as from the date of the generation of such Results, establish a written separate joint ownership agreement regarding the allocation of ownership and terms of exercising, protecting, the division of related costs and exploiting such jointly owned Results on a case by case basis. However, until the time a joint ownership agreement has been concluded and as long as such rights are in force, such Results shall be jointly owned in shares according to their share of contribution (such share to be determined by taking into account in particular, but not limited to, the contribution of a joint owner to an inventive step,

the person months or costs spent on the respective work etc.) to the Results by the joint owners concerned.

Unless otherwise agreed:

each of the joint owners shall be entitled to use the jointly owned Results for non-commercial research activities on a royalty-free basis, and without requiring the prior consent of the other joint owner(s), and

each of the joint owners shall be entitled to otherwise Exploit the jointly owned Results and

to grant non-exclusive licenses to third parties (without any right to sub-license), if the other joint owners are given:

At least forty-five (45) calendar days advance notice; and

Fair and Reasonable compensation

The joint owners shall agree on all protection measures and the division of related cost in advance.

8.3 Transfer of Results

8.3.1 Each Party may transfer ownership of its own Results following the procedures of the Grant Agreement Article 30.

8.3.2 It may identify specific third parties it intends to transfer the ownership of its Results to in Attachment (3) to this Consortium Agreement. The other Parties hereby waive their right to prior notice and their right to object to a transfer to listed third parties according to the Grant Agreement Article 30.1.

8.3.3 The transferring Party shall, however, at the time of the transfer, inform the other Parties of such transfer and shall ensure that the rights of the other Parties will not be affected by such transfer.

Any addition to Attachment (3) after signature of this Agreement requires a decision of the Governing Council.

8.3.4 The Parties recognize that in the framework of a merger or an acquisition of an important part of its assets, it may be impossible under applicable EU and national laws on mergers and acquisitions for a Party to give the full 45 calendar days prior notice for the transfer as foreseen in the Grant Agreement.

8.3.5 The obligations above apply only for as long as other Parties still have - or still may request- Access Rights to the Results.

8.4 Dissemination

8.4.1 Dissemination of own Results

8.4.1.1 During the Project and for a period of 1 year after the end of the Project, the dissemination of own Results by one or several Parties including but not restricted to publications and presentations, shall be governed by the procedure of Article 29.1 of the Grant Agreement subject to the following provisions.

Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement in writing to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

8.4.1.2 An objection is justified if

(a) the protection of the objecting Party's Results or Background would be adversely affected

(b) the objecting Party's legitimate academic or commercial interests in relation to the Results or Background would be significantly harmed.

The objection has to include a precise request for necessary modifications.

8.4.1.3 If an objection has been raised the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.

The objecting Party can request a publication delay of not more than 90 calendar days from the time it raises such an objection. After 90 calendar days the publication is permitted, provided that Confidential Information of the objecting Party has been removed from the Publication as indicated by the objecting Party.

8.4.2 Dissemination of another Party's unpublished Results or Background

A Party shall not include in any dissemination activity another Party's Results or Background without obtaining the owning Party's prior written approval, unless they are already published.

8.4.3 Cooperation obligations

The Parties undertake to cooperate to allow the timely submission, examination, publication and defence of any dissertation or thesis for a degree which includes their Results or Background subject to the confidentiality and publication provisions agreed in this Consortium Agreement.

8.4.4 Use of names, logos or trademarks

Nothing in this Consortium Agreement shall be construed as conferring rights to use in advertising, publicity or otherwise the name of the Parties or any of their logos or trademarks without their prior written approval.

Chapter 4 “Summary and conclusion”

This data management plan outlines the handling of data generated within the ADMONT project, during and after the project lifetime. As this document will be kept as a living document and regularly updated by the consortium. The partners put into write their plans and guarded expectations regarding valuable and publishable data. The DMP is based on article 29 from GA and article 8 from consortium agreement. ADMONT DMP is following Horizon 2020 guidelines version 16 from Dec. 2013.

Article 29 from our GA described “Dissemination of Results, Open Access and Visibility of Support”. Article 29.1 described “Obligation to dissemination results” and in article 29.2 “Open access to scientific publications”. The article 29.3 “Open access to research data” is not applicable for ADMONT.

The ADMONT consortium is aware of proper data documentation requirements and will rely on each partners’ competence in appropriate citation etc. The Consortium Agreement (CA) forms the legal basis in dealing with IPR issues and covers clear rules for dissemination or exploitation of project data. Besides the ADMONT public website, which targets a broad interest group, also marketing flyers or the SVN repository will be used as a tool to provide data. With regards to the retention and preservation of the data, ADMONT partners will retain and/or preserve the produced data for several years, three years at least.

The ADMONT consortium is convinced that this data management plan ensures that project data will be provided for further use timely, available and in adequate form, taking into account the IPR restrictions of the project.

List of Abbreviations

CA	*Consortium Agreement*
DMP	*Data Management Plan*
EC	*European Commission*
ECM	*Essential Capability Modules*
GA	*Grant Agreement*
H2020	*Horizon 2020*
IPR	*Intellectual Property Rights*
TRL	*Technology Readiness Level*