SHAPES

Smart and **H**ealth **A**geing
through **P**eople **E**ngaging in supporting **S**ystems

D8.13 – SHAPES Data Management Plan

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Revision History

Table 1 Revision History

Revision #	Date	Editor	Comments
0.2	31/03/2020	Nina Alapuranen (Laurea),	DMP for SHAPES internal review
0.3	26/04/2020	Nina Alapuranen (Laurea)	Amendments done according to comments received from internal review
1.0	30/04/2020	Nina Alapuranen (Laurea)	Document finalization and minor modifications done based on WP8 monthly telco discussion

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Table of Acronyms and Abbreviations

Table 3 Acronyms and Abbreviations

Acronym	Full Term
DMP	Data Management Plan
DPO	Data Protection Officer
GDPR	General Data Protection Regulation (EU) 2016/679
WP	Work Package
DLMP	Data Lifecycle Management Plan

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Keywords

Data Management, Data Lifecycle Management, Data Security

Disclaimer

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1 Executive Summary

SHAPES Data Management Plan sets a framework for processing and managing data in SHAPES. This document sets the Data Management Principles according to which all Work Packages will plan their usage of data. This ensures a consistent way of using data in SHAPES. Also the implementation of FAIR data principle, which SHAPES follows, is described in this document.

Data Lifecycle Management Plans shall be created in those work packages of SHAPE which are collecting and using data. This ensures compliance with privacy and data protection regulation and good data processing principles. These Plans also serve the purpose of ensuring that the usage of the data is well planned, data will be used according to agreed principles and that data will be removed at the end of its lifecycle. Relevant SHAPES Work Packages have already started this work. Data sets under preparation by Work Packages are described in section 6, Data Processed in SHAPES Work Packages.

Usage of personal data in SHAPES has been taken into account in creation of this Data Management Plan. Having proper data management processes in place will supports compliancy with General Data Protection Regulation. Usage of artificial intelligence and its special requirements is also covered in this document.

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2 Introduction

This document has been generated in the framework of the Project “Smart and Healthy Ageing through People Engaging in Supportive Systems” (SHAPES hereinafter). This is deliverable D8.13 Data Management Plan.

This Data Management Plan (DMP) addresses the data management life cycle for the data to be generated, collected and used in SHAPES as part of research and development activities. Data management rules given in this DMP shall also be followed when piloting and implementing the SHAPES platform and its data processing. SHAPES research activities will follow FAIR data principles and this DMP comprises templates and instructions on how these principles shall be followed in each Work Package (WP).

Due to the nature of the SHAPES project, it is not possible to give a comprehensive and final list of the data sets to be collected. This DMP shall work as a data management handbook, which describes how data management needs to be planned and implemented in SHAPES WPs. Each WP shall store their data management related material in Microsoft Teams. Each WP shall have its own Data Lifecycle Management Plan (DLMP) that follows the principles given in this DMP. SHAPES is a complex project and data processed in different WPs differs so much that it is not practical to create one huge data management plan without the risk that key aspects may be overlooked. By creating their own DLMPs it is more likely that the data will be processed in the correct way, taking into consideration the nature and the purpose of the data processed. By following the principles given in this DMP all plans should be created in a consistent way.

Chapter 2 of this DMP describes how the FAIR data processing principles will be implemented in SHAPES. Chapter 3 describes the role of the Data Owners in the context of data management. The following chapter 4 sets the grounds for Data Lifecycle Management in SHAPES. That describes how the usage of the data needs to be planned and followed during the whole lifecycle. It takes into account the data protection rules, but the process itself is intended to cover all data used in the project. It sets the data management principles that shall be followed in all processing activities to ensure consistent and well-managed data processing in SHAPES. Chapter 5 describes what kind of data each WPs was aiming to collect during the SHAPES. While this gathering was done at early stage of the project, these tables gives a high-level view of the dataset types and their usage. The intention for this initial documentation was to get an understanding of data collection in SHAPES but also to test how the selected documentation type works in practise. Chapter 6 describes how the ethical aspects are taken into consideration and Chapter 7 contains conclusion of this DMP.

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3 FAIR Data Principles In SHAPES Research and Development Work

SHAPES uses FAIR data principles, meaning that the project will ensure that all data created is easily Found, Accessible as widely as possible, Interoperable and Reusable. The following chapters will describe how SHAPES will ensure that it follows the FAIR data principles.

3.1 Finding Documents And Metadata Creation

All documents produced during SHAPES shall contain as a minimum the following metadata information:

- Name = document name
- Registration = record number and where the document is stored
- Responsibility unit = WP responsible for the document
- Responsible person = person who is responsible for the document
- Created = date when the document was created
- Year = year when the document was created
- Retention time = retention time for the document in years
- Accessibility = public, confidential or restricted status
- Search keyword = words that will help to find the document

Documents shall be saved in the repository, where datasets (when applicable), deliverables as well as papers, reports and presentations will be published. Until the repository has been established, SHAPES will use Microsoft Teams to store and share data.

The aim of the SHAPES platform as an open ecosystem solution is to share data as widely as possible but there will also be data that cannot be shared for legal reasons. SHAPES will follow the principle “as open as possible, as closed as necessary”.

The data used for SHAPES relies on open or partners’ sources and databases and it will be collected via pilots. Due to the nature of SHAPES, there will be a huge amount of personal data processed during the project. In practice, this means that there will be some data types that cannot be made publicly available. When possible, the data will be anonymized or aggregated so that it is not possible to identify its source thus enabling it to be widely shared. Another data type that can not be shared is the data that pilot companies are collecting from data subjects related to their service. There will be pseudonymization / anonymization solutions created during SHAPES in order to make the derived data as openly accessible as possible.

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Each data set will be analyzed and the following information will be provided: 1) is the data openly available (yes/no) 2) justification for the decision 3) alternative solution in case data cannot be shared publicly. This information shall be entered into the table shown in section 5 below with each WP having its own version.

If data is not shared or made openly available, then this will be determined by the WP lead and ethics / data protection manager of SHAPES. In borderline cases, decisions will be made at the SHAPES Ethical Advisory Board level.

3.2 Open Access to Research Data

Open Access is one of the main principles of Horizon 2020; by Open Access we mean the provision of 'free of charge' online access to scientific information for any user. The beneficiaries' obligation to granting open access is differentiated between scientific publications and research data.

• Scientific publication: Publication of academic and research work, most often in the form of an article, research paper or otherwise, in scientific journals or in other forms (e.g. textbook, conference proceedings).

• Research data: This refers to SHAPES: All participating projects' beneficiaries are required to ensure open access for their peer-reviewed scientific publications relating to their results, as defined in Article 29.2 of the H2020 - General MGA.

The SHAPES website is the privileged communication platform for the dissemination of knowledge, materials, methods and results of SHAPES, publishing grey literature information to the general public or to a restricted group (the Consortium and the EC), in accordance with the Consortium's knowledge management and Intellectual Property Rights (IPR) policies. All SHAPES innovation data that encompass personal data protection or privacy and IPR or is the basis for the SHAPES sustainable business model to be stored in the SHAPES official repository and will not be publicly disclosed.

The Consortium is committed to developing application interphases as part of SHAPES results, making them publicly and freely available. All relevant information and policy guidelines will be freely available to interested stakeholders. During the Action's implementation, existing technologies, software and platforms contributed by SHAPES partners may have ownership rights (e.g. patent, copyright), which will be retained by the contributing partners. However, the use of the above know-how may result in both proposals for solutions' and policies' implementation, available following an open access policy. No conflict is foreseen regarding the IPR management within SHAPES. Following the DESCA model, the IPR created within SHAPES can be licensed to all other parties under fair and reasonable terms.

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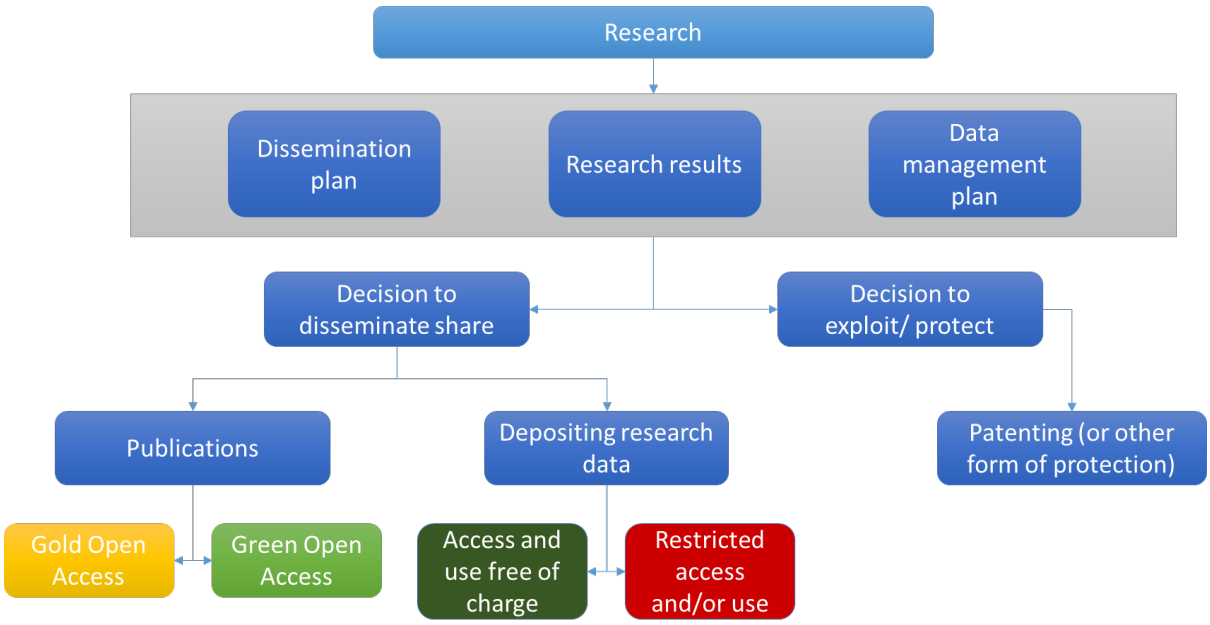
The above-described procedures are summarised in the following diagram:

Table 4 Publication procedures



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4 Data Owners

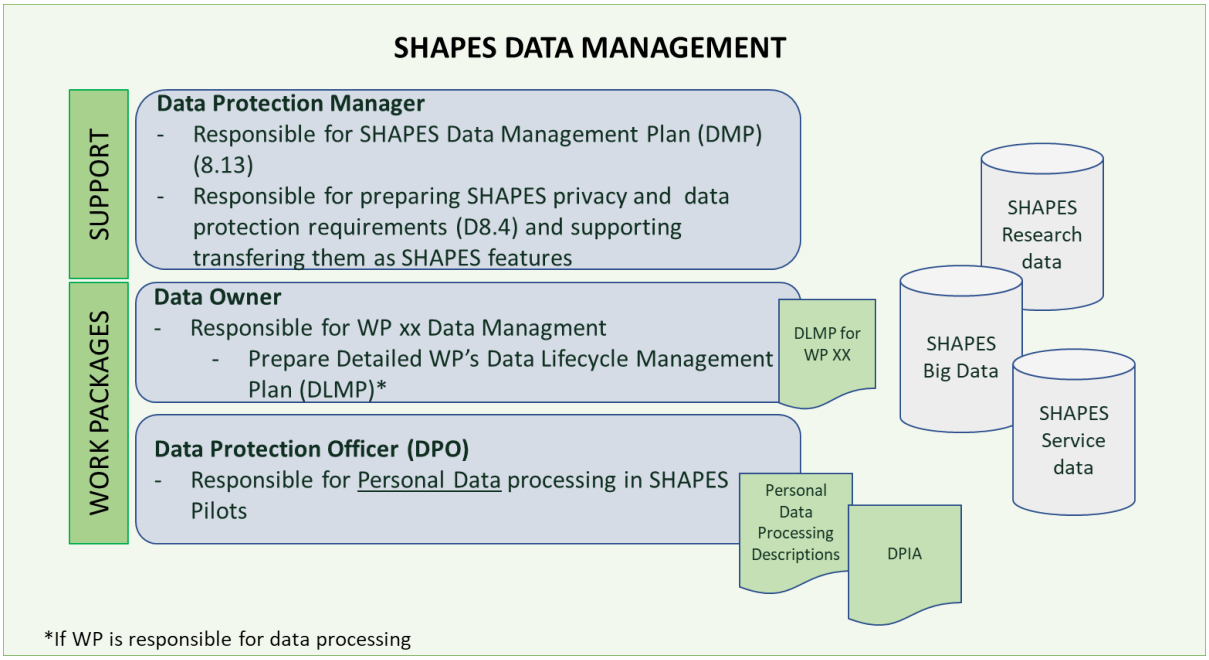
The data owner is the person who is responsible for the specific business process or service. This does not refer to the legal owner of the data; data owner is a role given to a nominated person in WPs that are responsible for processing data. The data owner is responsible for ensuring that the data will be processed according to the existing legislation and rules agreed in this DMP and in Ethics Framework for Shapes Solution 8.4.

Each pilot lead shall nominate a data owner. While all pilots will have their own Data Protection Officer (DPO), it is possible that one person fulfils both of these roles. In other WP's it is the WP leads responsibility to ensure that the data in their area is handled according to this DMP and Ethics Framework for Shapes Solution 8.4. The Data Protection Manager (DPM) supports WP leaders and DPOs in this role.

When SHAPES goes live, all parties that join the SHAPES ecosystem platform shall have a nominated data owner whose responsibility is to ensure that the data is processed according to SHAPES DMP. The most important objective for the data owners is to ensure that they have proper data management in place by implementing DLMP in their WP.

The roles described above are also illustrated in the Table 5, SHAPES Data Management – high-level description.

Table 5, SHAPES Data Management – high-level description.



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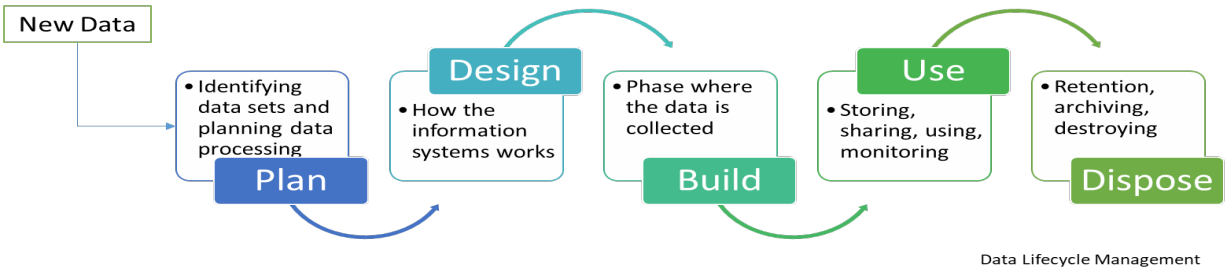
5 Data Lifecycle Management

According to the Data Management Body of Knowledge (DMBOK), data management is defined as “the planning and execution of policies, practices, and projects that acquire, control, protect, deliver, and enhance the value of data and information assets”. Data management is commonly seen as a component of data architecture, which is a key part of enterprise architecture. Data lifecycle management describes the stages that data go through in the course of existence in an organization.

This chapter describes the data lifecycle steps that shall be implemented in SHAPES. Note that the data management principles applies both to data that shall be processed in SHAPES platform and data that is processed elsewhere – e.g. research related data. All WP leads shall ensure that the data processing and managing principles shall be implemented and where applicable documented. Because data management is not an isolated one time exercise, the documentation shall be part of other work package documentation.

The SHAPES data lifecycle management is depicted below in table 4, Data Lifecycle Management followed by a detailed description of each step.

Table 6 Data Lifecycle Management



Data Lifecycle Management

5.1 Plan

This phase consists of planning the creation, acquisition and use of the information in SHAPES. In this phase, the aim is to gain an understanding of the information use in the respective processes, pilots, services and other project activities. In practice, this is the first step where the - to be collected data sets are identified and classified. Planning proper data security and data retention policies are also part of this activity.

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If the processing contains personal data, all data protection related requirements like data minimization and anonymization needs to be planned. In a nutshell, this is the point where data management starts.

5.1.1 Data Management Principles

All SHAPES parties who are responsible for planning and developing the use of data shall ensure that the principles listed below will be implemented. It should be noted that some of the principles are only mandatory for personal data processing (e.g. purpose limitation) but those should be taken into consideration when planning overall data management. Parties responsible for the data need to be able to demonstrate that they have considered these principles. All WP leads shall ensure that the data processing and managing principles shall be implemented and where applicable documented.

a. *Transparency*. In General Data Protection Regulation (GDPR) this means the transparency towards data subjects but in SHAPES this has a wider meaning. Transparency shall be the guiding principle in all data processing. It is important that SHAPES will be a trustworthy open ecosystem and this means that the activities need to be transparent. It does not mean that all data will be open or shared, it means that SHAPES needs to be able to describe how it processes different type of data and what kind of actions have been undertaken to ensure the lawful and ethical use of the data.

b. *Personal data minimization and purpose limitation.* These principles shall be followed when SHAPES is processing personal data. It means that SHAPES shall only process data that is adequate, relevant and limited to what is necessary for the purposes for which the data is processed. Personal data can be processed only for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes. Only data strictly necessary to the completion of SHAPES shall be retained. More detailed descriptions on these principles can be found in Ethics Framework For Shapes Solution 8.4.

c. *Accuracy*. SHAPES shall ensure that all data processed within its scope is accurate and when necessary kept up to date. This applies to all data processed within SHAPES. Personal data needs to be erased or rectified without delay, when it is no longer required for the purposes for which it has been processed.

d. *Storage planning*. SHAPES shall ensure that the data is stored securely which also means that proper disaster recovery functionalities are in place. Storing needs to be documented and documentation kept up to date. Personal data needs to be kept in a form which permits identification of data subjects for no

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longer than is necessary for the purposes for which the personal data are processed. Detailed descriptions on storing personal data can be found in Ethics Framework for SHAPES Solution 8.4.

e. *Traceability*. For personal data SHAPES needs to be able to demonstrate the whole lifecycle of the data. In practice this means that when requested, SHAPES needs to be able to identify the origin of the data, how it's processed, where stored and has it been transferred or disclosed to a third parties. Ethical use of Artificial Intelligence (AI) also sets some requirements for traceability although it is approached from a different point of view. This will be described in AI principles section.

f. *Using secondary data*. Using data for another purpose than which it was originally collected needs to be carefully planned. The data owner shall ensure that SHAPES has a right to use the data and all legal requirements have been taken into consideration. It should be noted that there are different rules for using secondary data for research purposes and e.g. for developing new services. More detailed information on using secondary data can be found in Ethics Framework for SHAPES Solution document 8.4.

g. *Using AI*. SHAPES shall keep accurate records regarding the data sets used to develop and test the AI systems, including a description of the main characteristics and how the data set was selected. The datasets themselves should be kept as well. The records, documentation and data sets needs to be retained during a limited, predefined time period to ensure effective enforcement of the relevant legislation. Other AI related principles can be found in Ethics Framework For Shapes Solution 8.4.

5.1.2 Data Security

SHAPES must ensure security of data processing. In practice this means that appropriate technical and organisational measures need to be planned to ensure proper data protection. The required security level needs to be planned through a risk analysis. If data is sensitive or the amount of data processed is large, there needs to be stricter security measures. Data security needs to be ensured during SHAPES but there also needs to be plans for secure storage of the data after the project. In addition, the data processed in SHAPES platform shall be secured. Detailed security requirements can be found in Ethics Framework For Shapes Solution 8.4.

SHAPES WP4 shall be consulted when e.g. secure storage or data removal practices are planned. SHAPES should have a common method to secure its data – the differences come mainly from the different type of data processed because security should be a risk based activity and the risks needs to be assessed by the people who

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are responsible for the data processing activities. Data Security is also one part of the Data Protection Impact Assessment (DPIA) that will be completed for the activities where processing consists of using (sensitive) personal data or large amounts of personal data.

In case of a personal data breach (GDPR art 33), SHAPES needs to give a notification to the supervisory authority. The data controller must follow the SHAPES personal data breach process that will be described in Ethics Framework For Shapes Solution 8.4. Data Controllers in SHAPES are the service providers / pilot organizations who determine the purposes and means for the processing of personal data.

5.1.3 Data Classification

One of the key aspects in data management is to understand the sensitivity of the information and classify the data based on both its sensitivity and the impact of release or loss of the information. It must also be possible to reclassify the data based on changes in its importance. Data owners are responsible for ensuring that the data in their area of responsibility is classified an appropriate way taking into consideration the data sensitivity and the SHAPES overall objective to open data as much as possible. In SHAPES datasets shall be:

- **Confidential** means that the information can be shared only between members of the Consortium (including the Commission).
- **Restricted** means information where the access is limited only for those persons who are allowed to see it due to their role or work that they do. Limitations can be based e.g. on law or agreements. Examples of restricted information are personal data and company commercially sensitive.
- **Public** means that the information is open access to consultation by anyone.

5.1.4 Data Retention

In SHAPES data retention periods will be decided when data sets are planned. When deciding, how long certain data should be stored, the following principles will be followed:

- Personal Data will be stored only as long as it is necessary for the purposes for which they were collected and to the extent required by law
- If data is shared with third parties, the retention periods needs to be in sync to ensure that the data will be processed in a harmonized way
- When the data retention period ends, data needs to be securely deleted and ensured that it cannot be recovered (e.g. by back-ups)

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If data has been shared with partners or third parties, it is important to ensure that the data has been also been deleted by such partners, unless they have a legal reason for their retention.

5.2 Design

This phase will specify how the information will look and how systems processing the information will have to work. This phase consists e.g. for creating data definitions, identifying data collection, planning access rights, storage procedures and metadata characteristics.

In SHAPES this phase consists as a minimum of the following actions:

- Data flow creation; this activity will consist of identifying all personal data processed in SHAPES and modeling how the data will move between different systems and organizations in SHAPES. The diagrams will be created as part of the pilots planning
- Metadata characteristics; metadata is already planned for SHAPES research documents. Metadata for all other information shall be planned during the SHAPES project
- Access rights; these will be planned as part of SHAPES cyber security work and detailed information can be found in Ethics Framework For Shapes Solution 8.4.
- Storage procedures; this will be updated later. This DMP will describe the SHAPES storage solution that will be used for SHAPES. Each SHAPES pilot and later services will describe the storage solution in their own DLMPs.

5.3 Build

This is the phase where the data is collected. It usually refers to e.g. to the creation of data records, the purchase of data and the loading of external files. In SHAPES's context, this could mean e.g. the collection of testing data for the pilots or collecting data for research purposes. This phase should be planned properly, taking into account security and data protection requirements. From the data protection point of view it's important to ensure that the SHAPES team has a legal right to process the data. This applies both to the research and development work. If not already done in the planning phase, this is the step where the dataset needs to be documented.

This phase cannot be started before proper data protection and data security activities have been undertaken. To give a practical example this means that if the data to be processed contains personal data, execution of data subject rights needs to be planned. Another example relates to the research data. Personal data cannot be collected unless there's a legal reason for collecting the data – e.g. data subjects consent to use the data for the specific purpose.

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5.4 Use

This is the phase where the active use of the data is planned. These can differ based on the scope of the data processing but Data Owners are advised to go through these and estimate if there are some aspects that still needs to be planned (e.g. by creating instructions on the use of project data).

a. Sharing; here information is made available for use through a distribution method. Activities in this phase may consist of identifying the processes that are used for transferring information to where it can be accessed and used (e.g. distributing documents by email, sharing information through database access, identify file/document servers)

b. Using; the phase where information is used to accomplish goals. In SHAPES context this is identified for each WPs as part of the data identification process. This phase can also include information about converting information from one form to another.

c. Monitoring: the purpose is to ensure that the information is up to date. It can also contain data management activities like cleansing, merging, and removing duplicate information data in data warehouses.

5.5 Dispose

Activity in this phase refers to information retention, archiving or destruction. Retention times in SHAPES data lifecycle management have already been decided in earlier phases but at this stage the purpose is to ensure that the deletion of data is technically possible and that there are processes to ensure that these planned timelines are kept. More information on the personal data retention and disposal can be found in Ethics Framework For Shapes Solution 8.4.

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6 Data Processed in SHAPES Work Packages

SHAPES will collect, produce and process a huge amount of data during the project. SHAPES project deliverables can be found at ECAS website and Technical notes can be found on the SHAPES website.

SHAPES processes data in many work packages. On a high level SHAPES has three different type of data; data processed as part of SHAPES project, data processed during the research activities and data processed during the SHAPES pilots. At this stage it is assumed that the data processed in pilots will be processed both on SHAPES platform and SHAPES partners own information systems. Data sets shown in this chapter focuses primarily on research data and the data that will be processed as part of SHAPES project activities. It was not possible to identify data sets that will be used in SHAPES pilots and for that reason those data sets and Data Lifecycle Management will be described in relevant WPs.

All work packages need to describe what data types they are processing. This is part of the data lifecycle management. The initial data sets have been described using the tables shown below. This model shall also be used when WP's are creating their own Data Lifecycle Management Plans, especially when they are describing the use of a SHAPES research data. If this model does not fit to the data processed in the WP (this might be the case e.g. in WP 4 that is responsible for the architecture), the Data Manager can do the planning in a way that fits to the purpose. It should be noted, that the datasets listed in this DMP are just the initial ones and most likely each work package will update this table during the project. The updates can be found in each WP's "Data Lifecycle Management Plan" that will be found in Teams.

The first versions of WPs Data Lifecycle Management Plans needs to be created before processing of the data starts. For example in SHAPES pilots, this means that the first plan needs to be ready before the pilot goes live. The DLMP will be kept up-to date during the whole project.

Table 7 Template for description of the WP and the purpose for their data collection

Short description of the WP and purpose for collecting data
[Insert here a description of the SHAPES work package. Describe why we're collecting the data and for what purposes. This should give the reader a high-level understanding on how the data collection supports SHAPES objectives] Size of the collected data during the SHAPES project: [insert here the total size of the data collected when the project ends].

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Table 8 Template for describing data types processed in SHAPES

Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xsl, .csv., docx., json.)	Contains personal data, Yes/No
1					
2					
3					
4					

Table 9 Template for describing Data accessibility in SHAPES

Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, due to legal, contract or voluntary restriction).	Alternative solution
1				

Table 10 Template for describing where the data can be found

Finding data					
#	Data type	Location (e.g. platform, data repository)	Level of accessibility (e.g. public, validated professionals).	Type of availability and required sw tools (e.g. filterable database, cleaned primary data)	Information on metadata and additional information (e.g. will be found in open source data repository)
1					

6.1 WP2 Understanding the Lifeworld of ageing individuals and Improving Smart and Healthy living

Short description of the WP and purpose for collecting data
The Action starts with WP2, by understanding the context of older individuals' lives, addressing in addition age-friendly social (and accessible) pathways and empowerment. It also develops personas, scenarios and use cases for the SHAPES Platform, used in WPs 3, 4, 5 and 6. The data are mainly collected for creating the personas and use cases.

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Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xsl, .csv., docx.)	Contains personal data, Yes/No
1	Contact lists	Contact list will consists of individuals who might be interested in SHAPES. List will be used for sharing information on SHAPES. It's assumed that receivers will benefit from receiving information on the project.	Public data/ data from consortium members	.xsl	Yes
2	Interviews	Interviews conducted with both experts in the field and caregivers.	Primary data	docx	No
3	Qualitative interviews	A composite proforma was developed based on qualitative research done by Palacký University with DIPEx methodology. The interviews were anonymized. Interview participants signed an informed consent agreement that reflects legislation (Czech Republic) and GDPR.	Primary data	docx	No

Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, tell if it's because of law, contract or voluntary restriction).	Alternative solution
1	Contact lists	No	Data contains personal information and it has been collected only for a specific purpose by obtaining signed informed consent from data subjects. Data cannot be used for any other purpose.	There's no alternative solution for this.
2	Interviews	no	Data were collected just for the specific purpose, and cannot be used for any other purpose	
3	Qualitative interviews	yes		

Finding data					
#	Data type	Location (e.g. platform, data repository	Level of accessibility (e.g. public, validated professionals)	Type of availability and required sw tools (e.g. filterable database, cleaned primary data)	Information on metadata and additional information (e.g. will be found in open source data repository
1	Qualitative interviews	web-page	public		Data is accessible hovoryozdravi.cz

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6.2 WP5 SHAPES Digital Solutions

WP5 has already identified several potential data sets to be collected during project. Digital Solutions to be included in the SHAPES are not decided yet. For this reason the data sets presented below will change and the more detailed descriptions shall be found in WP5 own DLMP.

Short description of the WP5 and purpose for collecting data
Adapt and integrate different digital solutions to support the large-scale piloting activities to be carried out in WP6. The use of these solutions will facilitate long-term healthy and active ageing and the maintenance of a high-quality standard of life. Within WP5 User Experience Guidelines will also be designed and implemented. Purpose: to better monitor patients and provide some guidance related to possible issues.

Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xsl, .csv., docx.)	Contains personal data, Yes/No
1	Contact lists from technical partners	Contact list will consists of technical partners	SHAPES project	.xsl	Yes

Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, tell if it's because of law, contract or voluntary restriction).	Alternative solution
1	Contact lists	No	Data contains personal information and it has been collected only for a specific purpose by obtaining signed informed consent for the individuals. Data cannot be used for any other purpose.	There's no alternative solution for this aspect.

Finding data					
#	Data type	Location (e.g. platform, data repository	Level of accessibility (e.g. public, validated professionals)	Type of availability and required sw tools (e.g. filterable database, cleaned primary data)	Information on metadata and additional information (e.g. will be found in open source data repository)

6.3 WP6 SHAPES Pan-European Pilot Campaign

WP6 will process a lot of data but most of the data sets will be collected during the pilots. In this scenario, WP6 will not have any identified data sets at this point. At the moment the plan is to first create the use case for the pilots, then create data models

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and after that data will be processed as part of the pilots work programme. Each pilot will have their own DLMP and data sets to be used will be described there.

6.4 WP7 Market Shaping, Scale-up Business Models and Socio-Economic Impact

Short description of the WP and purpose for collecting data
This WP will define the market strategy and business models for SHAPES, compatible with the nature of the SHAPES Consortium, in order to maximise returns (business-oriented) considering the best value-for-money for users/customers and the internationalisation and global ambitions of SHAPES. It will also provide an objective cost-benefit analysis of SHAPES on the daily living activities of its care recipients users and the day-to-day integrated care delivery activities. Furthermore, it will develop a marketplace platform to explore the SHAPES Platform's modular architecture, enabling the establishment of a rich ecosystem of suppliers and functionalities (added-value and future proof), achieving as well as a significant market advantage. The data to be collected will enable the SHAPES Consortium to adequately fulfil the project's activities defined for WP7 and meet the WP7's established objectives.

Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xls, .csv, .docx)	Contains personal data, Yes/No
1	Market data	The market data will enable the performance of a market analysis of the European and global market for digital solutions supporting and extending active ageing and independent living.	Data from consortium members. Public/Published data.	.docx .html	No
2	Socio-economic sustainability models	The socio-economic sustainability models will help to provide an objective cost-benefit analysis of SHAPES.	Data from consortium members. Public/Published data.	.docx .html	No
3	Funding models	The funding models will help to provide an objective cost-benefit analysis of SHAPES.	Data from consortium members. Public/Published data.	.docx .html	No
4	Contact list	The contact list will include the contacts provided by the providers of the digital solutions present in the SHAPES Marketplace. It is assumed that the providers will benefit from being part of the SHAPES Marketplace.	Data from consortium members / third-parties participating in the SHAPES Open Calls and selected for the SHAPES Marketplace.	.xls	Yes
5	Digital Solutions Information	The digital solutions information will support the solutions providers' online marketing strategy in the SHAPES Marketplace. It is assumed that the providers will benefit from being part of the SHAPES Marketplace.	Data from consortium members / third-parties presenting digital solutions in the SHAPES Marketplace.	.docx	No

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Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, tell if it's because of law, contract or voluntary restriction).	Alternative solution
1	Market data	Yes	-	-
2	Socio-economic sustainability models	Yes	-	-
3	Funding models	Yes	-	-
4	Contact list	Yes	Data contains personal information and it has been collected only for a specific purpose by obtaining signed informed consent from data subjects. Data cannot be used for any other purpose.	There's no alternative solution for this.
5	Digital Solutions Information	Yes	Data contains information about the digital solutions selected to be part of the SHAPES Marketplace and it has been collected only for a specific purpose by obtaining signed informed consent from data subjects. Data cannot be used for any other purpose.	There's no alternative solution for this aspect.

Finding data					
#	Data type	Location (e.g. platform, data repository)	Level of accessibility (e.g. public, validated professionals)	Type of availability and required sw tools (e.g. filterable database, cleansed primary data)	Information on metadata and additional information (e.g. will be found in open source data repository)
1	Market data	SHAPES Deliverables	Public		Not applicable
2	Socio-economic sustainability models	SHAPES Deliverables	Public		Not applicable
3	Funding models	SHAPES Deliverables	Public		Not applicable
4	Contact list	SHAPES Marketplace	Public		Not applicable
5	Digital Solutions Information	SHAPES Marketplace	Public		Not applicable

6.5 WP8 SHAPES Legal, Ethics, Privacy and Fundamental Rights Protection

Short description of the WP and purpose for collecting data
WP8 gathers data in order to assess various ethical, legal and societal perspectives of both the SHAPES R&D process and the actual SHAPES solution.

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Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xsl, .csv., docx.)	Contains personal data, Yes/No
1	Brainstorming data	to identify risks and societal impacts of SHAPES solution. Will be part of project deliverables.	LAUREA students, Partners, experts in the domain on wellbeing and digital services	docx	No
2	desk-top based research data regarding ethical, legal and societal issues	to provide input for various ethical deliverables for 1) enhancing ethical awareness 2) providing guidelines for the R&D work 3) defining ethical requirements for shapes solution (D8.1, D8.2, D8.4 and D8.5)	Experts in LAUREA, WP leaders and various experts	docx	No
3	Interviews and site visits	Interviews with reference sites to collect data regarding the operational management processes involved in healthcare provision in the EU	Primary data	docx, xsl.	No

Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, tell if it's because of law, contract or voluntary restriction).	Alternative solution
1	Brainstorming data	No	This is raw data that will be used when creating deliverables.	Deliverables will be published.
2	Desk-top based research data regarding ethical, legal and societal issues	No	This is raw data that will be used when creating deliverables.	Deliverables will be published.
3	Interviews and site visits	No	This is raw data that will be used when creating deliverables.	Deliverables will be published

Finding data					
#	Data type	Location (e.g. platform, data repository	Level of accessibility (e.g. public, validated professionals)	Type of availability and required sw tools (e.g. filterable database, cleaned primary data)	Information on metadata and additional information (e.g. will be found in open sw data reporsitory)
1	Brainstorming data	Laurea SHAPES teams and Laurea personnel own secure file shares	Consortium members	Can be requested from Larea's ethical manager.	N/A
2	Desk-top based research data regarding ethical, legal and societal issues	Laurea SHAPES teams and Laurea	Consortium members	Can be requested from	N/A

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		personnel own secure file shares		Larea's ethical manager.	
3	Interviews and site visits	Secure machine in Maynooth university private offices	Validated professionals	Primary Data	

6.6 WP9 SHAPES Ecosystem Building

Short description of the WP and purpose for collecting data
T1: This WP will foster the up -take of the SHAPES Platform and digital solutions by expanding the ecosystem of stakeholders involved, through the establishment of a dynamic expert discussion forum on active and healthy ageing and independent living. Further through the analysis of the status quo and the exercise of foresight, through intensive networking and liaising activities, through interaction and co-working with relevant standardisation bodies and pre-normative activities and through the promotion of the SHAPES Open Calls, presenting new market opportunities, particularly for entrepreneurs and SMEs, who will be invited to develop their innovations in the SHAPES Platform and to validate them through additional small-scale pilots or demonstrations within the SHAPES large-scale piloting initiative. This WP has the involvement of all SHAPES partners. The main aspect of data collection will revolve around personal contacts or institutional contacts in order to create and foster the SHAPES ecosystem. An ecosystem being basically a network of people, and thus contact data are required. T2: This task will identify relevant innovations and trends, evaluating their results when available, and how they fill gaps, meeting the SHAPES Action's needs and priorities and preventing unnecessary duplications. The task will therefore provide insights into relevant innovation performance and challenges across the EU, and foster improved cross-fertilisation with past, ongoing and future research and innovation activities, which should result in a better understanding of current sectoral innovation dynamics across Europe by interested bodies. It will cover specific innovations as well as underpinning technologies and Key and Emerging Technologies (KETs). As the project unfolds and the discussions within the SHAPES Ecosystem provide additional elements of foresight in terms of new needs, technical and technological solutions, models and approaches concerning pan-European integrated care, this task will adhere to a foresight methodology based on the generation of futuristic scenarios in which the SHAPES Platform and solutions continue to strive and support smart healthy ageing. Despite the feasibility, scalability and affordability embedded in SHAPES to accomplish a large-scale deployment of digital solutions supporting and extending active ageing and independent living, this task will allow SHAPES to consider the future and see beyond state-of-the-art in research and practice.

Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xsl, .csv., docx.)	Contains personal data, Yes/No
1	Contact lists	Contact lists will consist of individuals who will be interested in SHAPES. Lists will be used for sharing information on SHAPES. It's assumed that receivers will benefit from getting information on the project.	Public data/ data from consortium members	.xsl	yes

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2	Foresight Information	Collection of promising future technologies or concepts that could be beneficial in the context of SHAPES. Could be incorporated into future scenarios.	Public literature data/ data from consortium members	.pptx	No
3	Inputs from Foresight Exercises	Collection of promising future technologies or concepts that could be beneficial in the context of SHAPES. Could be incorporated into future scenarios.	Workshops with consortium members	.pptx or .docx	No
4	List of new needs	Collection of new identified needs within the SHAPES Ecosystem	SHAPES consortium and deliverables	.pptx or .docx	No

Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, tell if it's because of law, contract or voluntary restriction).	Alternative solution
1	Contact lists	No, we are not going to publish the contact list. Only SHAPES internal	Data contains personal contact information and has been collected for the specific purpose of contacting the person within an ecosystem. Consent for data usage within SHAPES will be collected separately.	
2	Foresight Information	No, only SHAPES internal		
3	Inputs from Foresight Exercises	No, only SHAPES internal		
4	List of new needs	No, only SHAPES internal		

Finding data					
#	Data type	Location (e.g. platform, data repository	Level of accessibility (e.g. public, validated professionals)	Type of availability and required sw tools (e.g. filterable database, cleaned primary data)	Information on metadata and additional information (e.g. will be found in open sw data reporsitory)
1	Contact lists	SHAPES Teams	SHAPES partners only, on request only	Filterable xls file	No additional information
2	Foresight Information	SHAPES teams	SHAPES internal only	filterable database	No additional information
3	Inputs from Foresight Exercises	SHAPES teams	SHAPES internal only	filterable database	No additional information
4	List of new needs	SHAPES teams	SHAPES internal only	filterable database	No additional information

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6.7 WP10 SHAPES Outreach and Awareness Generation

Short description of the WP and purpose for collecting data
WP 10 is dedicated to the dissemination strategy of SHAPES, which aims to promote and encourage the uptake of the SHAPES results. In order to do so, partners in WP10 need to collect data. A list of contacts from data available on the internet has already been completed by UAVR. WP10 partners will get in touch with those contacts for sharing dissemination materials, invitation to events etc.

Data types collected					
#	Data type	Description and Purpose	Origin	Format (e.g. .xsl, .csv., docx.)	Contains personal data, Yes/No
1	Contact lists	Contact list will consist of persons who will be interested in SHAPES. Lists will be used for sharing information on SHAPES. It's assumed that receivers will benefit from getting information on the project.	Data from consortium members + Public data from the networks of SHAPES partners + some personal data when public data are not available	.xsl	It might
2	Personal /institutional emails (via voluntary subscription) for marketing materials	Interested people might join our contact list via SHAPES MailChimp	Personal emails getting by subscription	.xsl	yes

Data accessibility				
#	Data type	Data openly available (Yes/No)	Justification (if cannot be shared, tell if it's because of law, contract or voluntary restriction).	Alternative solution
1	Contact lists	Yes (not all of them)	The majority of the contacts collected can be shared because they are available on the internet. In some cases, when public data are not available, personal data will be collected, for which we will need to ask consent.	There's no alternative solution for this aspect.
2	Personal /institutional emails (via voluntary subscription) for marketing materials	No	Contact details are protected by personal data legislation and cannot be shared.	none

Finding data					
#	Data type	Location (e.g. platform, data repository	Level of accessibility (e.g. public, validated professionals)	Type of availability and required sw tools (e.g. filterable database,	Information on metadata and additional information (e.g. will be found in open

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				cleaned primary data)	source data repository)
1	Contact lists	Microsoft Teams	Consortium members	database	Available on Teams
2	Contacts for marketing material	Microsoft Teams	Consortium members	database	Available on Teams

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7 Conclusion

This Data Management Plan sets out the minimum requirements to be followed when processing data in the SHAPES project. SHAPES uses a lot of data for different purposes and the types and amounts of data will differ during the project. It is not possible to identify all the data to be processed or describe all security practices to be implemented at this phase of the project. For that reason this DMP sets out the framework for data management, introducing a data lifecycle management method. This method shall be used in each Work Package that processes data.

The intention of this data management plan is also to support future development of the SHAPES platform and help new services to be part of the SHAPES ecosystem. By following the data lifecycle management it can be ensured that the data usage is properly planned and that it follows the main principles of data management.

This DMP will be ready for use in May 2020. After that the SHAPES consortium members should take it into use and start creating their own Data Lifecycle Management Plans. The first versions of the DLMPs should be ready when WP starts to collect/process the data. It is understood that many WPs have already started the collection and that the data collection is already planned although not put in a DLMP format. Data owners of the WPs needs to decide, when the DLMP in their own area should be ready because they have the best knowledge on their own time schedule for data processing. DLMP should be a living document and the final update will be done when the SHAPES project ends and e.g. the amount of the collected data is known.

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References

CISA 26th Edition Review Manual 2015. ISACA.

CSX Cybersecurity Fundamentals 2017. Study Guide, 2nd Edition. ISACA.

European Commission White Paper On Artificial Intelligence – A European approach to excellence and trust. Brussels 19.2.2020. COM(2020) 65 final.

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Annex 1, Data Protection Policy for SHAPES Pilots

The purpose of this policy is to provide basic information on the processing of personal data during the SHAPES pilots.

The principles of Lawfulness, Fairness and Transparency, Purpose Limitation, Data Minimization, Accuracy, Storage Limitation, Integrity and Security, as well as accountability have been the starting point in the design of the SHAPES platform to be piloted during these pilots, as well as in the procedures processing personal data of the pilot participants.

Consent forms and data protection of research participants

1. The contact information of the pilot participants (name, organization, email or other contact information) is kept in separate files which are stored separately in a specific environment set by the beneficiary and accessible only by the researcher in case. The files will be destroyed after the project according to the data retention period specified in each pilots' data management plan.

2. Consent forms will be collected from end-users and other stakeholders taking part in the SHAPES pilots.

3. The signed consent forms will be archived by the host organization of the pilot, and destroyed after the project according to the data retention period.

The pictures taken for dissemination purposes will be used only in the dissemination material of the SHAPES project, and will be destroyed after the project. A separate permission to take pictures identifying persons will be asked explicitly on the consent.

SHAPES platform and processing of personal data

1 SHAPES solutions shall be designed following the principles and requirements of GDPR, including the Privacy by Design –approach. Each pilot shall have a separate Privacy and Data Protection Impact Assessment (PIA).

2 The controller of the SHAPES solution to be piloted is the consortium member responsible for the pilot.

3 SHAPES Cyber Security requirements shall be followed in pilots. Only the minimum amount of personal data is collected and data shall be anonymized if possible.

4 SHAPEs pilots shall have one common Data Lifecycle Management Plan.

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