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SCORES
Self Consumption Of
Renewable Energy by
hybrid Storage systems

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H2020- EEB - 2017 - 766464 – SCORES

Self Consumption Of Renewable Energy by hybrid Storage systems

D9.3 Data Management Plan

	Name	Signature and date
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Checked by	Anca Anastasopol (TNO)	
Approved by	Coordinator (on behalf of General Assembly)	30.04.18

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1 Background

The SCORES' project aim is to develop and demonstrate in the field a building energy system including new compact hybrid storage technologies that optimizes supply, storage and demand of electricity and heat in residential buildings, increasing self-consumption of local renewable energy in residential buildings at the lowest cost. Combination and optimization of multi-energy generation, storage and consumption of local renewable energy (electricity and heat) brings new sources of flexibility to the grid and gives options for tradability and economic benefits, enabling reliable operation with a positive business case in Europe's building stock. SCORES optimizes self-consumption of renewable energy and defers investments in the energy grid.

This deliverable (D9.3) aims to establish the means for promoting the findings and to enhance and ensure transparency of relevant information within the scope of the Consortium Agreement. The Data Management Plan sets the basis for Dissemination and Exploitation Plans and will be updated accordingly.

This document was compiled by FENIX, whereas other project partners contributed information on expected data to be produced within their tasks and work packages. This document has also been reviewed by the partners within the SCORES program before publication.

2 References

2.1 Applicable Documents

	Document	Reference	Issue
AD-01	SCORES Grant Agreement	No. 766464	
AD-02	SCORES Consortium Agreement	No. 0100308813	

2.2 Reference Documents

	Document	Reference	
RD-01	Guidelines on Data Management in Horizon 2020	link	

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3 Terms, definitions and abbreviated terms

AAC	Advanced Audio Coding
ATE	Automatic Test Equipment
AVI	Audio Video Interleave
BEMS	Building energy management system
CDF	Concurrent Design Facility
CLC	Chemical Looping Combustion
DESCA	Development of a Simplified Consortium Agreement
DHW	Domestic Hot Water
DMP	Data Management Plan
DPO	Data Protection Officer
EAB	Expert Advisory Board
EC	European Commission
EV	Electric Vehicle Battery
GA	Grant Agreement
IPR	Intellectual Property Right
MIDI	Musical Instrument Digital Interface
PCM	Phase Change Material
PDF	Portable Document Format
PM	Project Manager
PV/T	Photovoltaic Thermal
R&D	Research and Development
RP	Report
STDF	Standard Test Data Format
UTI	Uniform Type Identifier
WMA	Windows Media Audio
WMV	Windows Media Video
WP	Work package

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4 Executive summary

This is a deliverable D9.3 Data Management Plan of the SCORES project. It constitutes a public document, delivered in the context of WP9 Dissemination and exploitation of results, Task 9.1 Dissemination and Communication. The objective of Task 9.1 is to ensure relevant Project's information transferability.

This document presents the first release of Data Management Plan in the framework of the SCORES project. The main purpose of this Deliverable is to provide the plan for managing the data generated and collected during the Project. Specifically, the Data Management Plan describes the data management life cycle for all datasets to be collected, processed and/or generated by the project. It covers:

- Identification of the results that should be subject of the SCORES dissemination and exploitation
- Analysis of the main data uses and users
- Exploration of the restrictions related to Intellectual Property Rights in accordance with the Consortium Agreement
- Definition of the data assurance processes that are to be applied during and after the completion of the Project

In addition, the Data Management Plan specifies whether data will be shared/made open and how and what methodology and standards will be applied.

This document is prepared in compliance with the template provided by the Commission in the Annex 1 of the Guidelines on Data Management in Horizon 2020.

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5 Introduction

This document constitutes the first issue of Data Management Plan (DMP) in the EU framework of the SCORES project under Grant Agreement No. 766464. The objective of the DMP is to establish the measures for promoting the findings during the Project's life and detail what data the Project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved. The DMP enhances and ensures relevant Project´s information transferability and takes into account the restrictions established by the Consortium Agreement. In this framework, the DMP sets the basis for both Dissemination Plan and Exploitation Plan. The first version of the DMP is delivered at month 6, later the DMP will be monitored and updated in parallel with the different versions of Dissemination and Exploitation Plans. It is acknowledged that not all data types will be available at the start of the Project, thus whenever important, if any changes occur to the SCORES project due to inclusion of new data sets, changes in consortium policies or external factors, the DMP will be updated in order to reflect the actual data generated and the user requirements as identified by the SCORES consortium participants.

The SCORES project aims to combine and optimize the multi-energy generation, storage and consumption of local renewable energy and grid supply, bringing new sources of flexibility to the grid, and enabling reliable operation with a positive business case in Europe's building stock. SCORES optimizes self-consumption of renewable energy and defers investments in the energy grid.

The overall goal of the SCORES project is to demonstrate in the field the integration, optimization and operation of a building energy system including new compact hybrid storage technologies, that optimizes supply, storage and demand of electricity and heat in residential buildings and that increases self-consumption of local renewable energy in residential buildings at the lowest cost.

SCORES project comprises six technical work packages as follows:

- WP3 Enhancement of energy conversion technology
- WP4 Development of electrical storage system using second-life Li-ion battery
- WP5 Optimization of heat storage technology based on Chemical Looping Combustion (CLC)
- WP6 Energy management system and (electrical) system integration
- WP7 Demonstration of the integrated energy system including the innovative technologies in an existing multifamily building connected to a district heating grid
- WP8 Demonstration of the integrated energy system including the innovative technologies in an existing multifamily building with electric space heating

Three non-technical work packages ensure the facilitation of the technical work and coordination of all the work packages, dissemination and communication of the project results. These work packages consist of the following:

- WP1 Project Management

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- WP2 Modelling and evaluation of the system added value and business opportunities
- WP9 Dissemination and exploitation of results

This document has been prepared to describe the data management life cycle for all data sets that will be collected, processed or generated by the SCORES project. It is a document outlining how research data will be handled during the Project, and after the Project is completed. It describes what data will be collected, processed or generated and what methodologies and standards are to be applied. It also defines if and how this data will be shared and/or made open, and how it will be curated and preserved.

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6 Open Access

Open access can be defined as the practice of providing online access to scientific information that is free of charge to the reader and that is reusable. In the context of R&D, open access typically focuses on access to "scientific information", which refers to two main categories:

- Peer-reviewed scientific research articles (published in academic journals), or
- Scientific research data (data underlying publications and/or raw data).

It is important to note that:

- Open access publications go through the same peer review process as non-open access publications.
- As an open access requirement comes after a decision to publish, it is not an obligation to publish; it is up to researchers whether they want to publish some results or not.
- As the decision on whether to commercially exploit results (e.g. through patents or otherwise) is made before the decision to publish (open access or not), open access does not interfere with the commercial exploitation of research results. [1]

Benefits of open access:

- Unprecedented possibilities for the dissemination and exchange of information due to the advent of the internet and electronic publishing.
- Wider access to scientific publications and data including creation and dissemination of knowledge, acceleration of innovation, foster collaboration and reduction of the effort duplication, involvement of citizens and society, contribution to returns on investment in R&D etc.
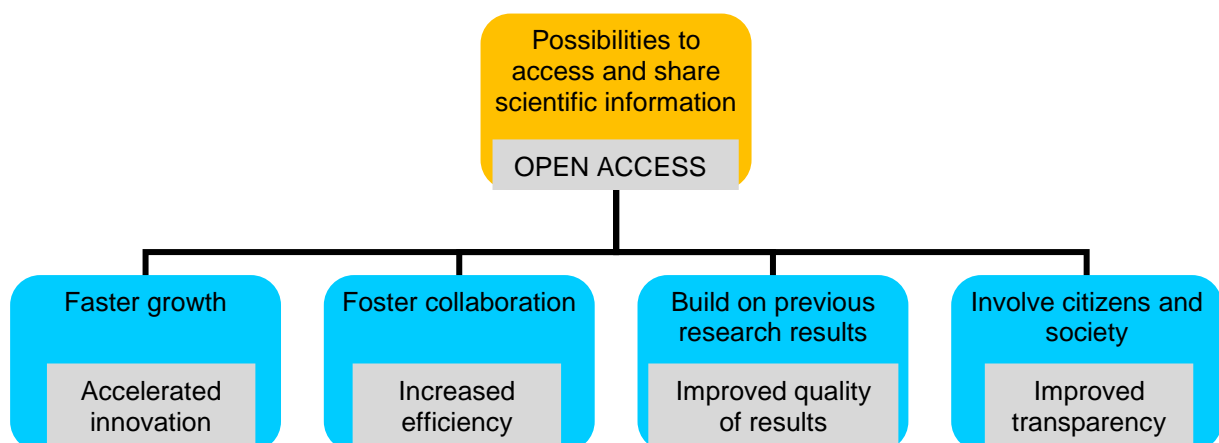
Figure 1: Open Access benefits

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[1] *European Commission background note on open access to publications and data in Horizon 2020*

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The EC capitalizes on open access and open science as it lowers barriers to accessing publicly-funded research. This increases research impact, the free-flow of ideas and facilitates a knowledge-driven society at the same time underpinning the EU Digital Agenda (OpenAIRE Guide for Research Administrators - EC funded projects). Open access policy of European Commission is not a goal in itself, but an element in promotion of affordable and easy accessible scientific information for the scientific community itself, but also for innovative small businesses.

6.1 Open Access to peer-reviewed scientific publications

Open access to scientific peer-reviewed publications (also known as Open Access Mandate) has been anchored as an underlying principle in the Horizon 2020 Regulation and the Rules of Participation and is consequently implemented through the relevant provisions in the Grant Agreement. Non-compliance can lead, amongst other measures, to a grant reduction.

More specifically, Article 29 of the SCORES GA: "Dissemination of results, Open Access, Visibility of EU Funding" establishes the obligation to ensure open access to all peer-reviewed articles relating to the SCORES project.

Article 29.2 SCORES GA: Open access to scientific publications

"Each beneficiary must ensure open access (free of charge online access for any user) to all peer reviewed scientific publications relating to its results.

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 "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;
- a persistent identifier."

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6.1.1 Green Open Access

The green open access is also called self-archiving and means that the published article or the final peer-reviewed manuscript is archived by the researcher in an online repository before, after or alongside its publication. Access to this article is often delayed (embargo period). Publishers recoup their investment by selling subscriptions and charging pay-per-download/view fees during this period during an exclusivity period. This model is promoted alongside the "Gold" route by the open access community of researchers and librarians, and is often preferred.

6.1.2 Gold Open Access

The gold open access is also called open access publishing, or author pays publishing, and means that a publication is immediately provided in open access mode by the scientific publisher. Associate costs are shifted from readers to the university or research institute to which the researcher is affiliated, or to the funding agency supporting the research. This model is usually the one promoted by the community of well-established scientific publishers in the business.

6.2 Open Access to research data

"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. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images. The focus is on research data that is available in digital form.

Article 29.3 SCORES GA: Open access to research data

"Regarding the digital research data generated in the action ('data'), the beneficiaries must:

(a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

  (i) the data, including associated metadata, needed to validate the results presented in scientific publications as soon as possible;
  (ii) other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan' (see Annex 1 of the SCORES GA);

(b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

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The beneficiaries do not have to ensure open access to specific parts of their research data if the achievement of the action's main objective, as described in Annex 1, would be jeopardized by making those specific parts of the research data openly accessible. In this case, the data management plan must contain the reasons for not giving access."

6.3 Dissemination & Communication and Open Access

For the implementation of the SCORES project, there is a complete dissemination and communication set of activities scheduled, with the objectives of raising awareness in the research community, industry and wide public (e-newsletters, e-brochures, posters or events, are foreseen for the dissemination of the SCORES to key groups potentially related to the project results' exploitation). Likewise, the SCORES website, webinars, press releases or videos, for instance, will be developed for a communication to a wider audience. Details about all those dissemination and communication elements are provided in the deliverable D9.2 Communication and Dissemination Plan. The Data Management Plan and the actions derived are part of the overall SCORES dissemination and communication strategy, which is included in the above mentioned D9.2.

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7 Objectives of Data Management Plan

The purpose of the SCORES Data Management Plan is to provide a management assurance framework and processes that fulfil the data management policy that will be used by the SCORES project partners regarding all the dataset types that will be generated by the SCORES project. The aim of the DMP is to control and ensure quality of project activities, and to manage the material/data generated within the SCORES project effectively and efficiently. It also describes how data will be collected, processed, stored and managed holistically from the perspective of external accessibility and long-term archiving.

The content of the DMP is complementary to other official documents that define obligations under the Grant Agreement and associated annexes, and shall be considered a living document and as such will be the subject of periodic updating as necessary throughout the lifespan of the Project.
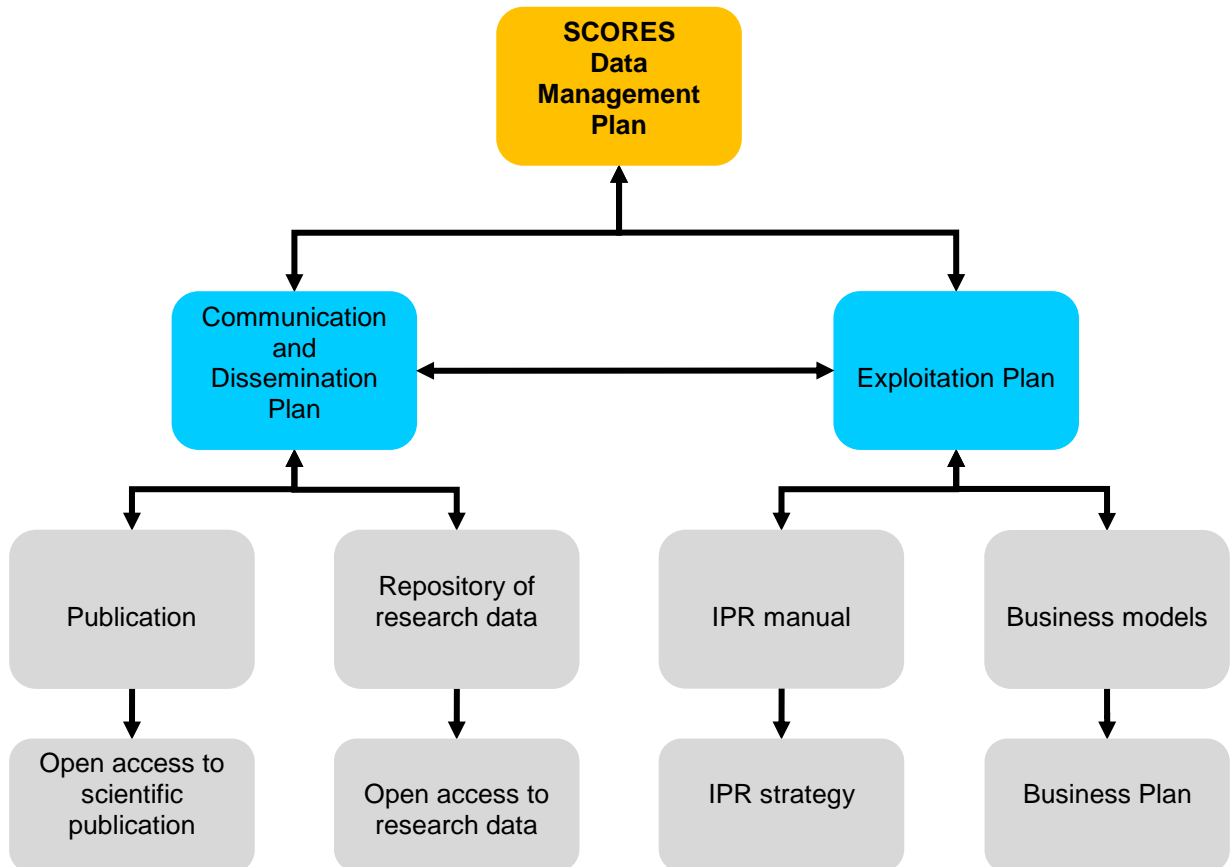

Figure 2: SCORES Data Management Plan overview

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8 SCORES Project Website and Sharepoint - storage and access

8.1 SCORES Project Website

The SCORES project website is used for storing only public documents related to the Project and dissemination. The website has been set up under the address www.scores-project.eu and has been launched in January 2018. The SCORES website is meant to be functioning for the whole Project duration and minimum 2 years after the Project end. The website presents the first step in the partial objective of developing and deploying an awareness and dissemination plan.
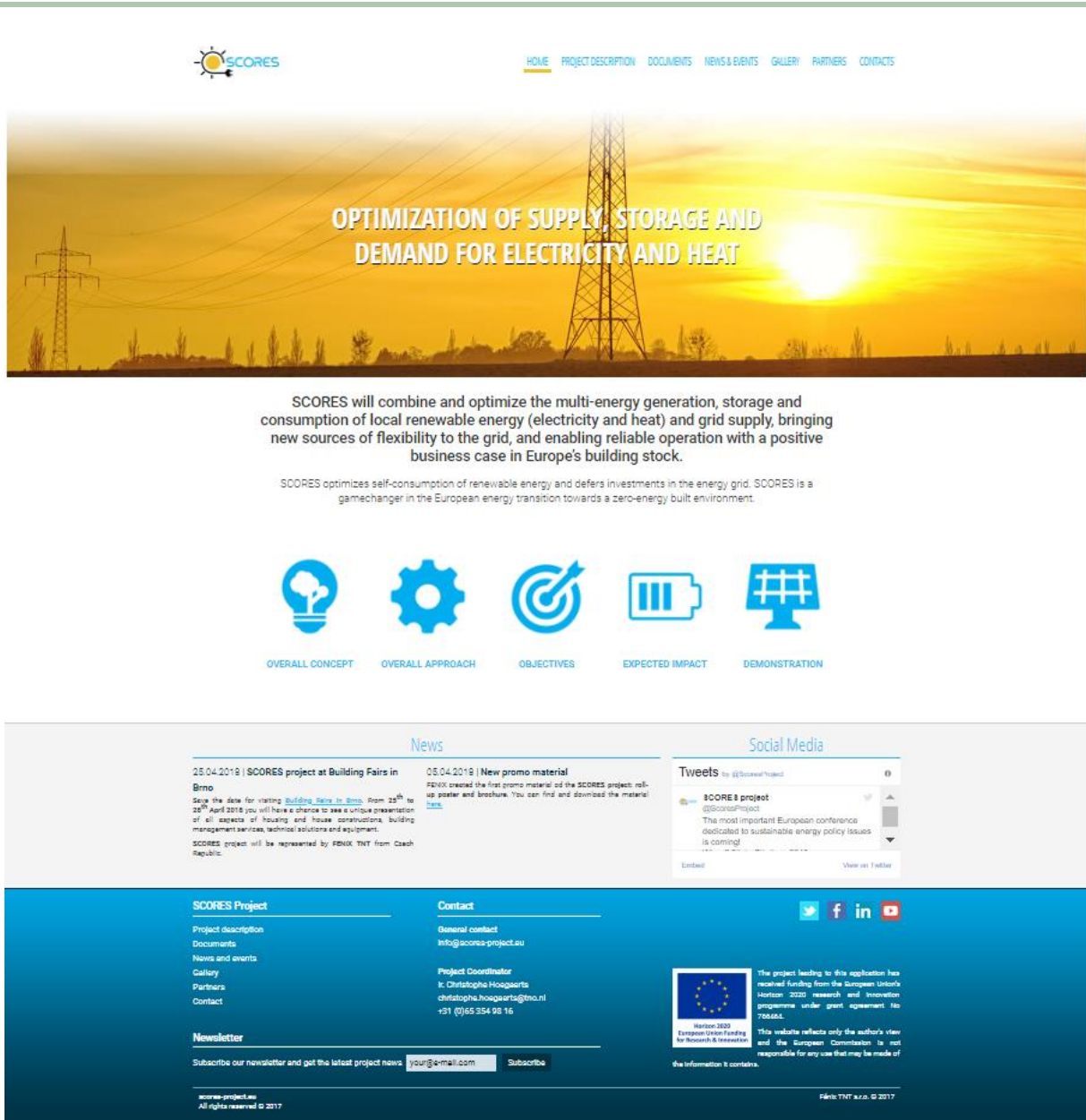
Design of the website has been done by dissemination leader FENIX that is also in charge of website maintenance and regular update. As the Project website is not intended to be static, the news and events as well as the rest of the content will be once a month updated and managed throughout the duration of the Project based on the partner's inputs and Project evolution. Due to the expected impact on different audience all around the world, it was designed to provide complete and technical information in a way that is accessible by a wide range of stakeholders. The website is available in English, but translation to partners´ languages is considered as well in order to break the language barrier and enable wide and effective communication of Project results at national level.

The site itself has only the public section, which is accessible to everyone and contains public deliverables, promo materials, presentations, newsletters, publications, papers and others.

To ensure the safety of the data, the partners will use their available local file servers to periodically create backups of the relevant materials. The SCORES project website itself already has its own backup procedures.

The Project Coordinator (TNO) of the SCORES along with the Dissemination and Exploitation Manager (FENIX) will be in charge for data management and all the relevant issues.

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Figure 3: SCORES project website

8.2 SCORES Project Sharepoint

The SCORES Sharepoint site is the baseline for document sharing within the framework of the SCORES project. Sharepoint is used for document sharing, document configuration control, action item handling and contact information list. The Project Coordinator is the administrator of the SCORES Sharepoint site. The administrator (TNO) is responsible for the Sharepoint maintenance and for adding or removing users. The users permissions are also handled by the administrator (TNO). In order to ensure the confidentiality of documents in accordance with the Grant and Consortium Agreement a Project Security Instruction has been established.

The Sharepoint site contains picture library and several document libraries. Document libraries consist of:

- Management, Contracts, Finances
- Actions, Documents, User Instructions, Contacts
- Templates and Dissemination material
- Dropbox
- Archive
- Papers
- Design Folder

Documents with a formal status (e.g. deliverable, important plans, procedures) have to be reviewed and approved by an expert colleague and General Assembly. The final status of these documents can become "Authorized" and documents are formalized by signature on the cover page. After the authorization of the document by the General Assembly, document is moved to the Archive by the Sharepoint administrator (TNO).

Grant Agreement and Consortium Agreement set out rules for data handling and management. Distribution within a file share environment shall be limited to active participants from the consortium partners on a need-to-know basis. Confidential information shared through the SCORES Sharepoint site may not be distributed outside the consortium. All Project partners shall take precautions to securely store data connected to the Project when downloading and locally storing files from the Sharepoint site. For this purpose all TNO laptops are storage encrypted by Bitlocker and the similar measures shall be taken by other Project partners.

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9 Data management plan implementation

The organisational structure of the SCORES project matches the complexity of the Project and is in accordance with the recommended management structure of the DESCA model Consortium Agreement. The organisational structure of the Project is shown in the figure below.
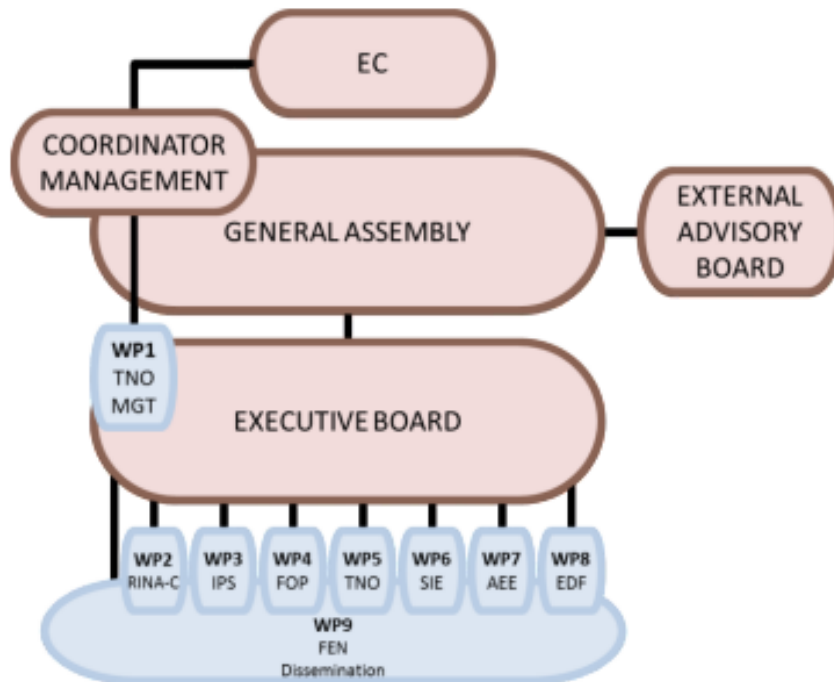

Figure 4: Management and organizational structure of the SCORES project

The general and technical management of the Project is handled by the **Coordinator** of the Project (TNO). Experts within the TNO organisation provide the Project Manager (PM) at TNO with administrative, financial and legal support. TNO has a vast experience in the administration and management of national and international collaborative projects.

Responsibilities of the Coordinator include:
- The overall management of the Project, including administrative tasks and all contacts with the EC and the Project Officer
- Coordinating all technical activities, including progress reporting,
- Organising and chairing the meetings of the General Assembly and Executive Board managing bodies
- Assisting in coordination of the dissemination and exploitation activities
- Representing the Project in public exposure and media contacts

The R&D work in the Project is divided in six technical work packages and three non-technical work packages. Each work package is managed by **Work Package Leader** (WP

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Leader). WP Leaders are responsible for managing their work package as a self-contained entity.

Tasks and responsibilities of the WP Leaders include, among others, following:

- Coordination of the technical work in the WPs, including contribution to reporting
- Assessment of the WP progress to ensure the output performance, costs and timeline are met
- Identification of IPR issues and opportunities
- Organisation of the WP meetings
- Contribution to the dissemination activities
- Initiation of all actions necessary for reaching a solution or decision in consultation with the researchers involved and the PMs

In the case of technical problems at WP level, the WP Leader should be notified as soon as possible.

In addition, each WP is further subdivided into its large components tasks, which are allocated to a **Task Leader** responsible for their coordination.

In the organisation structure, two management bodies are identified:

- **General Assembly (GA):** consists of one representative of each partner, chaired by the representative of the Coordinator. The task of the GA is to supervise the Project and to take decisions in major issues that may affect the wide implementation and strategy of the entire Project like changes of work plan, change of Project Manager or WP Leader, budget relocations, IPR issues, entrance/leave of partners and other non-technical matters of general importance.
- **Executive Board (EB):** consists of all WP Leaders, chaired by the representative of the Coordinator. The EB monitors the technical progress, approves progress reports and deliverables, assesses milestones, deals with technical problems that concern two or more WPs, prepares issues that should be decided by the General Assembly and coordinates meetings and conference visits.

The GA is supported by the **Expert Advisory Board (EAB)** consisting of the number of external experts that will be selected on the basis of their profound and long-lasting expertise in the field of research, innovation and industrialisation.

Partners of the SCORES project demonstrate relevant management capabilities necessary to support and provide major contribution to all the activities envisaged in the Project work. All partners and their roles in the SCORES project are listed in the following table.

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Table 1: SCORES partners and their role in the project

#	Partner short name	Partner legal name	Partner role in the SCORES project
1.	TNO	Nederlandse organisatie voor Toegepast Natuurwetenschappelijk onderzoek	Project Coordinator, contributing to optimization and further development of the CLC thermal energy storage technology, definition of controls and algorithms of the hybrid system and system engineering of the demo cases.
2.	AEE	AEE – Institute for sustainable technologies (AEE INTEC)	Leader of demonstration of the SCORES system in Northern Europe, contributing to the definition, design, enhancement and validation of the heat battery subsystem and its components, the definition, design and implementation of the overall SCORES system and performing the system simulations of the SCORES system.
3.	EDF	Electricité de France SA	Leader of demonstration of the integrated energy system including the innovative technologies in an existing multifamily building with electric space heating situated in Southern Europe. Responsible for technical, economical and environmental evaluation of the system. Involvement in battery testing, BEMS development, self-consumption of PV in buildings.
4.	RINA-C	RINA Consulting S.p.A.	Leader of Modelling and evaluation of the system added value and business opportunities, being specifically responsible for the preparation of the business models, technology roadmap for the future upscaling of the system as well as for the definition of the standardization measure.
5.	FENIX	FENIX TNT s.r.o.	Dissemination and exploitation leader, development of business modelling and business plans, IPR management, market assessment, data management.
6.	KMG	König Metall GmbH & Co. KG	Responsible for the building of the CLC storage subsystem, working on its technical and economical manufacturing.
7.	IPS	Instituto Politécnico de Setúbal	Responsible for the enhancement of energy conversion technology with the focus on benchmarking different existing PCMs and selection of the appropriate one, CFD simulation to optimize the PCM integration with the other system components and optimisation of the DHW subsystem with

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			PV/T collectors and coupling with the heat battery.
8.	**FOP**	Forsee Power	Responsible for selection of the EV battery source and design and building of 2 battery cabinets with a new battery controller for the 2 demonstrators
9.	**HEL**	Heliopac SAS	Leader of the installation, commissioning and decommissioning of the northern and southern Europe demo sites. Responsible for the enhancement of the coupling of long term storage with domestic hot water produced by the combination of water to water heat pumps and PV/T collectors for the southern demo site.
10.	**CAM**	Campa	Responsible for the development of air heat pumps with PCM storage energy system for space heating and Electro-Thermal storage units for ambient air comfort development.
11.	**SIE**	Siemens Nederland N.V.	Leader of the designing, engineering and installation of an integrated Building Energy Management System that will optimize the self-consumption, self-generation and the flexibility of the building by monitoring and controlling the various developed energy related technologies and by optimizing the balance between supply and demand of electricity and heat. Involvement in the engineering and production of the convertor cabinets.
12.	**SAL**	Salzburg AG	Contributing to set up of the system requirements for the demonstration case by giving input w.r.t the demo building and the district heating grid connection, performance of the system integration, installation and commissioning, troubleshoot during integration and installation and conduction of the decommissioning process for the demo system.

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10 Research data

"Research data" refers to information, in particular facts or numbers, collected to be examined and considered 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 recordings and images. The focus is on research data that is available in digital form.

As indicated in the Guidelines on Data Management in Horizon 2020 (European Commission, Research & Innovation, October 2015), scientific research data should be easily:

- DISCOVERABLE
  The data and associated software produced and/or used in the project should be discoverable (and readily located), identifiable by means of a standard identification mechanism (e.g. Digital Object Identifier).

- ACCESSIBLE
  Information about the modalities, scope, licenses (e.g. licencing framework for research and education, embargo periods, commercial exploitation, etc.) in which the data and associated software produced and/or used in the project is accessible should be provided.

- ASSESSABLE and INTELLIGIBLE
  The data and associated software produced and/or used in the project should be easily assessable by and intelligible to third parties in contexts such as scientific scrutiny and peer review (e.g. the minimal datasets are handled together with scientific papers for the purpose of peer review, data is provided in a way that judgments can be made about their reliability and the competence of those who created them).

- USEABLE beyond the original purpose for which it was collected
  The data and associated software produced and/or used in the project should be useable by third parties even long time after the collection of the data (e.g. the data is safely stored in certified repositories for long term preservation and curation; it is stored together with the minimum software, metadata and documentation to make it useful; the data is useful for the wider public needs and usable for the likely purposes of non-specialists).

- INTEROPERABLE to specific quality standards
  The data and associated software(s) produced and/or used in the project should be interoperable allowing data exchange between researchers, institutions, organisations, countries, etc.

Some examples of research data include:
- Documents (text, Word), spreadsheets
- Questionnaires, transcripts, codebooks
- Laboratory notebooks, field notebooks, diaries

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- Audiotapes, videotapes
- Photographs, films
- Test responses, slides, artefacts, specimens, samples
- Collection of digital objects acquired and generated during the process of research
- Database contents (video, audio, text, images)
- Models, algorithms, scripts
- Contents of an application (input, output, logfiles for analysis software, simulation software, schemas)
- Methodologies and workflows
- Standard operating procedures and protocols.

In addition to the other records to manage, some kinds of data may not be sharable due to the nature of the records themselves, or to ethical and privacy concerns (e.g. preliminary analyses, drafts of scientific papers, plans for future research, peer reviews, communication with partners, etc.). Research data also do not include trade secrets, commercial information, materials necessary to be held confidential by researcher until they are published, or information that could invade personal privacy. Research records that may also be important to manage during and beyond the project are: correspondence, project files, technical reports, research reports, etc.

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11 Data sets of the SCORES project

Projects under Horizon 2020 are required to deposit the research data - the data, including associated metadata, needed to validate the results presented in scientific publications as soon as possible; and other data, including associated metadata, as specified and within the deadlines laid down in a data management plan.

At the same time, projects should provide information (via the chosen repository) about tools and instruments at the disposal of the beneficiaries and necessary for validating the results, for instance specialised software(s) or software code(s), algorithms, analysis protocols, etc. Where possible, they should provide the tools and instruments themselves.

The types of data to be included within the scope of the SCORES Data Management Plan shall as a minimum cover the types of data that is considered complementary to material already contained within declared Project Deliverables. In order to collect the information generated during the Project, the template for data collection will be circulated periodically every 12 months. The scope of this template is to detail the research results that will be developed during the SCORES project detailing the kind of results and how it will be managed. The responsibility to define and describe all non-generic data sets specific to an individual work package is with the WP leader.

Data Set Reference and Name

Identifier for the data set to be produced. All data sets within this DMP have been given a unique field identifier and are listed in the table 4 (List of the SCORES project data sets and sharing strategy).

Data Set Description

A data set is defined as a structured collection of data in a declared format. Most commonly a data set corresponds to the contents of a single database table, or a single statistical data matrix, where every column of the table represents a particular variable, and each row corresponds to a given member of the data set in question. The data set may comprise data for one or more fields. For the purposes of this DMP data sets have been defined by generic data types that are considered applicable to the SCORES project. For each data set, the characteristics of the data set have been captured in a tabular format as enclosed in table 4 (List of the SCORES project data sets and sharing strategy).

Standards & Metadata

Metadata is defined as "data about data". It refers to structured information that describes, explains, locates, and facilitates the means to make it easier to retrieve, use or manage an information resource.

Metadata can be categorised in three types:

- Descriptive metadata describes an information resource for identification and retrieval through elements such as title, author, and abstract.

- Structural metadata documents relationships within and among objects through elements such as links to other components (e.g., how pages are put together to form chapters).
- Administrative metadata manages information resources through elements such as version number, archiving date, and other technical information for the purposes of file management, rights management and preservation.

There are a large number of metadata standards which address the needs of particular user communities.

Data Sharing

During the period, when the Project is live, the sharing of data shall be defined by the configuration rules defined in the access profiles for the project participants. Each individual project data set item shall be allocated a character "dissemination classification" (i.e. public, or confidential) for the purposes of defining the data sharing restrictions. The classification shall be an expansion of the system of confidentiality applied to deliverables reports provided under the SCORES Grant Agreement.

The above levels are linked to the "Dissemination Level" specified for all SCORES deliverables as follows:

- PU Public
- CO Confidential, only for members of the consortium (including the Commission Services)
- EU-RES Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)
- EU-CON Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)
- EU-SEC Classified Information: SECRET UE (Commission Decision 2005/444/EC)

All material designated with a PU dissemination level is deemed uncontrolled. In case the dataset cannot be shared, the reasons for this should be mentioned (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, or security-related).

Data will be shared when the related deliverable or paper has been made available at an open access repository. The expectation is that data related to a publication will be openly shared. However, to allow the exploitation of any opportunities arising from the raw data and tools, data sharing will proceed only if all co-authors of the related publication agree. The Lead author is responsible for getting approvals and then with FENIX assistance sharing the data and metadata on Zenodo (www.zenodo.org), a popular repository for research data. The Lead Author will also create an entry on OpenAIRE (www.openaire.eu) in order to link the publication to the data. A link to the OpenAIRE entry will then be submitted to the SCORES Website Administrator (FENIX) by the Lead Author.
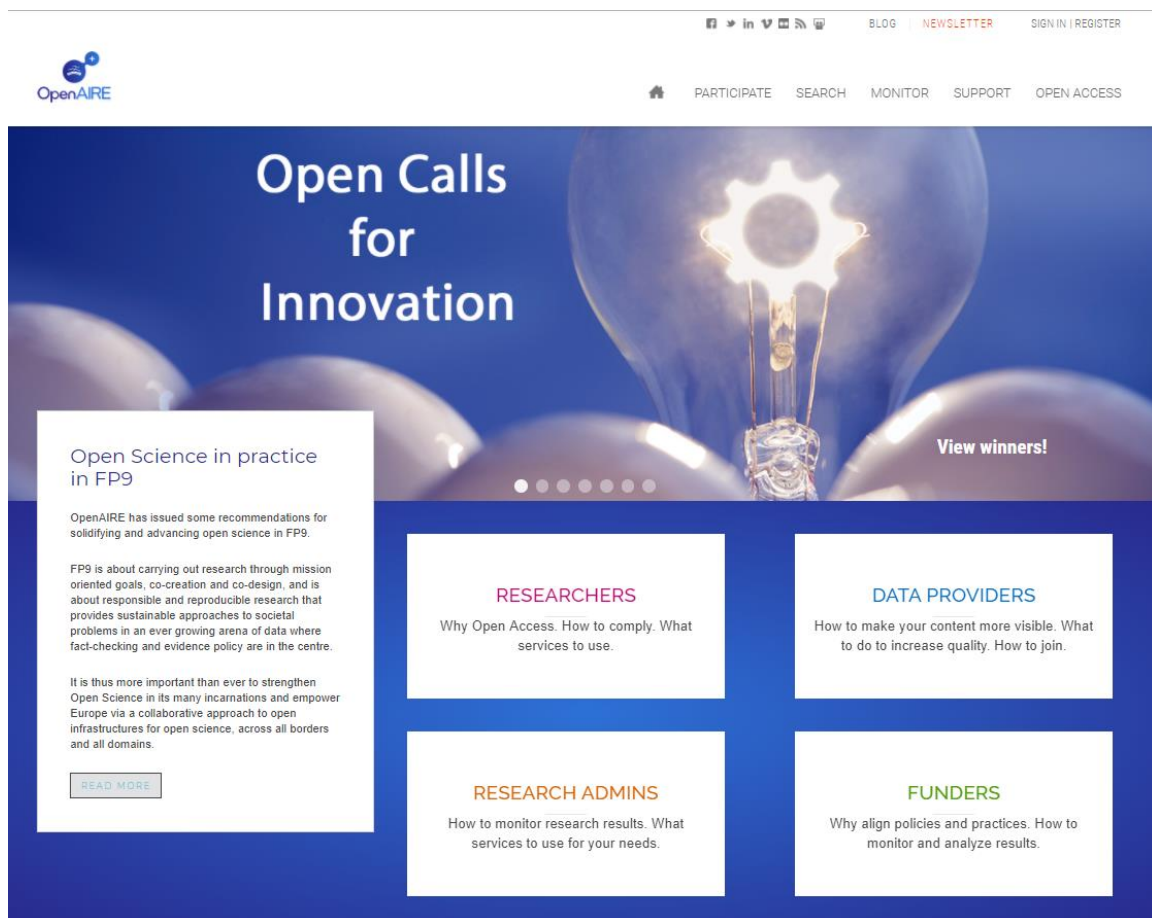
OpenAIRE is an EC/funded initiative designated to promote the open access policies of the EC and help researchers, research officers and project coordinators comply with them. OpenAIRE implements the Horizon 2020 Open Access Mandate for publications and its

Open Research Data Pilot and may be used to reference both the publication and the data. Each EC project has its own page on OpenAIRE, featuring project information, related project publications and data sets, and a statistics section.

In case of any questions regarding the Open Access policy of the EC the representatives of the National Open Access Desk for OpenAIRE in the Netherlands should be contacted, i.e. Just de Leeuwe (TU/Delft; email: J.deLeeuwe@tudelft.nl) and Elly Dijk (Data Archiving and Networked Services – DANS; email: elly.dijk@dans.knaw.nl).

Figure 5. OpenAIRE website

Data archiving and preservation

Both Zenodo and OpenAIRE are purpose-built services that aim to provide archiving and preservation of long-tail research data. In addition, the SCORES website, linking back to OpenAIRE, is expected to be available for at least 2 years after the end of the Project. At the formal Project closure all the data material that has been collated or generated within the Project and classified for archiving shall be copied and transferred to a digital archive (Project Coordinator responsibility).

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The document structure and type definition will be preserved as defined in the document breakdown structure and work package groupings specified. At the time of document creation, the document will be designated as a candidate data item for future archiving. This process is performed by the use of codification within the file naming convention (see Section 15). The process of archiving will be based on a data extract performed within 12 weeks of the formal closure of the SCORES project.

The archiving process shall create unique file identifiers by the concatenation of "metadata" parameters for each data type. The metadata index structure shall be formatted in the metadata order. This index file shall be used as an inventory record of the extracted files, and shall be validated by the associated WP leader.

Figure 6. ZENODO repository

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12 Technical requirements of data sets

The applicable data sets are restricted to the following data types for the purposes of archiving. The technical characteristics of each data set are described in the following sections. The copy rights with respect to all data types shall be subject to IPR clauses in the Grant Agreement, but shall be considered to be royalty free. The use of file compression utilities, such as "WinZip" is prohibited. No data files shall be encrypted.

12.1 Engineering CAD drawings

The .dwg file format is one of the most commonly used design data formats, found in nearly every design environment. It signifies compatibility with AutoCAD technology. Autodesk created .dwg in 1982 with the launch of its first version of AutoCAD software. It contains all the pieces of information a user enters, such as: Designs, Geometric data, Maps, Photos.

12.2 Static graphical images

Graphical images shall be defined as any digital image irrespective of the capture source or subject matter. Images should be composed such to contain only objects that are directly related to SCORES activity and do not breach IPR of any third parties.

Image files are composed of digital data and can be of two primary formats of "raster" or "vector". It is necessary to represent data in the rastered state for use on a computer display or for printing. Once rasterized, an image becomes a grid of pixels, each of which has a number of bits to designate its colour equal to the colour depth of the device displaying it. The SCORES project shall only use raster based image files. The allowable static image file formats are JPEG and PNG.

There is normally a direct positive correlation between image file size and the number of pixels in an image, the colour depth, or bits per pixel used in the image. Compression algorithms can create an approximate representation of the original image in a smaller number of bytes that can be expanded back to its uncompressed form with a corresponding decompression algorithm. The use of compression tools shall not be used unless absolutely necessary.

12.3 Animated graphical images

Graphic animation is a variation of stop motion and possibly more conceptually associated with traditional flat cell animation and paper drawing animation, but still technically qualifying as stop motion consisting of the animation of photographs (in whole or in parts) and other non-drawn flat visual graphic material. The allowable animated graphical image file formats are AVI, MPEG, MP4, and MOV. The WP leader shall determine the most suitable choice of format based on equipment availability and any other factors. This is mainly valid for the SCORES project promo video, which is expected to contain animated graphical images, infographics and on-site interviews.

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Table 2: Video formats

Format	File	Description
MPEG	.mpg .mpeg	MPEG. Developed by the Moving Pictures Expert Group. The first popular video format on the web. Used to be supported by all browsers, but it is not supported in HTML5 (See MP4).
AVI	.avi	AVI (Audio Video Interleave). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers.
WMV	.wmv	WMV (Windows Media Video). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers.
QuickTime	.mov	QuickTime. Developed by Apple. Commonly used in video cameras and TV hardware. Plays well on Apple computers, but not in web browsers. (See MP4)
RealVideo	.rm .ram	RealVideo. Developed by Real Media to allow video streaming with low bandwidths. It is still used for online video and Internet TV, but does not play in web browsers.
Flash	.swf .flv	Flash. Developed by Macromedia. Often requires an extra component (plug-in) to play in web browsers.
Ogg	.ogg	Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5.
WebM	.webm	WebM. Developed by the web giants, Mozilla, Opera, Adobe, and Google. Supported by HTML5.
MPEG-4 or MP4	.mp4	MP4. Developed by the Moving Pictures Expert Group. Based on QuickTime. Commonly used in newer video cameras and TV hardware. Supported by all HTML5 browsers. Recommended by YouTube.

12.4 Audio data

An audio file format is a file format for storing digital audio data on a computer system. The bit layout of the audio data (excluding metadata) is called the audio coding format and can be uncompressed, or compressed to reduce the file size, often using lossy compression. The data can be a raw bitstream in an audio coding format, but it is usually embedded in a container format or an audio data format with defined storage layer. The allowable animated audio file formats is MP3 or MP4. This is mainly valid for the SCORES project promo video, which is expected to contain interviews with key partners, voice over and music.

Table 3: Audio formats

Format	File	Description
MIDI	.midi .mid	MIDI (Musical Instrument Digital Interface). Main format for all electronic music devices like synthesizers and PC sound cards. MIDI files do not contain sound, but digital notes that can be played by electronics. Plays well on all computers and music hardware, but not

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		in web browsers.
RealAudio	.rm .ram	RealAudio. Developed by Real Media to allow streaming of audio with low bandwidths. Does not play in web browsers.
WMA	.wma	WMA (Windows Media Audio). Developed by Microsoft. Commonly used in music players. Plays well on Windows computers, but not in web browsers.
AAC	.aac	AAC (Advanced Audio Coding). Developed by Apple as the default format for iTunes. Plays well on Apple computers, but not in web browsers.
WAV	.wav	WAV. Developed by IBM and Microsoft. Plays well on Windows, Macintosh, and Linux operating systems. Supported by HTML5.
Ogg	.ogg	Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML5.
MP3	.mp3	MP3 files are actually the sound part of MPEG files. MP3 is the most popular format for music players. Combines good compression (small files) with high quality. Supported by all browsers.
MPEG-4 or MP4	.mp4	MP4. Developed by the Moving Pictures Expert Group. Based on QuickTime. Commonly used in newer video cameras and TV hardware. Supported by all HTML5 browsers. Recommended by YouTube.

12.5 Textual data

A text file is structured as a sequence of lines of electronic text. These text files shall not contain any control characters including end-of-file marker. In principle, the least complicated form of textual file format shall be used as the first choice.

On Microsoft Windows operating systems, a file is regarded as a text file if the suffix of the name of the file is "txt". However, many other suffixes are used for text files with specific purposes. For example, source code for computer programs is usually kept in text files that have file name suffixes indicating the programming language in which the source is written. Most Windows text files use "ANSI", "OEM", "Unicode" or "UTF-8" encoding.

Prior to the advent of Mac OS X, the classic Mac OS system regarded the content of a file to be a text file when its resource fork indicated that the type of the file was "TEXT". Lines of Macintosh text files are terminated with CR characters.

Being certified Unix, macOS uses POSIX format for text files. Uniform Type Identifier (UTI) used for text files in macOS is "public.plain-text".

12.6 Numeric data

Numerical Data is information that often represents a measured physical parameter. It shall always be captured in number form. Other types of data can appear to be in number form i.e. telephone number, however this should not be confused with true numerical data that can be processed using mathematical operators.

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12.7 Process and test data

Standard Test Data Format (STDF) is a proprietary file format originating within the semiconductor industry for test information, but it is now a Standard widely used throughout many industries. It is a commonly used format produced for/by automatic test equipment (ATE). STDF is a binary format, but can be converted either to an ASCII format known as ATDF or to a tab delimited text file. Software tools exist for processing STDF generated files and performing statistical analysis on a population of tested devices. SCORES innovation development shall make use of this file type for system testing.

12.8 Adobe Systems

Portable Document Format (PDF) is a file format developed by Adobe Systems for representing documents in a manner that is independent of the original application software, hardware, and operating system used to create those documents. A PDF file can describe documents containing any combination of text, graphics, and images in a device independent and resolution independent format. These documents can be one page or thousands of pages, very simple or extremely complex with a rich use of fonts, graphics, colour, and images. PDF is an open standard, and anyone may write applications that can read or write PDFs royalty-free. PDF files are especially useful for documents such as magazine articles, product brochures, or flyers in which you want to preserve the original graphic appearance online.

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13 GDPR compliance

At every stage, the SCORES project management and Project Consortium will ensure that the Data Management Plan is in line with the norms of the EU and Commission [as expressed in the General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679)] and will promote best practice in Data Management. The GDPR comes into force on 25 May 2018.

The responsibility of protection and use of personal data[2] is on the Project partner collecting data. The questionnaire answers shall be anonymized in as early stage of the process, and data making it possible to connect the answers to individual persons shall be destroyed. The consent of the questionnaire participant will be asked in all questionnaires conducted within the SCORES project. This will include a description how and why the data is to be used. The consent must be clear and distinguishable from other matters and provided in an intelligible and easily accessible form, using clear and plain language. It must be as easy to withdraw consent as it is to give it.

The questionnaire participants will not include children or other groups requiring a supervisor. Also when asking for somebody's contact information, the asking party shall explain why this information is asked and for what purposes it will be used.

Controller and Processor

Controller means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data.

Processor refers to a natural or legal person, public authority, agency or other body which processes personal data on behalf of the controller.

Data Protection Officer

The Data Protection Officer (DPO) is responsible for overseeing data protection strategy and implementation to ensure compliance with GDPR requirements. Under the GDPR, there are three main scenarios where the appointment of a DPO by a controller or processor is mandatory:

- The processing is carried out by a public authority
- The core activities of the controller or processor of processing operations which require regular and systematic processing of data subjects on a large scale; or

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[2] Article 4 GDPR: "'personal data' means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person"

- The core activities of the controller or processor consist of processing on a large scale of sensitive data or data relating to criminal convictions / offences.

Each SCORES partner shall assess its own data processing activities to understand whether they fall within the scope of the requirements set out above. If they do, then it will be important to either fulfil the DPO position internally or from an external source. For those organizations to whom the requirements do not apply, they may still choose to appoint a DPO. If they choose not to appoint a DPO, then it is recommended to document the reasoning behind that decision.

Data protection

European citizens have a fundamental right to privacy. In order to protect this right of individual data subject, the anonymisation and pseudonymisation can be used.

Anonymization refers to personal data processing with the aim of irreversibly preventing the identification of the individual to whom it relates. For the anonymized types of data, the GDPR does not apply, as long as the data subject cannot be re-identified, even by matching his/her data with other information held by third parties.

Pseudonymization refers to the personal data processing in such a manner that the data can no longer be attributed to a specific data subject without the use of additional information.[3] To pseudonymize a data set, the additional information must be kept separately and subject to technical and organizational measures to ensure non/attribution to an identified or identifiable person. In other words, the pseudonymized data constitutes the basic privacy-preserving level allowing for some data sharing, and represent data where direct identifiers (e.g. names) or quasi-identifiers (e.g. unique combinations of date and zip codes) are removed and data is mismatched with a substitution algorithm, impeding correlation of readily associated data to the individual's identity. For such data, GDPR applies and appropriate compliance must be ensured.

Due to the limited amount and less harmful nature of the personal data that is collected within the SCORES project, neither pseudonymisation nor anonymisation will be used. Other means of data security will be used to protect data collected in the framework of the Project.

Breach Notification

Under the GDPR, breach notification will become mandatory in all member states where a data breach is likely to "result in a risk for the rights and freedoms of individuals". This must be done within 72 hours of first having become aware of the breach. Data processors will also be required to notify the data subjects and the controllers, "without undue delay" after first becoming aware of a data breach.

Right to be Forgotten

Also known as Data Erasure, the right to be forgotten entitles the data subject to have the data controller erase his/her personal data, cease further dissemination of the data, and

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[3] Article 4 GDPR

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potentially have third parties halt processing of the data. The conditions for erasure include the data no longer being relevant to original purposes for processing, or a data subjects withdrawing consent. It should also be noted that this right requires controllers to compare the subjects' rights to "the public interest in the availability of the data" when considering such requests. If a data subject wants his/her personal data to be removed from a questionnaire, the non-personal data shall remain in the analysis of the questionnaire.

Data portability

GDPR introduces data portability which refers to the right for a data subject to receive the personal data concerning them, which they have previously provided in a 'commonly use and machine readable format' and have the right to transmit that data to another controller.

The personal data collected within SCORES project will be in electronic form, mostly in Microsoft Excel file forms .xls or .xlsx. In case the data subject requests to transmit his/her data to another controller there should be no technical limitations for providing them.

Privacy by design and by default

Privacy by design refers to the obligation of the controller to implement appropriate technical and organisational measures, such as pseudonymisation, which are designed to implement data protection principles, such as data minimisation, in an effective manner and to integrate the necessary safeguards into the processing.

Privacy by default means that the controller shall implement appropriate technical and organisational measures for ensuring that only personal data which are necessary for each specific purpose of the processing are processed. That obligation applies to:

- the amount of personal data collected,
- the extent of personal data processing,
- the period of personal data storage, and
- the accessibility of personal data.

In particular, such measures shall ensure that by default personal data are not made accessible without the individual's intervention to an indefinite number of natural persons.[4]

Personal data collected during the SCORES project will be used only by project partners, including linked third parties, and only for purposes needed for the implementation of the project. Also within the SCORES project, if someone of the project consortium asks for personal data, the partner holding the data should consider whether that data is needed for the implementation of the Project. If personal data is provided, the data shall not be distributed further within or outside the Project.

Records of processing activities

Records of data processing and plans for the use of data will be kept by the WP Leaders of those work packages that collect personal data.

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[4] Article 25 GDPR

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14 Naming convention

Every document submitted to the SCORES Sharepoint site is named in accordance with the SCORES Sharepoint User and Security Instruction as follows:

[**Company Name**]-SCORES-[**Doc Type**]-[**Doc No.**]-[**Issue No.**]_[**Title**]

Where:

- [**Company Name**] is the name of the project partner responsible for issuing the document
- [**Doc Type**] is the type of the document such as:
    - RP: Report
    - LI: list or excel
    - PROC: Procedure
    - MOM: Minutes of Meeting
    - ECM: Engineering Coordination Memo
    - HO: Hand-out or presentation
    - PL: Plan
    - TR: Test Report
    - TP: test Plan
    - NDA: Non-Disclosure Agreement
    - LT: Letter
    - SC: Schedule
    - AG: Agenda
    - ABS: Abstract
    - FI: Film, movie
    - PPR: PROJECT PERIODIC REPORT
    - PA: Paper, article
    - ST: Sticker
- [**Doc No.**] is a unique number of each document following the previous document
- [**Issue No.**] is the number of document issue
- [**Title**] is the title of the document that should be clear and meaningful and without abbreviation

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15 Expected research data of the SCORES project

Expected research data of the SCORES project is listed below. The table template will be circulated periodically in order to monitor the data sets and set the strategy for their sharing.

Table 4: List of the SCORES project data sets and sharing strategy

WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level[5]
WP1 Management	TNO	Project management, financial and administrative management	M1-M48	TNO	Meeting plan	Consortium meeting plan report	.pdf	PU
					Quality assurance and risk management plan	Report	.pdf	PU
Data Sharing		• Public data: SCORES website	**Data Archiving and preservation**		Sharepoint	**Data management Responsibilities**	Pavol Bodis	

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[5] PU – public, CO - confidential

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WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level
WP2 Modelling and evaluation of the system added value and business opportunities	RINA-C	Task 2.1 - Top-down modelling of the building energy system including local renewable generation and grid supply, conversion, storage and consumption of energy	M1-M6	EDF	Results of techno-economic modelling	Results of techno-economic modelling	.pdf	CO
		Task 2.2 - Cost-benefit analysis of the integrated systems	M24-M42	EDF	Report on cost-benefit evaluation	Report on cost-benefit evaluation	.pdf	CO
		Task 2.3 - Business model and commercial deployment roadmap and strategy	M12-M45	RINA	Market analysis on hybrid storage components	Market analysis (identification of potential customers, optimal scenarios for the technology application and competitors) related to the hybrid storage components	.pdf	PU
					Technological roadmap for the commercial deployment of	Development of technology and commercialisation roadmap of the	.pdf	CO

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					the hybrid storage system	demonstrated hybrid storage systems		
					New business models for the SCORES hybrid storage system	Development of differentiated business models for the proposed hybrid storage systems	.pdf	CO
		Task 2.4 – Impact of the hybrid storage implementation on grid flexibility	M12-M45	EDF	Report on impact of hybrid storage implementation on grid flexibility	Report on impact of hybrid storage implementation on grid flexibility	.pdf	CO
		Task 2.5 – Measures for future standardization	M6-M45	RINA	Report on measures for future standardization	Report on measures for future standardization, analysis and assessment of the current legislative framework of reference for the proposed hybrid energy system	.pdf	PU
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WP3 Enhancement of energy conversion technology	IPS	Task 3.1 – Electro-Thermal storage units for ambient air comfort development	M1-M24	CAM	Storage charge and discharge cycles	Temperature and electrical power logs of charge and discharge cycles of SETS heat storage unit in the lab	.csv	CO
					Storage charge and discharge cycles in real conditions	Temperature and electrical power logs of charge and discharge cycles of SETS heat storage unit in real conditions	.csv	CO
		Task 3.2 - Development of air to air heat pumps with PCM storage energy system for space heating	M1-M24	CAM	Storage charge and discharge cycles	Temperature and electrical power logs of charge and discharge cycles of SETS heat storage unit in the lab	.csv	CO
		Task 3.3 - Development of DHW production system based on water to water heat pump coupled with PV/T collectors	M1-M24	HEL	System Design	Technical specifications on DHW subsystem powered by Water to water heat pumps connected to PVT solar collectors Technical specifications on	.pdf	CO

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						Optimized Control		
						interactions between DHW and CLC subsystems		
					System Design	Optimized Control strategy of the DHW subsystem coupled to CLC	.pdf	CO
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WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level
WP4 Development of electrical storage system using second-life Li-ion battery	FORSEE POWER	Task 4.1 – Sourcing and qualification of used EV battery	M1-M12	FOP	Definition of the selection process	Report	.pdf	PU
					Batterie Selection Final choice	Report	.pdf	CO
		Task 4.2 – Design and production of the repackaged	M13-M24	FOP	Technical specifications and drawings of	Report	.pdf	CO

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		battery			the 2 batteries cabinet (T4.2)		
					Batteries cabinet (T4.2)	Demonstrator		CO
		Task 4.3 – Design and production of the converter cabinet	M13-M24	SIE	Technical specifications and drawings of 2. the converter cabinet (T4.3)	Report	.pdf	CO
					Converters cabinet (T4.3)	Demonstrator		CO
		Task 4.4 – Integration between battery and converters controller, converter controller and BEMS	M13-M24	SIE	Technical manual of the ESS	Report	.pdf	CO
		Task 4.5 – Integration with the local environment	M19-M24	RINA	End of Life	End of life data about second life batteries	.xls	CO
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WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level
WP5 Optimization of heat storage technology based on Chemical Looping Combustion	TNO	Task 5.1 – Design of CLC storage with the focus on energy density, reliability and costs	M1-M18	TNO	System design	Report	.pdf	CO
		Task 5.2 - Enhancement of the CLC storage subsystem	M1-M26	TNO	Control strategy	Report	.pdf	CO
					Experimental data	Report	.pdf	CO
		Task 5.3 - Building of the CLC storage subsystem	M13-M26	KMG	CLC Design	Drawings	.pdf	CO
					CLC setup	Photographs	.ipg	PU
		Task 5.4 - Validation of the CLC storage subsystem	M19-M30	TNO	Experimental data	Report	.pdf	CO

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WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level
WP6 Energy management system and (electrical) system integration	SIEMENNS	Task 6.1 – Definition of requirements, design and implementation of a building energy system (BEMS) that interfaces with the package units, the external energy infrastructure, the metering of the demand of electricity and heat, and external sources of information	M1-M12	EDF	Requirements report for the BEMS	Requirements report for the BEMS	.pdf	CO
		Task 6.2 – Definition of subsystem controls and system algorithm	M1-M12	TNO	Control strategies of the SCORES subsystems	Report	.pdf	CO
					Models of the SCORES subsystems	Report	.pdf	CO

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		Task 6.3 – Definition of interfaces (including data communication protocol) that supports the selected subsystems, external energy infrastructure, metering of the demand of electricity and heat, and relevant sources of information	M1-M12	SIE	BEMS requirements and preliminary design document	Report	.pdf	CO
		Task 6.4 – Implementation of the BEMS including control loops, system algorithm and interfaces	M10-M22	SIE	Detailed Design document of BEMS	Report	.pdf	CO
		Task 6.5 – Remote monitoring and optimalisation	M13-M48	AEE	Measurement plan	Report on measurement equipment	.pdf	CO
					Measurement data	Data from measurement	.csv	CO
					Optimization plan	Report on optimization measures	.pdf	CO
					Measurement data	Measurement data for optimized system	.csv	CO
					Quantification of optimization	Report on Analysis/Comparison of optimization measures	.pdf	CO

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WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level
WP7 Demonstration of the integrated energy system including the innovative technologies in an existing multifamily building connected to a district heating grid	AEE INTEC	Task 7.1 – Requirements, design and simulation of the overall energy system	M1-M26	TNO	SCORES System requirements for DEMO-A	Requirements	.xls	CO
		Task 7.2 – System integration, installation, commissioning and decommissioning including all the components and the BEMS	M18-M29	HEL	Regulation verification	Regulation verification before installation in Demo A	.pdf	CO
					Integration, installation, commissioning plan	Integration, installation, commissioning plan	.pdf	CO
					Photos of installed system	Photos of installed system	.jpg	PU
					Decommissioning plan	Decommissioning plan	.pdf	CO

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		Task 7.3 – System operation, testing and experiments	M25-M29	AEE	Test & experiments plan	Plan containing which system tests and experiments will be performed	.pdf	CO
					Measurement data	Data of the experimental measurement	.csv	CO
					Comparison of experimental data with simulation	Comparison of experimental data with simulation results	.pdf	CO
		Task 7.4 – System operation testing and experiments also for the case when there is no heating-grid connection as an alternative side-scenario	M25-M29	AEE	Test & experiments plan	Plan containing which system tests and experiments will be performed	.pdf	CO
					Measurement data	Data of the experimental measurement	.csv	CO
					Comparison of experimental data with simulation	Comparison of experimental data with simulation results	.pdf	CO
		Task 7.5 - Evaluation of the technical, environmental and economic benefits of the system	M40-M48	EDF	Description of methodology	Description of evaluation methodology	.pdf	CO
					Report on technical, economic and environmental	Report on technical, economic and environmental performances of	.pdf	PU

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					performances of Demo A	Demo B		
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WP number and name	WP lead	Task number and name	Duration	Task lead	Dataset name	Dataset description	Format	Level
WP8 Demonstration of the integrated energy system including the innovative technologies in an existing multifamily building with electric space heating	EDF	Task 8.1 – Requirements, design and simulation of the overall energy system	M1-M26	TNO	Building characteristics	Characteristics of the multifamily building hosting the demonstrator	.pdf	PU
					Subsystem performance and boundaries	Inventory of subsystem performance and boundaries	.pdf	CO
					System breakdown	Chart of system breakdown	.jpg	CO
					Requirements of SCORES Future System and Demo B	List of requirements to fulfill for the SCORES Future System and the Demonstrator	.xls	CO

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					System design	Architecture of the system design in Demo B	.pdf	CO
					SCORES evaluation methodology	Description of the methodology for the performance evaluation of the Demo B	.pdf	CO
					Reference system	Description of the reference system	.pdf	CO
					Modelling inputs for simulation	List of modelling inputs for simulation	.pdf	CO
					Inputs for algorithm implementation in simulation	List of inputs for algorithm implementation in simulation	.pdf	CO
					Modelling architecture	Description of modelling architecture in software environment	.pdf	CO
					Report on expected performances	Report on expected performances of the Demo B from the simulation	.pdf	CO
		Task 8.2 – System integration, installation, commissioning and decommissioning including all the components and the	M18-M29	HEL	Regulation verification	Regulation verification before installation in Demo B	.pdf	CO
					Integration, installation,	Integration, installation,	.pdf	CO

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		BEMS			commissioning plan	commissioning plan		
					Photos of installed system	Photos of installed system	.jpeg	PU
					Decommissioning plan	Decommissioning plan	.pdf	CO
		Task 8.3 – Field test and measurements of the system performance	M25-M42	AEE	Test plan	Test plan	.pdf	CO
					Measurement data	Measurement data	.csv	CO
					Comparison of field test data with simulation	Comparison of field test data with simulation	.pdf	CO
		Task 8.4 – Technic, economic and environmental evaluation of the system	M40-M48	EDF	Description of methodology	Description of evaluation methodology	.pdf	CO
					Report on technical, economic and environmental performances of Demo B	Report on technical, economic and environmental performances of Demo B	.pdf	PU

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WP9 Dissemination and exploitation of results	FENIX TNT SRO	Task 9.1 – Dissemination and Communication	M1-M48	FEN	Communication and Dissemination Plan	Report identifying target audiences, key messages, communication channels, roles and timelines	.pdf	PU
					Data Management Plan	Report analysing the main data uses and restrictions related to IPR according to the Consortium Agreement	.pdf	PU
					Promo materials (e.g. Brochure, rollup, poster, project presentation design)	Images and logos from project partners, photos/videos from dissemination events, project promo videos consisting of animated graphical images, filming, voice over and music. Promo materials shared online. *The owner gives permission to FENIX*	eps, .jpeg, .png, .mpeg, .avi, .mp4, .pdf	PU

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						to use images for dissemination purposes of SCORES.		
		Task 9.2 – Exploitation and IPR management	M13-M48	FEN	Exploitation Plan	Identification of the key exploitable results, exploitable forms, competition, risk analysis, potential obstacles	.pdf	CO
					IPR Manual	Background knowledge and existing patents mapping, potentially overlapping IPR, optimal IPR protection	.pdf	CO
		Task 9.3 – Policy implications, workshops and final conference	M18-M48	EDF	Dissemination of results to targeted audience	Dissemination of results to targeted audience	.pdf	PU
					Promotion of workshop	Promotion of workshop	E-mail / Flyers	PU
					Workshop medium for information	Workshop medium for information	.ppt / Posters	PU
					Promotion of conference	Promotion of conference	E-mail / Flyers	PU
					Conference medium for information	Conference medium for information	.ppt / Posters	PU

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		Task 9.4 – Training activities	M25-M48	IPS	Report on training activities	Report on the training activities, exploiting instructions, processes and tools developed in the framework of the Project.	.pdf	PU
		Task 9.5 – Social impact	M25-M48	FEN	Potential social impact of the Project and users engagement	Report on social impact	.pdf	PU
Data Sharing		- Confidential data: Sharepoint - Promo material (PU): SCORES website, social network profiles, videos on YouTube, thematic portals - Public reports: SCORES website	**Data Archiving and preservation**		Sharepoint and company server	**Data management Responsibilities**	Petra Colantonio	

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16 Publication

The SCORES Consortium is willing to submit papers for scientific/industrial publication during the course of the SCORES project. In the framework of the Dissemination and Communication Plan agreed by the GA, project partners are responsible for the preparation of the scientific publications. As a general approach, the project partners are responsible for the scientific publications as well as for the selection of the publisher considered as more relevant for the subject of matter. Each publisher has its own policies on self-archiving (Green Open Access: researchers can deposit a version of their published work into a subject-based repository or an institutional repository, Gold Open Access: alternatively researcher can publish in an open access journal, where the publisher of a scholarly journal provides free online access).

After the paper is published and license for open access is obtained, project partner will contact Dissemination and Exploitation Manager (FENIX), who is responsible for SCORES data management, and FENIX will upload the publication into project website and deposit in the OpenAIRE repository ZENODO indicating the project it belongs to in the metadata. Dedicated pages per project are visible on the OpenAIRE portal.

For adequate identification of accessible data, all the following metadata information will be included:

- Information about the grant number, name and acronym of the action: European Union (UE), Horizon 2020 (H2020), Innovation Action (IA), SCORES acronym, GA N° 766464
- Information about the publication date and embargo period if applicable: Publication date, Length of embargo period
- Information about the persistent identifier (for example a Digital Object Identifier, DOI): Persistent identifier, if any, provided by the publisher (for example an ISSN number)

For more detailed rules and processes about OpenAIRE, ZENODO, it is possible to find within FAQ on the link https://www.openaire.eu/support/faq.

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17 Conclusion

This report contains the first release of the Data Management Plan for SCORES project and it provides preliminary guidelines for the management of the project results during the project and beyond. The Data Management related to the data generation, storage and sharing has been addressed. The report will be subject to revisions as required to meet the needs of the SCORES project and will be formally reviewed at month 18, 36 and at the end of the project to ensure ongoing fitness to the purpose.