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HARMONIA

Ethics

Data management plan & Data ethics report v2

Deliverable 1.1

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1			
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Partners organisations

No.	Name	Short name	Country
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Executive Summary

Deliverable D1.1. is the first version of Harmonia's Data Management Plan (DMP) and data ethics report. Accordingly, it consists of two parts. The first summarizes the different parameters of the HDMP and provides a list of the main datasets that will be generated and processed for the project's purposes. To achieve this, a questionnaire on DMP was circulated among the partners in order to acquire their feedback on the datasets currently used by them, as well as, to assess the level of compliance each partner has achieved with regard to the FAIR data principles, namely the principles that need to be implemented during collecting and processing the data in question. It is pointed out that the DMP is a dynamic document that will be updated as the project progresses.

The second part of the present deliverable report includes HARMONIA's Data Ethics Report. Given that it is anticipated that personal data will be processed for the purposes of the Harmonia project, compliance with data ethics and the GDPR specifically is of the essence. In the context of executing this task a questionnaire on compliance with the GDPR was circulated to the partners and the conclusions and suggestions included herein are based on the partners' replies.

The second and final version on DMP and data ethics is due on M44, where the final remarks on these subject matters will be elaborated. Until that time the DMP will be updated regularly and assistance on issues related to data ethics will be provided to the partners throughout the project's lifecycle.

1. Introduction to the Harmonia Data Management Plan and Data Ethics

1.1 Purpose and scope

The HARMONIA project will leverage existing tools, services and novel technologies to deliver an integrated resilience assessment platform working on top of GEOSS, seeing the current lack of a dedicated process of understanding and quantifying Climate Change (CC) effects on urban areas using Satellite and auxiliary data available on GEOSS, DIAS, urban TEP, GEP etc. platforms. HARMONIA will focus on a solution for climate applications supporting adaptation and mitigation measures of the Paris Agreement. HARMONIA will test modern Remote Sensing tools and 3D-4D monitoring, Machine Learning/Deep Learning techniques and will develop a modular scalable data-driven multi-layer urban areas observation information knowledge base, using Satellite data time series, spatial information and auxiliary data, in-situ observing systems, which will integrate detailed information on local level of neighbourhoods/building blocks.

HARMONIA focuses on two pillars: a) Natural and manmade hazards intensified by CC: urban flooding, soil degradation and geo-hazards (landslides, earthquake, ground deformation) and b) Manmade hazards: heat islands, urban heat fluxes, Air Quality, Gas emissions. Sustainable reconstruction of urban areas and the health of humans and ecosystems are therefore top priorities. HARMONIA will take into account the local ecosystems of European urban areas, following an integrated and sustainable approach by incorporating the active communities' participation initiative, which will involve the use of a social platform.

The HARMONIA project constitutes, therefore, a data-intensive research project. It is in this context that this reports includes, in a combined manner:

- The Project's Data Management Plan, and
- The Project's first Data Ethics Report.

The Project's Data Management Plan aims to be the essential point of reference when accessing and/or managing data produced/generated within the context of the project, to ensure an effective and sustainable exploitation of the project results also beyond the project duration. The Project's Consortium strongly believes in the necessity of transparency of the scientific process, in particular for science driven by public funds.

The DMP will therefore describe:

(i) the datasets that will be collected, processed or generated by the HARMONIA project;
(ii) the data management life cycle for all datasets;

(iii) the methodology and standards regarding which data will be collected, processed or generated;
(iv) whether and how this data will be shared and made open;
(v) how the data will be curated and preserved.

Due to the dynamic nature of a project, the DMP is intended to be a living document that can be updated during the project lifecycle, in order to be able to reflect important changes to the project. The nature of such changes can be varied, such as the inclusion of new data sets, new consortium policies or external factors. Regular check points on the status of the data will ensure that the DMP is implemented as foreseen.

A complete and thorough description will be provided at the end of the project, once all data has been collected, processed or generated and more detailed information can be provided. At that time (month 44), a final version of the DMP will be released.

In addition, due to its social elements, ethics and personal data protection aspects form an equally important part of HARMONIA. To this end, ethics and legal compliance with the highest applicable standards needs to be warranted throughout the HARMONIA lifecycle. In this context, this report also includes HARMONIA's first **Data Ethics Report**.

The proposed Data Ethics Report will therefore:

(i) Describe the HARMONIA ethics and personal data protection applicable framework;

(ii) Outline the HARMONIA partner's obligations as regards the above framework;

(iii) Setup the HARMONIA Ethics Helpdesk, the ongoing compliance mechanism during the Project's lifecycle.

Being more of a preliminary approach, this document is not supposed to answer definitively all requirements set in the H2020 guidelines. On the contrary, it will be regularly updated within the project's lifecycle, whenever significant changes arise (e.g. new data, changes in consortium policies or composition, etc.), in order to lay the foundations for the final DMP release, which will be presented in D1.2 "Data Management Plan and Data Ethics Report v2", due in M44, that will include all data generated in the course of the project's lifecycle.

1.2 Structure of this report

This report consists of the following sections

- **Section 1**: Introduction outlining this report's purpose and structure;
- **Section 2**: Definition of the methodology for data and ethics management for the HARMONIA project, in accordance with EU guidelines, particularly applying the H2020 FAIR DMP Template;
- **Section 3**: Presentation of the HARMONIA datasets and evaluation of their compliance with the FAIR principles;
- **Section 4**: Presentation of data ethics under the GDPR: basic definitions, data processing principles, data subjects' rights and security of data in the context of the GDPR;
- **Section 5**: Implementation of the GDPR in the Harmonia project;
- **Section 6**: Conclusions on the project's Data management plan and data ethics;
- **Annex I**: The Harmonia GDPR questionnaire

2. The Harmonia Data Management Plan

2.1 Adaptation of the FAIR Data Principles

Data Management Plans (DMPs) are a key element of good data management. A DMP describes the data management life cycle for the data to be collected, processed and/or generated by a Horizon 2020 project. The HARMONIA DMP complies with the H2020 guidelines for making data Findable, Accessible, Interoperable, Re-usable (FAIR). To achieve that, the FAIR template provided by the European Commission is followed. This template has been adapted onto the HARMONIA circumstances and conditions, and a relevant questionnaire circulated to all partners can be found in Annex I of this report. It is pointed out that, in order to enable the Harmonia partners to provide their feedback a shorter version of the EC template on DMP was used which however included all necessary sections in accordance with the EC template and which may be found in section 3 below[1].

The components included in FAIR are the following:

- Data Summary;
- FAIR Data Principles;
    - Making data findable, including provisions for metadata;
    - Making data openly accessible;
    - Making data interoperable;
    - Increase data re-use (by clarifying licences);
- Allocation of resources;
- Data Security;
- Ethical Aspects;
    - Other Issues refer to other national/ funder/ sectorial/ departmental procedures for data management that are used (if any).

The Data Summary and the FAIR Data Principles will be addressed separately for each dataset that is expected to be generated from the HARMONIA project, in Section 4. The analysis follows the HARMONIA adapted DMP questionnaire circulated to all partners. The same template will be used for all dataset descriptions. In this early stage, it is not required to cover exhaustively all points for each dataset, as this DMP will be updated during the project, whenever new data or other significant changes emerge. The DMP will be updated over the course of the project when significant changes

[1] See H2020 Programme, Guidelines on FAIR Data Management in Horizon 2020, Version 3.o, 26 July 2016. https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf#page=10

arise such as new data, changes in consortium policies, changes in consortium composition and external factors.

2.2 Responsibilities and Decision-Making

Each partner is responsible to identify the datasets that it will collect, process or generate for the HARMONIA purposes. Subsequently, it needs to examine whether there will be data to which open access can be granted without adversely affecting legitimate interests, including IPRs[2]. Once the relevant datasets have been identified, the information needed for the formulation of this document has been or will be collected using the HARMONIA DMP questionnaire (see Annex 1), that has been prepared following the guidelines for the Open Research Data Pilot, in order to ensure compliance with the H2020 guidelines aforementioned. Such information consists of:

(i) A general data summary, such as origin, types and formats of files, purpose, size, utility;
(ii) FAIR Data:
  a. Findable: discoverability, naming convention, search keywords, version numbers, metadata;
  b. Accessible: availability, software tools, repositories, restriction and/or conditions for access;
  c. Interoperable: description of interoperability, metadata vocabularies, standards and/or methodologies;
  d. Re-Usable: license, data quality, time frames for availability and storage.
(iii) Allocation of resources (by Consortium agreement, each partner has to individually identify and allocate resources for data storage and management);
(iv) Data security;
(v) Ethical aspects;
(vi) Other issues.

In the event of data to be generated which pertain to HARMONIA modules/components, software, or figures that are considered as confidential by one or more of the partners, the particular data affected by this will be described in the DMP along with the reasons for maintaining confidentiality.

[2] On open access to data see also https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm

3. The HARMONIA datasets

3.1 The CTI dataset

The datasets collected, processed or generated by CTI during the HARMONIA lifecycle are listed below:

Title of the dataset n°1	Sentinel-1A and Sentinel-1B
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Products: GRD, OCN – full archive Product: RAW – last 6 months Product: SLC – Europe: full archive, last 6 months/ orderable
Subject	Sentinel-1A and Sentinel-1B

Title of the dataset n°2	Sentinel-2A and Sentinel 2B
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Product: L1C – full archive Product: L2A - orderable
Subject	Sentinel-2A and Sentinel 2B

Title of the dataset n°3	Sentinel-3A and Sentinel-3B

Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Products: L1 SLSTR, L1 OLCI, L1 SRAL, L2 SLSTR, (LST/WST), L2 OLCI, L2 SRAL - full archive
Subject	Sentinel-3A and Sentinel-3B

Title of the dataset n°4	Sentinel-5P
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Product: L1B – full archive Product: L2 (Aerosol, Cloud, CO, HCHO, NO2, NP, O3, SO2) - full archive
Subject	Sentinel-5P

Title of the dataset n°5	Landsat-5
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Products: L1G, L1T, L1GT - Coverage of Europe (1984-2011)
Subject	Landsat-5

Title of the dataset n°6	Landsat-7
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Products: L1G, L1T, L1GT - Coverage of Europe (1999-2017)
Subject	Landsat-7

Title of the dataset n°7	Landsat-8
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Products: L1T, L1GT - Coverage of Europe
Subject	Landsat-8

Title of the dataset n°8	Envisat
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Product: L1 - Global (2002-2012)
Subject	Envisat

Title of the dataset n°9	SMOS
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Products: L1B, L1C, L2 - Global (2010-present)
Subject	SMOS

Title of the dataset n°10	S2GL
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	Coverage of Europe (2017)
Subject	S2GL

Title of the dataset n°11	CAMS (Atmosphere)
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	-
Subject	CAMS (Atmosphere)

Title of the dataset n°12	CEMS (Emergency)
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	-
Subject	CEMS (Emergency)

Title of the dataset n°13	CLMS (Land)
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	-
Subject	CLMS (Land)

Title of the dataset n°14	CMEMS (Marine)
Task	CTI (T3.4)
Data owner/controller	ESA
Time period covered by the Dataset	-
Subject	CMEMS (Marine)

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	XML – Sentinel
Metadata standards	-
Naming conventions	Sentinel, Landsat, Envisat, SMOS, S2GL, CAMS, CEMS, CLMS, CMEMS
Search keywords	-
Versioning	-
2.2. Making data openly accessible	
Classification	
Sharing and access	WMS / WMTS
Software necessary to access the data	GIS tools, DIAS,
Documentation	ESA sites, DIAS sites (well documented)
Access authorisation	Free
Access conditions	Free
2.3. Making data interoperable	
Interoperability	YES

Metadata vocabularies	YES
Project ontologies	-
2.4. Increase data re-use	
License conditions	-
Third-parties access after project end	YES
Data quality assurance procedures	ESA owned data collected with ESA standards.
Availability period	Open data with no limitation as of today

Based on CTI's replies it is concluded that the FAIR Data principles are being observed. In particular, CTI has named the specific conventions it will be following during the project, it has indicated the necessary software to access the data in question, as well the accompanying documentation for such access. CTI has confirmed that access is free. With regard to interoperability of data, CTI replied that the data in question are interoperable and that metadata vocabularies will apply. Finally, it confirms that data will be accessed by third-parties after the project ends and that the data will remain available for an indeterminate period of time in the future.

3.2 The EURONET dataset

The datasets collected, processed or generated by EURONET during the HARMONIA lifecycle are listed below:

Title of the dataset	Personal information/ data
Task	8.5 Business models, exploitation plan & HARMONIA IRAP sustainability
Data owner/controller	EURONET – Emiliano Spaltro
Time period covered by the Dataset	N/A

Subject	Some personal data (at least name, surname, email, phone, country) will be collected. These data will be dealt with in compliance with the applicable rules on the protection of natural persons with regard to the processing of personal data. Information will be collected through direct consultation with end-users (i.e., interviews, meetings…) and with their informed consent. An ad-hoc privacy statement on the protection of personal data will be prepared and shared with the person before the interview. In final deliverables, no personal data will be disclosed. Sensitive info will be presented only in an aggregate and anonymous way (the business plan should be classified as a confidential document)

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	N/A
Metadata standards	N/A
Naming conventions	N/A
Search keywords	N/A
Versioning	N/A
2.2. Making data openly accessible	
Classification	Personal data
Sharing and access	Only EURONET staff involved in the HARMONIA project and working on task 8.5 will have access to these data. Personal data will be not shared with third parties.
Software necessary to access the data	N/A

Documentation	N/A
Access authorisation	N/A
Access conditions	N/A
2.3. Making data interoperable	
Interoperability	N/A
Metadata vocabularies	N/A
Project ontologies	N/A
2.4. Increase data re-use	
License conditions	No
Third-parties access after project end	No
Data quality assurance procedures	All personal data are dealt with in compliance with the applicable rules on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data (currently Regulation (EU) No 2018/1725). When applicable, they will be managed also in line to national or international regulations.
Availability period	The overall project duration

EURONET shall collect and process personal data. In this context the FAIR data principles are not applicable to the dataset in question. Nevertheless, EURONET confirms that it will apply the GDPR requirements as regards the protection of such data, including for instance by acquiring the data subjects' informed consent, by limiting access to EURONET personnel that is involved in the Harmonia project and anonymising any personal information in final deliverables. Compliance with the GDPR by those partners who will be involved in data processing activities are addressed in the second part of this report.

3.3 The IXELLES dataset (in collaboration with GHS)

The datasets collected, processed or generated by IXELLES in collaboration with GHS during the HARMONIA lifecycle are listed below:

Title of the dataset - n°1	PRAS - Plan Régional d'affectation des sols
Task	ASSIMILA (T2.2, T4.3, T5.2)
Data owner/controller	perspective.brussels
Time period covered by the Dataset	2021
Subject	In situ land cover/ land use maps

Title of the dataset - n°2	**not available**
Task	FORTH (T5.3)
Data owner/controller	**not available**
Time period covered by the Dataset	**not available**
Subject	Tree footprints/heights

Title of the dataset - n°3	orthophotos + BruCiel
Task	GSH (T3.2)
Data owner/controller	CIRB-UrbIS + urban.brussels
Time period covered by the Dataset	1971-2021 + 1930-2021
Subject	Archive - historical airborne /VHR time series images

Title of the dataset - n°4	UrbIS P&B
Task	GSH (T3.2)
Data owner/controller	CIRB-UrbIS
Time period covered by the Dataset	2021
Subject	National census data or cadastral

Title of the dataset - n°5	various statistics + Monitoring des Quartiers
Task	GSH (T3.2)
Data owner/controller	IBSA + district Monitoring
Time period covered by the Dataset	2001-2021 + 2001-2021
Subject	Demographics data (population density) & mobility data

Title of the dataset - n°6	Espaces Verts (RBC:Zones vertes du PRAS) / Espaces Verts + Vegetation_2016 / public_green_area + shapeGb
Task	GSH (T3.2)
Data owner/controller	urban.brussels + Brussels Environment + CIRB-UrbIS
Time period covered by the Dataset	**Static data (No Date)**
Subject	Utilities data (public services, parks)

Title of the dataset - n°7	CIRB-UrbIS-DTM + BE.NGI-IGN DTM
Task	POLIMI (T4.4)

Data owner/controller	CIRB-UrbIS + National Geographic Institute
Time period covered by the Dataset	2019 -+ 2018-12-31
Subject	Digital terrain models

Title of the dataset - n°8	GeoTool
Task	POLIMI (T4.4)
Data owner/controller	Brussels Environment
Time period covered by the Dataset	**No Date**
Subject	Geological and hydrogeological maps Geotechnical information on involved soils (mechanical and hydraulic properties). Active monitoring data (geotechnical and hydraulic)

Title of the dataset - n°9	Air temperature, pressure, precipitation, humidity, wind speed/direction
Task	FMI (T4.1, T5.5)
Data owner/controller	RMI
Time period covered by the Dataset	2017-11-18 - 2021 (monthly updated)
Subject	Meteorological data from local ground stations + Weather radar precipitation nowcasts/forecasts and/or rain gauge nowcast data, as well as historic records for model validation purposes

Title of the dataset - n°10	**not available**
Task	FMI (T4.1, T5.5)

Data owner/controller	Brussels Environment - **to explore**
Time period covered by the Dataset	**not available**
Subject	River discharge observations and/or drainage flow observations

Title of the dataset - n°11	UrbIS-ADM MU 21009
Task	FMI (T4.1, T5.5)
Data owner/controller	CIRB-UrbIS
Time period covered by the Dataset	2021
Subject	Shape files of municipality borders/streets

Title of the dataset - n°12	**not available**
Task	INGV (T5.6)
Data owner/controller	**not available**
Time period covered by the Dataset	**not available**
Subject	GNSS data (time series of station coordinates) for all the permanent or survey-mode GNSS benchmarks existing in the 4 selected municipalities, covering an extension at least 30 km larger than the area under study

Title of the dataset - n°13	GeoTool - **to explore**
Task	INGV (T5.6)
Data owner/controller	Brussels Environment - to explore

Time period covered by the Dataset	**not available**
Subject	Optical leveling data at different epochs in the period 2016 to present

Title of the dataset - n°14	GeoTool
Task	INGV (T5.6)
Data owner/controller	Brussels Environment
Time period covered by the Dataset	**ND**
Subject	Piezometric level data for shallow to deep wells, for the period 2016 to present

Title of the dataset - n°15	**ND - exploration in progress**
Task	INGV (T5.6)
Data owner/controller	STIB
Time period covered by the Dataset	**ND**
Subject	Subway and Metro lines routes with depth and dimension of tunnels

Title of the dataset - n°16	api counts
Task	UVT (T4.6)
Data owner/controller	Brussels Mobility
Time period covered by the Dataset	realtime

Subject	Non authoritative traffic data

Title of the dataset - n°17	**ND - later stages ?**
Task	UVT (T4.6)
Data owner/controller	**ND**
Time period covered by the Dataset	**ND**
Subject	Data collected from citizens for collaborative planning projects or for other activities involving citizens and data collection for environmental related activities.

Title of the dataset - n°18	**not available**
Task	UVT (T4.6)
Data owner/controller	Google - Apple - ...
Time period covered by the Dataset	**ND**
Subject	Google mobility trends, Apple mobility reports, Facebook data for good, waze data exports openstreetmap, data collected from twitter posts, Instagram

Title of the dataset - n°19	**Clarification needed - data not understood**
Task	URBASOFIA (T3.1)
Data owner/controller	**Clarification needed - data not understood**
Time period covered by the Dataset	**Clarification needed - data not understood**

Subject	Personal Data: Name and email (for some cases) and localization data.

Title of the dataset - n°20	**Clarification needed - data not understood**
Task	URBASOFIA (T3.1)
Data owner/controller	**Clarification needed - data not understood**
Time period covered by the Dataset	**Clarification needed - data not understood**
Subject	Sensor data (quantitative collection)

Title of the dataset - n°21	**Clarification needed - data not understood**
Task	URBASOFIA (T3.1)
Data owner/controller	**Clarification needed - data not understood**
Time period covered by the Dataset	**Clarification needed - data not understood**
Subject	Sensibility data (qualitative collection) through text (questionnaire), photo, metadata, etc.

Title of the dataset - n°22	air quality data - pollutants concentrations
Task	HUMANITAS (T4.5)
Data owner/controller	IrCeline
Time period covered by the Dataset	2010 - 2021

Subject	Sensor data (quantitative collection)

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	Coordinate Reference System (CRS), scale -> for all geospatial data bit depth, pixel size- > for geospatial data with raster data (Digital Terrain Models, Airborne/historical imagery) time of acquisition,name of data set -> for all data various metadata such as position (latitude+longitude), time intervals between measurements, zone code, station city, station name, detection limit, component caption, etc. -> For atmospheric in-situ stations in Brussels
Metadata standards	INSPIRE, OGC
Naming conventions	CIRB-UrbIS - GeoTool - IBSA
Search keywords	atmospheric, traffic, DTM, ortho
Versioning	CIRB-UrbIS
2.2. Making data openly accessible	
Classification	FALSE
Sharing and access	all except STIB and BruCiel (to be determined)
Software necessary to access the data	GIS software such as QGIS, ArcGIS, etc. Some data are available for view in webGIS or data plot and other web applications from the data providers (e.g. https://ibsa.brussels/themes/population/evolution-annuelle, https://datastore.brussels/web/map)
Documentation	TRUE

Access authorisation	FREE except : ● STIB and BruCiel (to be determined) ● RMI - API identification ● Google,Apple,Facebook,... not determined
Access conditions	FREE except : ● STIB and BruCiel (to be determined) ● Google,Apple,Facebook,... to pay
2.3. Making data interoperable	
Interoperability	TRUE for UrbIS, Brussels Environment (GeoTool), IrCeline, Brussels Mobility, IBSA, district monitoring, National Geographic Institute, RMI FALSE for urban.brussels, perspective.brussels, Brussels Environment (Green_area), STIB, BruCiel
Metadata vocabularies	Yes, most providers give xml schemas for the metadata
Project ontologies	
2.4. Increase data re-use	
License conditions	NA except for RMI, STIB, BruCiel (to be determined with them)
Third-parties access after project end	TRUE except for RMI, STIB, BruCiel (to be determined with them)
Data quality assurance procedures	TRUE for UrbIS, Brussels Environment (GeoTool), IrCeline, Brussels Mobility, IBSA, district monitoring, National Geographic Institute, RMI FALSE for urban.brussels, perspective.brussels, Brussels Environment (Green_area), STIB, BruCiel
Availability period	opendata except for RMI, STIB, BruCiel (to be determined with them)

The datasets provided by the Municapality of Ixelles are not finalised yet. Given that the DMP is a dynamic tool that will be updated regularly during the Harmonia project, this shouldn't present any difficulties for the project. As regards the fair data principles in particular, Ixelles has named

the conventions that it will follow and has declared specific search keywords as well as the types of metadata that will be generated. In the context of making data accessible Ixelles has confirmed that all datasets will be free to access with the exception of STIB and BruCiel, access to which will be determined in the near future. The necessary software to have access to the data in question is GIS software while some data are available for view in webGIS or data plot and other web applications from the data providers. According to feedback provided by Ixelles interoperability does not apply to all datasets provided in the context of the project. License conditions and third-party access rights vary depending on the dataset and so does the availability period of the data in question as the majority of them are categorised as open data with some exceptions as these are listed in the relevant field. Based on the feedback received by Ixelles, it can be concluded that the Municipality will create and process its datasets under the fair data principles, as applicable.

3.4 The RG dataset

The datasets collected, processed or generated by RG during the HARMONIA lifecycle are listed below:

Title of the dataset	Dataset 1: Resilience_weights_Unprocessed Dataset 2: Resilience_weights_Processed
Task	Task 6.2: Vulnerability Assessment and Urban Resilience
Data owner/controller	RG
Time period covered by the Dataset	M13-M42 (indicative)
Subject	Resilience indicators, weights. Technical data for defining the indicator weights and hence calibrating the urban resilience assessment tool

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis
2.1. Making data findable, including provisions for metadata

Types of metadata	Standard metadata e.g. title, author, date created, last modification day and time for the processed dataset. No metadata will be created for the unprocessed dataset, since it won't be made accessible to the public
Metadata standards	
Naming conventions	The naming convention will follow a standard scheme e.g. [dataset name]_[expertID]_[version]
Search keywords	Appropriate keywords will be assigned to the processed dataset only e.g. weights, resilience, indicators
Versioning	Appropriate version numbering will be used, e.g. v0.1, v0.2…v1.0
2.2. Making data openly accessible	
Classification	Unprocessed dataset: Restricted to consortium members Processed dataset: Open
Sharing and access	The unprocessed dataset will not be made openly accessible. Although the data will be anonymised, they won't be shared in their unprocessed form to avoid any indirect link to the experts/end-users providing the data. Processed data (e.g. statistics) would be made openly available by means of the project foreseen deliverables and publications. If needed (depending on the data that will be collected) the processed dataset might be published in an open access repository
Software necessary to access the data	Standard pdf, txt, doc, xls file readers
Documentation	No documentation is required for accessing the data
Access authorisation	RG
Access conditions	Access to unprocessed dataset is restricted to the consortium members and is granted to the HARMONIA partners by RG upon their request
2.3. Making data interoperable	

Interoperability	Yes
Metadata vocabularies	No special means are needed to access the processed data that will be collected and presented in a standard format
Project ontologies	N/A
2.4. Increase data re-use	
License conditions	No licence is needed for using the processed data apart from reference to the original work that the data appeared to
Third-parties access after project end	The processed data will be available to anyone interested
Data quality assurance procedures	The data quality assurance will comply with the quality assurance plan of the HARMONIA project and the relevant policy of RG
Availability period	No time restrictions for the processed data. The unprocessed data will be deleted following the project completion.

RG will be providing two datasets, one characterised as "processed" and another characterised as "unprocessed" data. Based on the received feedback RG is taking all necessary steps is order to be in compliance with the fair data principles. Specifically, RG will use appropriate keyword and version numbering. As regards access to data, the unprocessed dataset will only be available to consortium members. Although the data will be anonymised, they won't be shared in their unprocessed form to avoid any indirect link to the experts/end-users providing the data. Processed data on the other hand will be made openly available. Access to all data will be provided by RG. Data will be interoperable whereas no license will be needed to access them. The processed data will be available to any third-parties. Finally, no time restrictions will apply to the processed data whereas the unprocessed data will be deleted a soon as the project is complete.

3.5 The SOFIA Municipality dataset

The datasets collected, processed or generated by SOFIA during the HARMONIA lifecycle are listed below:

Title of the dataset	1. Sofia Municipality River level monitoring system 2. Mobile weather station 3. Urban heat islands monitoring 4. Geohazards 5. Orthophoto data
Task	Task under WP 2, 3, 4, 5, 6, 7
Data owner/controller	For 1) Sofia Municipality For 2) Sofia Municipality For 3) Sofia Municipality For 4) Other Governmental institution For 5) Other Governmental institution
Time period covered by the Dataset	From 8/2021
Subject	Development of a support for improved Resilience and sustainable urban areas to cope with climate change and extreme events based on GEOSS and advanced modelling tools – Harmonia as described in the project proposal, approved by the EC program – HORIZON 2020

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	Geographical data (GIS data), Statistical data, pdf, etc.
Metadata standards	INSPIRE and OGC
Naming conventions	Under discussion
Search keywords	No applicable
Versioning	Depending on data providers

2.2. Making data openly accessible	
Classification	FALSE
Sharing and access	to be determined
Software necessary to access the data	GIS software (for example QGIS)
Documentation	To some extend
Access authorisation	Sofia Municipality WEB Portal / To be determined
Access conditions	To be determined
2.3. Making data interoperable	
Interoperability	TRUE for Sofia GIS Department, FALSE for other departments or to be determined
Metadata vocabularies	Clarification needed - not understood
Project ontologies	Clarification needed - not understood
2.4. Increase data re-use	
License conditions	to be determined
Third-parties access after project end	to be determined
Data quality assurance procedures	Responsibility of Data providers; INSPIRE Directive to be applied on National level by State Agency for E Government
Availability period	to be determined during the Project immplementation

Sofia Municipality will share five datasets within the Harmonia project. Based on the replies received by Sofia, the Municipality's DMP is not finalised yet however to the extent that this may be evaluated by the partner's replies, the fair data principles will be respected as per the conditions that follow: The metadata that will be used include Geographical data (GIS data), Statistical data, pdf. and the applicable metadata standards are INSPIRE and OGC. Access conditions to the data in question are yet to be determined however the software necessary for such access will be the GIS software (for example QGIS). As regards data quality, the INSPIRE Directive will apply at national level by State Agency for e-Government. The quality of other data will be verified by each data provider. Sofia Municipality is expected to determine access rights in particular within the next months.

3.6 The URBASOFIA dataset

The datasets collected, processed or generated by URBASOFIA during the HARMONIA lifecycle are listed below

Title of the dataset	Citizen-based and end-users data collection
Task	Two activities in WP2/WP3 link with dataset, though collection of requirements, questionnaires, workshops and citizen-based data acquisition in a participative approach
Data owner/controller	Probably an IT service for the URBASOFIA server
Time period covered by the Dataset	M2 – M25
Subject	Personal data identifiers will be collected (e-mail, addresses, age, gender, occupation, etc...) during the different questionnaires and workshop with Harmonia's partners and pilot cities (WP2). The collection of citizens-based data will serve the purpose of understanding and quantifying the CC effects on urban areas from the population point of view (WP3).

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis
2.1. Making data findable, including provisions for metadata

Types of metadata	Personal Data, “Citizens as observatories”…
Metadata standards	Date of the observation; Age categories; Level of educations; Neighborhood localisation; level of knowledge with the field
Naming conventions	[dd/mm/yyyy] ; [<20 – 20-30 ; 31-49 ; 50-69 ; >69]; [SectorName, Municipality]; [high-school degree, bachelors, master]; [none - medium - important – expert]
Search keywords	“Below” “Above” “affirmative/positive” “negative” “included” “excluded” “NameCity”
Versioning	Month or Week
2.2. Making data openly accessible	
Classification	Possible
Sharing and access	Only Harmonia Consortium allowed to read the report and need the data to analyse the well-going of the project
Software necessary to access the data	The participation will be encouraged through the use of smartphones and personal devices armed with low-cost sensors (new mobile solutions for community science). Questionnaires and Workshop (online)
Documentation	*Users Guide*
Access authorisation	
Access conditions	limited
2.3. Making data interoperable	
Interoperability	Yes
Metadata vocabularies	

Project ontologies	
2.4. Increase data re-use	
License conditions	LP of HARMONIA project and Muncipality responsible services
Third-parties access after project end	
Data quality assurance procedures	monitoring
Availability period	Harmonia project procedure

URBASOFIA will collect personal data for the purposes of the Harmonia project and specifically citizens data such as e-mail, addresses, age, gender, occupation, etc. Therefore, the fair data principles do not find applicability in the specific dataset, however URBASOFIA will need to undertake all necessary steps in order to achieve compliance with the GDPR. Guidance on GDPR compliance and its implementation to the Harmonia project may be found in the second part of this report. As regards access rights to URBASOFIA's dataset in particular, this will only be allowed to Harmonia partners. It is suggested that such data will be anonymised before being shared with the consortium unless this hinders the project's purpose.

3.7 The POLIMI dataset

The datasets collected, processed or generated by POLIMI during the HARMONIA lifecycle are listed below:

Title of the dataset	Dataset 1: Geotechnical parameters calibration and validation Dataset 2: Quantitative measurements Dataset 3: Milano Municipality Topographic Database (DBT) Dataset 4: Precipitation measurements Dataset 5: Earth Observation data (e.g. Sentinel and/or Landsat imagery) Dataset 6: Regional orthophotos Dataset 7: Regional land use/land cover data (DUSAF) Dataset 8: Demographical data Dataset 9: Traffic data Dataset 10: OpenStreetMap Dataset 11: Facebook Data for Good

	Dataset 12: crowdsourced data (e.g. Twitter posts) Dataset 13: Digital Terrain Models
Task	T4.4 (Geotechnical Models for CC context) T4.6 Urban context models (mobility, demographics, etc.) T7.2 (Pilot activities in Milan), respectively
Data owner/controller	Public data providers (Comune di Milano and Regional Environmental Protection Agency - ARPA Lombardia) POLIMI (collected, processed data and processed) European Commission USGS Lombardy Region OpenStreetMao Twitter Facebook Vehicle Rental services Sofia Municipality Ixelles Municipality Piraeus Municipality
Time period covered by the Dataset	At least between 2000 and current date (for example for data set 4) Period regarding specific sudden hazardous events (e.g. Dataset 5 for Urban flash floods, Task 7.2)
Subject	rainfall triggered landslides, information about precipitation (for impact evaluation and assessment of urban flash flooding), information about soil geotechnical parameters (mechanical properties), information about stratigraphy, demographical data, terrain height, social media, topographic map

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	Geological, Hydrogeological and Seismic components Hydro-*nivo*-meteorological data archive Metadata for geospatial information complying to INSPIRE and OGC standards
Metadata standards	ISO, OGC and INSPIRE,

Naming conventions	The naming convention will follow a standard scheme e.g. [dataset name]_[expertID]_[version] Naming conventions will be introduced at the processing level. Original data sources will probably not provide strict naming conventions, in case, these conventions will be respected.
Search keywords	Elevation, geology, hydrogeology, DTM (digital terrain model), soil geotechnical properties, soil stratigraphy, rainfall, precipitation, monitoring, urban flash flooding, land use/land cover, hydrography
Versioning	v0.1, v0.2…v1.0
2.2. Making data openly accessible	
Classification	Unprocessed data: Collected raw data Processed data: Translated data
Sharing and access	Unprocessed data access is how it is currently available by the data providersand /or data collected by POLIMI for purposes of HARMONIA project. Processed data will be available to be shared publicly open or upon requests to POLIMI and according to the consortium members' consensus.
Software necessary to access the data	Geographic Information System software (such as QGIS, ArcGIS) for the files with the extensions such as .shp or GEOJSON; tools to read .pdf, .doc, .xls, .csv files
Documentation	For the data that is going to be requested, a form could be asked to fill to declare the aim of obtaining this data.
Access authorisation	POLIMI
Access conditions	N.A.
2.3. Making data interoperable	
Interoperability	YES (for geospatial information main reference will be the INSPIRE Directive)
Metadata vocabularies	
Project ontologies	N.A.

2.4. Increase data re-use	
License conditions	
Third-parties access after project end	The processed data will be available either open public or shared by request based on the type of data.
Data quality assurance procedures	The data quality assurance is going to be complied with HARMONIA's and the relevant policy of POLIMI.
Availability period	No time restrictions for the processed data, however the unprocessed (raw) data will be eliminated after project is finalized.

Several datasets will be generated and processed by POLIMI for the purposes of the Harmonia project. POLIMI has provided information on types of metadata, standards, keywords and conventions thus complying with the principle of making data findable. With regard to access rights POLIMI shall make processed data available to third parties upon request. Access to unprocessed data will be governed by the relevant access terms of the data providers. Interoperability of data will be performed in accordance with the INSPIRE Directive. Finally, no time restrictions will apply for the processed data, however the unprocessed (raw) data will be eliminated after the project is concluded. Based on the received feedback it is concluded that POLIMI implements the fair data principles while generating and processing its datasets.

3.8 The INGV dataset

Title of the dataset	Satellite-derived ground motion data and products
Task	Tasks 5.6, 7.2, 7.3, 7.4, 7.5
Data owner/controller	Raw satellite data: Copernicus Processed products: Istituto Nazionale di Geofisica e Vulcanologia
Time period covered by the Dataset	Please define the start and end date of the period covered by the dataset 2015-2024

Subject	Satellite SAR (Synthetic Aperture Radar) data covering the four pilot areas, ground displacement time series, mean ground velocities

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	Satellite data: metadata provided by ESA in XML format Derived products: metadata to be agreed with partners
Metadata standards	Satellite data: metadata provided by ESA Derived products: EPOS metadata could be used if agreed
Naming conventions	Can be decided based on user needs
Search keywords	They can be provided based on user needs
Versioning	Yes
2.2. Making data openly accessible	
Classification	
Sharing and access	Satellite data are already openly accessible, derived products will be openly accessible if the municipality partners agree. Both will be accessed as single files with metadata.
Software necessary to access the data	The satellite SAR data are distributed by ESA and are accessed using a dedicated online catalogue: the ESA SìciHub (https://scihub.copernicus.eu/). The processed products (ground motion maps) will be accessed, as a minimum via ftp protocol, and analysed using a GIS tool (i.e. QGIS).
Documentation	TBD

Access authorisation	TBD
Access conditions	TBD
2.3. Making data interoperable	
Interoperability	no
Metadata vocabularies	
Project ontologies	
2.4. Increase data re-use	
License conditions	For processed products: CC:BY:NC
Third-parties access after project end	Granted
Data quality assurance procedures	Yes
Availability period	No expiration

With respect to the fair data principles INGV has provided its replies in order to be evaluated whether these principles are being observed in the context of the Harmonia project. Specifically, INGV listed the types of metadata that will be created as well as the applicable metadata standards. As regards access rights, INGV clarified that satellite data (which are the data that will be collected by the partner in question) are already openly accessible and that derived products will be openly accessible if the municipality partners agree. In addition, it provided information on the software that will be necessary to access the data. Access and authorisation conditions will be determined in the near future. Interoperability will not apply to the specific data. Finally, third-parties will be granted access after the project is completed whereas the availability period of the specific data is unlimited. It is concluded that INGV has taken concrete steps in order to make sure that the fair data principles will apply for the specific dataset it will create and process; however, there are certain fields that no final decisions have yet been reached, which is nevertheless to be

expacted, given the early stage of the Harmonia Project; these are anticipated to be determined in the next few months.

3.9 The ASDE dataset

The datasets collected, processed or generated by ASDE/ECOREGIONS during the HARMONIA lifecycle are listed below:

Preliminary Note: ASDE-ECOREGIONS is a complex R&D structure providing various services. On one side it develops capacity on data acquisition and management, but mainly ASDE is using information from different databases, provided by different data providers/sources, using different services (GIS, raster/vector formats, statistics, etc). Defining the needed datasets depends very much on the specific characteristics of the detailed Sofia Pilot program and administrative capacity, during the next stage of the project implementation. On other side the availability of datasets is flexible – as example the so-called JICA databases of Bulgaria, recently disappeared from the list of available providers. Thus we can not define all datasets which will be used under HARMONIA project. We can define some major datasets which we are sure to be applicate.

Title of the dataset	1) Bulgarian Spatial Data Infrastructure - http://bsdi.asde-bg.org/; simulation modelling/ Risk Manager application/ Risk Navigator application; 2) Sofia Municipal DSM1 (provided by ESA/GAF); Sofia Municipal DSM2 (provided by SM-DESP-MAF) 3) CbM interpretation of data from SENTINEL, provided by CREODIAS 4) Thematic Data sets, provided by SM-DESP
Task	Tasks under WP 2,3,4,5,6,7
Data owner/controller	For 1) SAITS/ASDE-ECOREGIONS; For 2) ESA/SM-RESP-MAF/ASDE-ECOREGIONS; For 3) EC-DIAS-CREODIAS/ASDE-ECOREGIONS; For 4) SM-DESP and various data providing structures;
Time period covered by the Dataset	1) Various – 2005-2010; 2) 2019-2020; 3) 2016-2021;
Subject	'Development of a Support System for Improved Resilience and Sustainable Urban areas to cope with Climate Change and Extreme Events based on GEOSS and Advanced Modelling Tools' — 'HARMONIA', as described in the project proposal, approved by the EC Program- HORISON 2020.

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis

2.1. Making data findable, including provisions for metadata	
Types of metadata	To be defined together with SM-DESP
Metadata standards	To be defined with SM-DESP
Naming conventions	To be defined with SM-DESP
Search keywords	To be defined with SM-DESP
Versioning	To be defined with SM-DESP
2.2. Making data openly accessible	
Classification	To be defined with SM-DESP
Sharing and access	To be defined with SM-DESP
Software necessary to access the data	To be defined with SM-DESP
Documentation	To be defined with SM-DESP
Access authorisation	To be defined with SM-DESP
Access conditions	To be defined with SM-DESP
2.3. Making data interoperable	
Interoperability	To be defined with SM-DESP
Metadata vocabularies	To be defined with SM-DESP
Project ontologies	To be defined with SM-DESP

2.4. Increase data re-use	
License conditions	To be defined with SM-DESP
Third-parties access after project end	To be defined with SM-DESP
Data quality assurance procedures	To be defined with SM-DESP
Availability period	To be defined with SM-DESP

The DMP provided by ASDE is still at a premature stage. As a result, the partner in question listed the datasets that will certainly be used for the purposes of the Harmonia project but not all the datasets that will be generated and processed throughout the project's lifetime. In addition, ASDE was not in a position to define how the fair data principles will apply which will be co-decided with SM-DESP in the months to come.

3.10 The ASSIMILA dataset

The datasets collected, processed or generated by ASSIMILA during the HARMONIA lifecycle are listed below:

Title of the dataset	1. Copernicus Sentinel-2
Task	T5.2
Data owner/controller	Data IPR belongs to the EU under the Copernicus Programme. Data is available with an open license
Time period covered by the Dataset	2015 - present
Subject	Optical Earth observation data

Title of the dataset	Copernicus Atmospheric Monitoring Service (CAMS)
Task	2. T5.2
Data owner/controller	Data IPR belongs to the EU under the Copernicus Programme. Data is available with an open license
Time period covered by the Dataset	2003 - Present
Subject	Atmospheric Composition data both real-time and reanalysis

Title of the dataset	Urban Greenness
Task	T5.2
Data owner/controller	Assimila
Time period covered by the Dataset	2015 - Present
Subject	Indicators of urban greenness for the cities involved in the project

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	Full metadata at the granule level describing data date/time/location. QA metadata at the granule and some cases the sample level.

Metadata standards	INSPIRE
Naming conventions	Native naming conventions for all Copernicus data , with key metadata =embedded in the filename
Search keywords	TBD
Versioning	Versioning not expected for the input datasets. Full version control maintained for dataset #3
2.2. Making data openly accessible	
Classification	
Sharing and access	Input data are open access/ Dataset #3 will be according to the terms of the collaboration and grant agreements
Software necessary to access the data	Data stored in standard formats. Very wide range of image processing and GIS packages, both commercial and open source, will be able access the data
Documentation	Product user guides available
Access authorisation	Input data are open source
Access conditions	Input data are open source
2.3. Making data interoperable	
Interoperability	TBD
Metadata vocabularies	TBD
Project ontologies	TBD
2.4. Increase data re-use	
License conditions	Open access for input data. TBD for dataset #3

Third-parties access after project end	TBD
Data quality assurance procedures	Tracing of QA flags and uncertainties through the processing chain
Availability period	Collected data maintained indefinitely. For dataset #3 will be maintained for TBD years after the end of the project

ASSIMILA shared three datasets titles that it will generate and process for the purposes of the Harmonia project. The first two datasets derive data from the Copernicus programme whereas the third dataset is owned by ASSIMILA itself. As regards compliance with the fair data principles, ASSIMILA shared the types of metadata, the metadata standards (INSPIRE) as well as the conventions that it will follow throughout the process in order to ensure that data will be findable. In terms of access, ASSIMILA confirmed that for the two first datasets all data are open access whereas for the third access will be governed by the terms of the GA. In addition, it clarified that data are stored in standard formats so access will be available through a wide range of image processing and GIS packages, whereas product user guides will be available. As regards interoperability, no input has been provided by the partner in question as this issue will be further clarified within the next few months according to project requirements. Finally, access to data of the first two datasets will be free, while access to third dataset that is owned by ASSIMILA will be further discussed and so will access rights of third parties after the project ends. Collected data will be maintained indefinitely. Specifically, for dataset 3 ASSIMILA cannot confirm for how long these data will be available once the project is completed. Based on the received feedback, ASSIMILA has taken a concrete set of measures to comply with the fair data principles; Certain issues regarding the third dataset owned by it remain to be clarified in the near future, as per project requirements.

3.11 The FMI dataset

The datasets collected, processed or generated by FMI during the HARMONIA lifecycle are listed below:

Title of the dataset	Seasonal forecasts from the Copernicus Climate Change Service (C3S), bias-adjusted with ERA5-Land and ecPoint-Calibrate
Task	Anni Kröger
Data owner/controller	FMI / Mikko Strahlendorff
Time period covered by the Dataset	2021 July onwards
Subject	https://sm.harvesterseasons.com/grid-gui

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1 Making data findable, including provision for metadata	
Types of metadata	Catalog service to be identified for 2.1
Metadata standards	-
Naming conventions	-
Search keywords	-
Versioning	-
2.2 Making data openly accessible	
Classification	Open data
Sharing and access	Allowed
Software necessary to access the data	Web browser / http(s) interface
Documentation	-
Access authorisation	Open
Access conditions	Free
2.3 Making data interoperable	
Interoperability	WMS 1.X, WFS 2.0 APIs
Metadata vocabularies	-
Project ontologies	ECMWF shortnames and units (https://apps.ecmwf.int/codes/grib/param-
2.4 Increase data re-use	
License conditions	https://en.ilmatieteenlaitos.fi/open-data-licence
Third-parties access after project ended	Yes
Data quality assurance procedures	QC scripts
Availability period	2 years rolling archive

FMI will generate and process a dataset for the purposes of the Harmonia project that will include seasonal forecasts from the Copernicus Climate Change Service (C3S), that will be bias-adjusted with ERA5-Land and ecPoint-Calibrate. FMI stated that the types of metadate will be clarified however it did not provide any specific information on metadata standards, keywords, versioning and conventions, all issues to be clarified during the project's lifecyle. As regards accessibility to data, these will be open data and therefore no authorisation will be needed and therefore access to them will be free. FMI provided information on the interoperability to the data in question as well as on the license conditions applicable to them.

3.12 The PIRAEUS dataset

The datasets collected, processed or generated by PIRAEUS during the HARMONIA lifecycle are listed below:

Title of the dataset-n°1	Historical Images
Task	T3.2
Data owner/controller	Hellenic Military Geographical Service
Time period covered by the Dataset	Availability since 1938
Subject	Archive - historical airborne /VHR time series images

Title of the dataset-n°2	Cadastral data
Task	T3.2
Data owner/controller	Hellenic Statistical Authority
Time period covered by the Dataset	
Subject	

Title of the dataset-n°3	Piraeus demographics
Task	T3.2
Data owner/controller	Hellenic Statistical Authority
Time period covered by the Dataset	Every 10 years, 2001, 2011, 2021
Subject	Demographics data sets such as population density and other indexes

Title of the dataset-n°4	Piraeus Digital Terrain Model

Task	T4.4
Data owner/controller	Hellenic Cadastre
Time period covered by the Dataset	2010 - 2020
Subject	Digital Terrain Model

Title of the dataset-n°5	Piraeus geological and hydrological maps
Task	T4.4
Data owner/controller	Institute of Geology and Mineral Exploration (IGME)
Time period covered by the Dataset	-
Subject	Geological map, drainage basins and hydrological maps

Title of the dataset-n°6	Piraeus meteorological data
Task	T4.1 & T5.5
Data owner/controller	Institute for Environmental and Sustainable Development, National Observatory of Athens
Time period covered by the Dataset	Since 1980
Subject	Weather radar precipitation nowcasts/forecasts and/or rain gauge nowcast data, as well as historic records for model validation purposes

Title of the dataset-n°7	Piraeus municipality borders
Task	FMI (T4.1, T5.5)

Data owner/controller	Hellenic Statistical Authority
Time period covered by the Dataset	2011 (static)
Subject	Shapefiles of municipality borders/streets

Title of the dataset-n°8	Piraeus - Subway and Metro lines routes
Task	T5.6
Data owner/controller	Attiko Metro
Time period covered by the Dataset	n/a
Subject	Train lines routes with dimensions

The relevant FAIR analysis of the above dataset(s) is/are provided in the following table:

FAIR Dataset Analysis	
2.1. Making data findable, including provisions for metadata	
Types of metadata	Coordinate Reference System (CRS), scale -> for all geospatial datasets, bit depth and pixel size -> for geospatial data (raster) time of acquisition, name of data set -> for all data
Metadata standards	INSPIRE, OGC
Naming conventions	-
Search keywords	atmospheric, DTM, orthoimages

Versioning	-
2.2. Making data openly accessible	
Classification	FALSE
Sharing and access	Data collected by Municipality of Piraeus will be shared across partners for processing purposes only in the context of HARMONIA project
Software necessary to access the data	GIS software such as QGIS, ArcGIS, etc.
Documentation	TRUE
Access authorisation	Most data sets can be acquired by individuals via formal requests
Access conditions	Atmospheric data (NOA) payment needed Historical airborne images (HGMS) payment needed (TBD) Others free access (TBD)
2.3. Making data interoperable	
Interoperability	TBD
Metadata vocabularies	Most providers give xml schemas for the metadata
Project ontologies	Yes, in case of using uncommon or generating project scientific ontologies or vocabularies, the partners will provide mappings to more commonly used ontologies and follow standards such as INSPIRE
2.4. Increase data re-use	
License conditions	NOA, HGMS need explicit licences to provide data All datasets acquired by municipality of Piraeus require formal requests from the corresponding agencies of Greece
Third-parties access after project end	TBD

Data quality assurance procedures	TBD
Availability period	In the duration of the project (TBD)

The Municipality of Piraeus provided a wide list of datasets that will be generated and processed for the purposes of the Harmonia project. It is noted that as per the Municipality's statement the list of data owner/providers is not final, and it may be modified based on the availability and quality of the data in question. As regards the fair data principles, the Municipality of Piraeus provided the types of metadata that will be generated as well as specific keywords as required in order to make data findable. In terms of accessibility of data all data collected by the Municipality of Piraeus will be shared across partners for processing purposes only in the context of HARMONIA project. A specific software to access the has been identified. With respect to access conditions atmospheric data can be accessed upon payment and same will likely be the case for historical airborne images (HGMS) even though this will be confirmed at a later stage of the project. Other data will be free to access unless otherwise agreed as the project progresses. Interoperability of the data in questions has not been clarified yet, whereas when it comes to licensing conditions for access to data provided by NOA and HGMS an explicit licence will be needed. All datasets acquired by municipality of Piraeus require formal requests from the corresponding agencies of Greece. It is noted that for the time-being and given the temporary character of the DMP provided by the Municipality of Piraeus, the partner in question has taken some main steps in order to be in compliance with the fair data principles.

4. Data Ethics in the Harmonia Project: a general approach to data ethics and the protection of personal data under the GDPR in particular

4.1. An introduction to data ethics in research

Data ethics constitute a significant parameter in all Horizon 2020 projects and an integral part of conducting research ethically. In this context the Regulation establishing Horizon 2020[3] in its article 19, under the title "Ethical Principles", describes the main ethics' concerns and principles that should be taken into consideration when conducting research. These are comprised in the following list:

a. All the research and innovation activities carried out under Horizon 2020 projects shall comply with ethical principles and relevant national, Union and international legislation, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols. Particular attention shall be paid to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of a person, the right to non-discrimination and the need to ensure high levels of human health protection;

b. Research and innovation activities carried out under Horizon 2020 shall have an exclusive focus on civil applications;

c. In Horizon 2020 projects the following fields of research shall not be financed: research activity aiming at human cloning for reproductive purposes; research activity intended to modify the genetic heritage of human beings which could make such changes heritable; research activities intended to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer;

d. Research on human stem cells, both adult and embryonic, may be financed, depending both on the contents of the scientific proposal and the legal framework of the Member States involved. No funding shall be granted for research activities that are prohibited in all the Member States. No activity shall be funded in a Member State where such activity is forbidden;

e. The fields of research set out in paragraph 3 of this Article may be reviewed within the context of the interim evaluation set out in Article 32(3) in the light of scientific advances.

The Commission has also issued some useful guidance on ethics related issues in Horizon 2020 Programme.

The Commission's ethics issues checklist includes ten different section that are synopsised as follows:

-human embryos

-human beings

-human cells or tissues

-personal data

-animals

-non-EU countries

-environment

-dual use

-exclusive focus on civil applications

-Potential misuse of research findings[4]

Based on both documents, protection of personal data is a central issue for research ethics. However, not all data that will be collected and processed for the purposes of the Harmonia project are characterised as personal data (see the analysis under section 5.2. below). As a result, data ethics concerns could be raised in other cases such as in case processing of big data is involved or data that are derived from social media platforms. Nevertheless, given the preliminary nature of the present report and the premature status of the datasets that have been shared by the partners, it was deemed appropriate to avoid, at this point, a thorough analysis of any issues related to data ethics that are not characterised as personal. This would provide us with the opportunity to acquire a clear idea on the type of data that will be collected and processed for the purposes of Harmonia as well as of their use and management as the project progresses and include our conclusive remarks in the second and final version of the report. On the contrary, explicit reference to personal data protection issues that may arise during the project's execution as well as addressing issues related to participation of humans in the Harmonia research were considered essential given the sensitive nature of both matters. In this context providing guidance to the partners at this early stage of the project aims to shed some light on possible unclarities or confusing issues and safeguard that that Harmonia research will be conducted lawfully and in compliance with the main ethics principles.

4.2. Protection of personal data under the GDPR

4.2.1 How are personal data defined under the GDPR?

The GDPR[5] provides a detailed **definition of personal data in its Article 4(1).** Specifically, 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 conditions to determine whether a natural person is identifiable are further described in recital 26 of the Regulation: in particular account should be taken of all the means that are reasonably likely to be used, such as singling out, either by the controller or by another person to identify the natural person directly or indirectly. The factors that should be considered when determining what means are likely to be used are the costs of and the amount of time required for

[3] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC.

[4] See also https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/ethics/h2020_hi_ethics-self-assess_en.pdf

[5] See Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

identification, based on the available technology at the time of the processing and technological developments.

The recital clarifies that **personal data which have undergone pseudonymisation, which could be attributed to a natural person by the use of additional information, should be considered to be information on an identifiable natural person**.

A**nonymous information does not fall under the scope of the GDPR**. The same rule governs any data that were rendered anonymous in such a manner that the data subject is not or no longer identifiable.

4.2.2 Which data are considered to fall under the definition of special categories of data?

There is a specific category of personal data that attracts special attention under the GDPR. These are data that fall under the definition of special categories of data. These include:

- data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership
- genetic data that include personal data relating to the inherited or acquired genetic characteristics of a natural person which give unique information about the physiology or the health of that natural person and which result, in particular, from an analysis of a biological sample from the natural person in question;
- biometric data that include personal data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allow or confirm the unique identification of that natural person, such as facial images or dactyloscopic data; and
- data concerning health that refer to personal data related to the physical or mental health of a natural person, including the provision of health care services, which reveal information about his or her health status.

Contrary to the general rule that applies to personal data according to which processing of data is not generally forbidden but rather allowed under certain conditions, in the case of special categories of data a general prohibition of processing applies which is overruled in the particular cases listed in article 9(2) of the GDPR. In this context,

Article 9 (1) of the GDPR states that "processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation shall be prohibited".

The exceptions to this general rule are described in article 9(2) and are outlined below:

a. the data subject has given explicit consent to the processing of those personal data for one or more specified purposes;

b. processing is necessary for the purposes of carrying out the obligations and exercising specific rights of the controller or of the data subject in the field of employment and social security and social protection law;

c. processing is necessary to protect the vital interests of the data subject or of another natural person where the data subject is physically or legally incapable of giving consent;

d. processing is carried out in the course of its legitimate activities with appropriate safeguards by a foundation, association or any other not-for-profit body with a political, philosophical, religious or trade union aim and on condition that the processing relates solely to the members or to former members of the body or to persons who have regular contact with it in connection with its purposes and that the personal data are not disclosed outside that body without the consent of the data subjects;

e. processing relates to personal data which are manifestly made public by the data subject;

f. processing is necessary for the establishment, exercise or defence of legal claims or whenever courts are acting in their judicial capacity;

g. processing is necessary for reasons of substantial public interest;

h. processing is necessary for the purposes of preventive or occupational medicine, for the assessment of the working capacity of the employee, medical diagnosis, the provision of health or social care or treatment or the management of health or social care systems and services;

i. processing is necessary for reasons of public interest in the area of public health, such as protecting against serious cross-border threats to health or ensuring high standards of quality and safety of health care and of medicinal products or medical devices;

j. processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1)

It is stressed out that for the processing of special categories of personal data to have a full legal basis both articles 9. par 2 and 6 par. 1 have to be satisfied. In other words, the legal bases provided in these two articles of the GDPR need to apply additionally and not alternatively.

4.2.3 What are the data processing principles under the GDPR?

In order for personal data to be processed in compliance with the provisions of the GDPR the following principles, listed in article 5 of the Regulation, should be followed:

- **The principle of lawfulness, fairness and transparency** which means that personal data need to be processed lawfully, fairly and in a transparent manner in relation to the data subject
- **The principle of purpose limitation** according to which personal data shall be collected for specified, explicit and legitimate purposes and not further processed in a manner that is

incompatible with those purposes; It is clarified that further processing for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes, in accordance with Article 89(1) is not considered incompatible with the initial purposes

- **The principle of data minimization** which dictates that personal data are adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- **The principle of accuracy** which means that personal data need to be accurate and, where necessary, kept up to date
- **The principle of storage limitation** according to which personal data must be kept in a form which permits identification of data subjects for no longer than it is necessary for the purposes for which the personal data are processed. Again, there is exception when personal data will be processed solely for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) in which case they may be stored for longer periods insofar as appropriate technical and organisational measures are in place in order to safeguard the rights and freedoms of the data subject
- **The principles of integrity and confidentiality**. Personal data shall be processed in a manner that ensures their appropriate security, including protection against unauthorised or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organizational measures.

As per the principle of accountability, the burden of demonstrating compliance with the data processing principles falls on the controller.

4.2.4 How is lawfulness of processing defined under the GDPR?

The principle of lawfulness of processing is addressed specifically by the Regulation in its article 6 which guarantees to the data subjects that their personal data may only be processed with their consent or with permission by a legitimate legal provision. In particular, according to article 6 the legal bases for the processing of personal data are:

-consent,

-performance of a contract,

-compliance with a legal obligation,

-protection of vital interests of the data subjects,

-public interest,

-overriding interest of the controller

If a processing activity has no legal basis, then the activity is unlawful and therefore impermissible. The implementation of a legal bases of the ones mentioned above does not suffice for the processing activity to be compliant with the GDPR. Other obligations provided by the Regulation

need to be observed to this direction with most important the data processing principles and the rights afforded to data subjects.

These six legal grounds apply alternatively and not cumulatively. This does not exclude the possibility of two or more legal grounds to apply at the same time.

4.2.5 What are the rights afforded to data subjects under the GDPR?

The rights of the data subjects are regulated in articles 13-21 of the Regulation and can be summarised as follows:

> The right to information is regulated under articles 13 and 14. Article 13 regulates the case where personal data have been collected from the data subject and lists the information that need to be provided to him/her at the time their data are obtained, such as the identity and the contact details of the controller and, the contact details of the data protection officer, the purposes of the processing as well as the legal basis for the processing and the recipients or categories of recipients of the personal data. Other information includes the period for which the personal data will be stored, the existence of the right to request access to the data or erasure, the right to withdraw consent at any time etc. Article 14 lists the information to be provided to the data subject where personal data have not been obtained from the data subject itself.

- **The right to access the data.** The data subject shall have the right to obtain from the controller confirmation as to whether or not personal data concerning him/her are being processed and if yes, access to such data. The data subject may also exercise the right to request a copy of his/her personal data from the controller.

- **The right to rectification** provides the data subject with the right to obtain from the controller without undue delay the rectification of inaccurate personal data concerning him or her.

- **The right to erasure (the right to be forgotten)** Article 17 of the Regulation grants individuals the right to have their personal information deleted by data controllers, if specific conditions, as these are listed in its paragraph 1, are met. For instance, when the personal data have been unlawfully processed or they are no longer necessary in relation to the purpose for which they were collected, or the data subject has withdrawn his/her consent and others.

- T**he right to restriction of processing** is regulated under Article 18 of the Regulation. The conditions under which a data subject may exercise his/her rights are listed in the first paragraph of article 18 and include, for instance, the contest by the data subject of the accuracy of the personal data processed by the controller or the claim that the processing is unlawful and therefore the data subject opposes the erasure of his/her personal data.

- **The right to data portability** Data portability is dealt with under article 20 of the GDPR and includes the data subject's right to receive the personal data concerning him or her, which he or she has provided to a controller, in a structured, commonly used and machine-readable format and have the right to transmit those data to another controller without hindrance from the controller to which the personal data have been provided. The right to data portability is provided to data subjects under two conditions:

  a. the processing is carried out by automated means;

  b. the processing is based on consent or on a contract.

- **The right to object.** The right to object is laid down in Article 21 of the GDPR. It provides the data subjects with a right to object to their data being processed at any time in those case though where processing is based on points (e) or (f) of article 6(1) namely when it is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller, or on grounds of the legitimate interests of a controller or a third party. In those case the controller has to demonstrate that its compelling legitimate interest overrides the interests or the fundamental rights and freedoms of the data subject.

4.2.6 How is informed consent defined under the GDPR? What are the specific conditions that need to be met for consent to be valid?

When it comes to personal data processing in particular, individual consent is arguably the most important legal ground for processing personal data lawfully. While the other legal bases address third party interference with the data subject's right to the protection of its personal data, consent is a way through which the data subject exercises such right.

Consent has attracted great attention under the GDPR and several references to its definition and the conditions for a valid consent may be found in its text. In particular:

A definition of consent is provided **under article 4(11) of the GDPR**: "consent of the data subject means any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her".

Recital 32 of the GDPR further clarifies the specific criteria which individual consent should meet:

-**Consent should be given by a clear affirmative act establishing a freely given, specific, informed and unambiguous indication of the data subject's agreement to the processing of personal data relating to him or her**, such as by a written statement, including by electronic means, or an oral statement. This could include ticking a box when visiting an internet website, choosing technical settings for information society services or another statement or conduct which clearly indicates in this context the data subject's acceptance of the proposed processing of his or her personal data. Silence, pre-ticked boxes or inactivity should not therefore constitute consent.

-**Consent should cover all processing activities carried out for the same purpose or purposes.** When the processing has multiple purposes, consent should be given for all of them.

-**If the data subject's consent is to be given following a request by electronic means, the request must be clear, concise and not unnecessarily disruptive to the use of the service for which it is provided**.

Conditions for consent are listed in **article 7 of the Regulation**. In more detail:

- the controller shall be responsible to demonstrate that the data subject has consented to processing of his or her personal data;
- if consent is given in the context of a written declaration, which also concerns other matters, the request for consent shall be presented in a manner which is clearly distinguishable from the other matters;
- the data subject shall be free to withdraw his/her consent at any time;
- When the performance of a contract is conditional on consent to the processing of personal data that is not necessary for the performance of that contract, it should always be examined whether the consent has indeed been provided freely;

When **special categories of personal data are being processed**, article 9 of the GDPR specifically mentions that the data subject needs to provide his/**her explicit consent** to the processing of this category of personal data in order for the general prohibition of non-processing to not apply. In other words an extra safeguard needs to apply in this case. The EDPB provided for guidance on the interpretation of "explicit consent" in its Guidelines 05/2020 on consent (https://edpb.europa.eu/sites/default/files/files/file1/edpb_guidelines_202005_consent_en.pdf). To the EDPB, the term explicit refers to the way consent is expressed by the data subject. It means that "the data subject must give an express statement of consent", that would include for instance a a signed, written statement. This is, however, by no means necessary to fulfil the condition of "explicit" consent: filling in an electronic form, sending an email, uploading a scanned document carrying the signature of the data subject or using an electronic signature might also fulfil the conditions of explicit consent according to the guidance. Even oral statements could qualify as providing explicit consent, however the EDPB emphasizes that in this latter case it is difficult for the controller to prove that necessary conditions were met.

4.2.7 Security of personal data under the GDPR?

Security of personal data is regulated under articles 32-34 of the GDPR. Article 32 introduces some measures of technical and organizational nature that need to be implemented by the controller and the processor in order to ensure security of processing including the pseudonymisation and encryption of personal data, the ability to ensure the ongoing confidentiality, integrity, availability and resilience of processing systems and services, the ability to restore the availability and access to personal data in timely manner in the event of a physical or technical incident as well as a process for regularly testing, assessing and evaluating the effectiveness of technical and organisational measures for ensuring the security of processing.

Data breaches are dealt with under article 33 and 34 of the GDPR. Specifically, data breach notifications are regulated by article 33. A "personal data breach" is defined in the text of the GDPR, in Article 4(12), as "a breach of security leading to the accidental or unlawful destruction, loss,

alteration, unauthorized disclosure of, or access to, personal data transmitted, stored or otherwise processed".

Notification of data breaches is regulated under article 33. In case a data breach occurs, controllers have 72 hours after having become aware of it to notify the personal data breach to the supervisory authority unless the personal data breach is unlikely to result in a risk to the rights and freedoms of natural persons. The minimum information the notification must contain, include the nature of the data breach, the name and contact details of the data protection officer, the likely consequences of the personal data breach and the measures taken or proposed to be taken by the controller to address the personal data breach. **Besides the obligation to notify a data breach to the competent authority, the controller is burdened with the obligation to communicate a data breach to the data subject** where the personal data breach is likely to result in a high risk to the rights and freedoms of natural persons (article 34 of the GDPR). The communication to the data subject shall describe in clear and plain language the nature of the personal data breach and contain at least the information and measures mentioned above

5. Implementation of the provisions of the GDPR in the Harmonia project.

5.1. Project's description, the IRAP platform and pilot activities in the context of the Harmonia project

HARMONIA focuses on developing integrated decision support tools for urban environments, tailored to the needs of European citizens and public stakeholders in domains of health, prosperity, security and overall wellbeing to address the detrimental impact of Climate Change (CC). HARMONIA integrates GEOSS urban and climate data with other local, regional and global datasets to develop applications that support adaptation and mitigation measures of the Paris Agreement for urban environments, in a state of the art seamless "holistic solution": the Intergrated Resilience Assessment Platform (IRAP). HARMONIA employs AI tools on top of GEOSS (e.g. impact models, extreme event modelling, Copernicus data & services, DIAS and ESA TEP etc.) and offers innovative solutions for risk management, damage prevention, protection form eco-hazards and preparedness for potential future calamities.

The final deliverable of HARMONIA is the Intergrated Resilience Assessment Platform (IRAP), a system that allows stakeholders to model a range of planning options against a number of CC scenarios towards targeted applications in order to mitigate CC effect in urban areas, helping deliver resilient cities for current and future generations. The Platform incorporates multi-disciplinary knowledge and assessments in a combined way, leading to the identification and definition of intervention necessity indices based on this collective and synthesized knowledge of different domains. The Platform aims to provide end-users with reliable recommendations regarding spatio-temporal changes and the impact of climate change on the environment. The platform will be integrated with GEOSS datasets so as to improve the reliability in decision making.

HARMONIA will establish the ability (and necessity) of urban areas, starting from the Municipalities involved, to adapt to new scenarios. The performance and effectiveness of the Harmonia platform applications will be evaluated through an integrated 5D monitoring system based on GEOS logic. **Specific demonstration activities will be conducted on four test areas located in different climatic zones**:

Pilot 1: Ixelles-Brussels (Belgium)

Pilot 2: Milan (Italy)

Pilot 3: Piraeus (Greece)

Pilot 4: Sofia (Bulgaria)

5.2. What types of data are anticipated to be collected and processed during Harmonia's execution? Will any of these data be categorised as personal data?

Based on the information included in the datasets received by the partners as part of the first section of this report (data management plan) the following categories of data are anticipated to be collected during the project's execution: meteorological, active monitoring data (geotechnical and hydraulic), data relating to air temperature, pressure, humidity, satellite-derived ground motion data to mention some of them. All data falling under the above categories cannot be categorised as personal data, because they do not refer to any identified or identifiable individual.

In preparation of D1.1. a questionnaire on GDPR compliance was circulated to the partners in order to identify whether personal data are anticipated to be collected and processed for the purposes of the Harmonia Project. Based on the received feedback, it is concluded that four out of twenty-two partners intend to process personal data in the context of their involvement in Harmonia. For consistency purposes all questionnaires are attached to this report as Annex I. It is noted that as D1.1. is due on M6, namely at a very early stage of the project, any issues related to data ethics will be re-evaluated during the project's progress and full assistance will be provided to all partners in this direction. The main objective is that all activities that will be conducted during the Harmonia project and which involve processing of personal data, will be performed in compliance with the provisions of the GDPR. Any final conclusions will be included in the second and final version of data management plan and data ethics that is due on M44.

On this basis this report aims to evaluate whether, at this stage of the project, the partners who will be involved in personal data processing activities will do so in full compliance with the requirements imposed by the GDPR. The remarks and suggestions that are listed in the following sections are based on the partners' replies to the questionnaire.[6]

Before examining the application of specific provisions of the Regulation, it is clarified that **personal data will be processed for the purposes of Harmonia**. These data, as per the partners' replies, do

[6] On data protection and ethics see also European Commission's Data protection and the Ethics Review Process, https://ec.europa.eu/info/sites/default/files/4. h2020 experts training data protection dual use misuse civilian focus_0.pdf

not fall under the definition of special categories of data nor the partners' processing activities involve a large volume of data. However, **three out of four partners declare that they will process data that belong to vulnerable groups of people while one partner will process children's data.**

5.3 Application of the data processing principles to the Harmonia project

5.3.1 Lawfulness of processing

As mentioned in the general part of the report in order for any processing activities to be lawful a legal basis of the ones listed in article 6 of the GDPR must apply. Following the partners' replies it is concluded that the data processing activities performed by the Harmonia partners are based on the data subject's consent which, as per the partners' guarantees is obtained through the use of an informed consent form which is regularly updated, it is drafted (if so requested) in the language of the signatory data subject, it is freely given, it is presented in a clear and plain language and data subjects are provided with the right to withdraw their consent. **It is therefore concluded that lawfulness of processing is observed during the project's execution. It is pointed out that as one partner provided a positive answer regarding the processing of personal data of children, the requirements of article 8 of the GDPR on children consent should be taken into consideration.** At the same time informed consent should be obtained from the person who is identified as the holder of parental responsibility for the child in question. To this effect the consent form should include a special reference to the lawful representative and his relation to the data subject or the holder of parental responsibility respectively. Same is the case when the data subjects are vulnerable persons. An informed consent form is attached to this report as Annex II.

5.3.2 Purpose limitation and data minimisation

In order to verify compliance with the above principles, the partners were asked whether the purpose of processing accurately defined and whether the data collected are proportionate to the purpose of processing. **Three out of four partners provided a positive answer to the above questions**. For the partner who gave a negative answer, it should make sure that the principles of purpose limitation and data minimisation are respected throughout the project's duration. **In this context it is advised that the specific partner re-evaluates the data processing methods it applies so as to ensure that the data collected for the purposes of the Harmonia project are proportionate to the specific purpose and that such purpose is accurately defined at the time of collecting such data from the data subjects**.

5.3.3 Storage limitation

With regard to the principle of storage limitation all partners, with the exception of one confirmed that they do not store data for longer that is required. **It is advised that the partner who provided a negative answer takes the necessary steps to make sure that data are deleted as soon as they are no longer needed**.

5.3.4 Data subjects' rights in the context of the Harmonia project

The partners were asked several questions in order to provide their feedback on the measures they implement in order to safeguard the data subjects' rights during the processing of their personal data.

In particular, all partners provided a positive answer when asked whether they provide users with the right to correct their data, to access their data, the right to ask for their data to be deleted and finally the ability to export a copy of the data collected in an intangible format. As regards the latter right in particular, only one partner provided a negative answer, but is expected to remedy this in the near future**. Therefore, data subjects' rights are believed to be respected in the context of the Harmonia project.**

5.3.5 Security of processing

A set of questions was addressed to the Harmonia partners in order to evaluate the level of compliance of the data processing activities that will take place during the project with the security requirements imposed by the GDPR. The questions address mainly the organisational and technical measures the partners have in place in order to safeguard the security of the personal data they process.

In this context three out of four partners confirmed that they encrypt their research data and two of them that they use encrypted communication channels for transferring any personal data. As regards anonymization of the personal data that are collected for the purposes of the Harmonia project, half of them confirmed that they implement such a process but only one replied that a pseudonymization process is implemented on the collected personal data.

Furthermore, two out of four partners replied that they apply a security policy for the protection of personal data against accidental or unlawful destruction, loss or alteration. The same percentage applies a security breach policy, which is reviewed regularly and communicated to all employees.

As regards the internal procedures which the four partners follow when processing personal data, all of them confirm that no unauthorized individuals can access the personal data processing system and that all individuals with access rights are bound by a confidentiality obligation. In addition, three out of four partners replied that they use common user accounts, however they implement a specific password policy.

All partners involved in data processing activities for the Harmonia project implement effective backup and recovery mechanisms for personal data and have these backups protected. Two out of

four partners use PETs but none of them encrypts the backed up personal data that are stored. All of them declare that they are able to restore availability and access to data in a timely manner in case of an incident.

Based on the feedback received by the partners it may be concluded that a set of measures is already in place by the majority of the partners in order for the protection of any personal data that are being processed in the context of Harmonia to be safeguarded. There are indeed some minor gaps in the Harmonia partners' security policy, which should be taken into consideration when each partner re-evaluates such policy with a view to remedying any shortcomings during project execution.

5.4 Participation of human subjects in the Harmonia Project and protection of their personal data

5.4.1 How are humans involved in the Harmonia Project

Participation of human subjects in research projects raise some significant concerns in terms of ethics in general and data ethics in particular. For the purposes of the present report and given the project's specifications, two issues will be mainly addressed: a**) informed consent of the subjects participating in the Harmonia project** and its connection to the data subject's consent for data processing activities that will take place during the project and b) **protection of personal data in the context of research.**

As per the project's description it is apparent that humans will indeed participate in Harmonia's research activities. In particular, in the context of WP3 (data acquisition, integration & handling) a process for the collection of citizen-based data will take place. Citizens will be encouraged to take part to the assessment of changes occurred due to CC issues e at local level and to give their opinion on co-created solutions. HARMONIA will make use of the community-based environmental monitoring and information tool, "Citizens as observatories". The collection of citizens-based data will serve the purpose of understanding and quantifying the CC effects on urban areas from the population point of view. Citizens' participation will be encouraged through the use of smartphones and personal devices armed with low-cost sensors (new mobile solutions for community science). Citizens will acquire in situ spatial data, pictures and parameters through Volunteered Geographic Information, related to air quality, land use, landslides, water quality etc. The citizen-based data will then be integrated in the IRAP dataset.

5.4.2 Consent of human participants in research and consent of data subjects

Getting a valid consent from research participants is one of the most important parameters for conducting research ethically. Such consent needs of course to be valid and the conditions for this to happen are synopsised in the following:

- It should be freely given;
- It should be obtained in advance;
- It should be in writing
- It should be informed, based on adequate and accurate information
- It should always be freely withdrawn

Valid consent needs to include the following three elements: adequate information, voluntariness and competence.

As regards information adequate would at least include the purpose of the research, any risks or discomforts related to the participation of the subject to it, the source of the research funding, the benefits to the participants and their exact role in the research to mention some of them. **In terms of quality of the information**, the language that will be used should be clear, simple (if necessary in the native language of the signatory data subject), and not contain too much technical information. Information should also be provided in a language that the participant understands if it is different than the language used for the research in question.

Voluntariness should also be taken into serious consideration. Voluntariness means in practice that the participant's consent should not be the result of coercion or manipulation. It should be freely given from a data subject who should not feel that he/she is over-pressured, deceived or threatened to participate in the research in question.

Voluntariness should always be examined together with competence. One cannot voluntarily participate in research if one is not able to provide a valid consent to this. In other words, it should always be evaluated whether the subject has the mental capacity to understand the information about the research and his/her role in it**. When talking about competence special attention should be given to children and vulnerable groups of people**. These people are not incompetent in the sense described above however it is very likely that they will need special treatment when they are asked to provide their consent as research participants.[7]

As vulnerable persons and children are at higher risk of harm or exploitation than others or less able to protect themselves from harm or exploitation specific measures should be implemented to protect their interests. The general rule should be that their involvement must be absolutely necessary for the specific purposes the research serves and even in this case it has to be restricted to the best extent possible. If their involvement is necessary, then researchers must obtain an informed consent from the legally authorised representative or the person who has the child's parental control and ensure that they have sufficient information to exercise the participants' rights on their behalf. Whenever possible, the assent of the participants should be obtained in addition to the consent of the parents or legal representatives and ask for such consent during the research if the conditions change (a child reaches the age of majority in the course of research or the factor that categorized a person as vulnerable does not exist anymore).

[7] See https://op.europa.eu/en/publication-detail/-/publication/12567a07-6beb-4998-95cd-8bca103fcf43

Consent in the context of research participation and consent as a legal basis for data protection has been examined by the EDPS in its Preliminary Opinion on data protection and scientific research of January 2020.[8] It is therein clarified that: "There is clear overlap between informed consent of human participants in research projects involving humans and consent under data protection law. But to view them as a single and indivisible requirement would be simplistic and misleading. Consent serves not only as a possible legal basis for the activity, it is also a safeguard - a means for giving individuals more control and choice and thereby for upholding society's trust in science. There may be circumstances in which consent is not the most suitable legal basis for data processing, and other lawful grounds under both Articles 6 and 9 GDPR should be considered. However, even where consent is not appropriate as a legal basis under GDPR, informed consent as a human research participant could still serve as an 'appropriate safeguard' of the rights of the data subject. Under what conditions such informed consent might be deemed an appropriate safeguard is still unclear. Certainly, innovative forms of consent in research activities, like tiered and dynamic consent, are promising practices that should be further encouraged and developed. The notion of consent in the two areas requires further discussion between the research community and data protection experts as part of a wider reflection on the role of consent and respect for individuals in the area of scientific research in the digital age".

What may be derived from the above quotation is that a balance between the two notions has been a persistent concern of the scientific community and that to-date no clear conclusion has been reached, making therefore necessary *ad hoc* solutions and implementations. Nevertheless, it is suggested that when human subjects participate in research and it is anticipated that their personal data will be processed for the purposes of the research in question two separate forms of informed consent be acquired, one for the participation itself and one for the data processing activities that will take place. With regard to Harmonia in particular, it is expected that during the participation of citizens in the "Citizens as observatories" programme a valid consent for both the participation and the data processing activities will be acquired and be kept updated during the project's lifetime.

5.4.3 Data protection and research

As the EDPS points out "data protection is intended to serve as a safety net for individuals whose data are needed to support science".[9] In this context it should be warranted that the participants' right to the protection of their personal data is safeguarded during all stages of their participation in the research in question. In particular, each of the principles under Article 5 of the GDPR apply to all data processing, including processing for research purposes. Same is the case with any other obligations of the data controller and processor as regards the security of the processing and the subjects' rights to mention some of them. However, there are certain derogations from this general rule. Article 89 of the GDPR provides for flexibility in the obligations on controllers and an emphasis on safeguards and accountability. The article reads as follows:

[8] See https://edps.europa.eu/sites/default/files/publication/20-01-06_opinion_research_en.pdf
[9] See Opinion 3/2020, A Preliminary Opinion on data protection and scientific research.

“1. Processing for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes, shall be subject to appropriate safeguards, in accordance with this Regulation, for the rights and freedoms of the data subject. Those safeguards shall ensure that technical and organisational measures are in place in particular in order to ensure respect for the principle of data minimisation. Those measures may include pseudonymisation provided that those purposes can be fulfilled in that manner. Where those purposes can be fulfilled by further processing which does not permit or no longer permits the identification of data subjects, those purposes shall be fulfilled in that manner. 2. Where personal data are processed for scientific or historical research purposes or statistical purposes, Union or Member State law may provide for derogations from the rights referred to in Articles 15, 16, 18 and 21 subject to the conditions and safeguards referred to in paragraph 1 of this Article in so far as such rights are likely to render impossible or seriously impair the achievement of the specific purposes, and such derogations are necessary for the fulfilment of those purposes. 3. Where personal data are processed for archiving purposes in the public interest, Union or Member State law may provide for derogations from the rights referred to in Articles 15, 16, 18, 19, 20 and 21 subject to the conditions and safeguards referred to in paragraph 1 of this Article in so far as such rights are likely to render impossible or seriously impair the achievement of the specific purposes, and such derogations are necessary for the fulfilment of those purposes. 4. Where processing referred to in paragraphs 2 and 3 serves at the same time another purpose, the derogations shall apply only to processing for the purposes referred to in those paragraphs.

As regards special categories of data again some flexibility is provided as article 9(2)(g) to (j) of the GDPR permits derogations to the prohibition of the processing of special categories of data on the basis of EU or Member State law, including for the purposes of scientific research (Article 9(2)(j) – which is a new provision in the GDPR allowing processing

In the context of the Harmonia project, all partners involved in tasks that require the participation of human participants and whose personal data are expected to be processed for carrying out the task under consideration should make sure that all requirements of the GDPR that are applicable to this process will be observed throughout its duration. Further assistance will be provided to them by the partner responsible for work under this Task and deliverable (MPL) throughout the project’s term.

6. Conclusions

Deliverable D1.1. is the first version of Harmonia's Data Management Plan (DMP) and data ethics report. While the final report is due on month 44, which coincides with the completion of the project, the Harmonia's DMP should be viewed as a living document that will be regularly updated until the final version is submitted. Therefore, any findings included in the present analysis are preliminary and should be evaluated under this assumption.

As mentioned in the introduction of the report, this is divided into two sections. The first section addresses issues regarding the Harmonia DMP and the second section examines the legal and ethical issues related to the project's data processing activities and specifically their compliance with the GDPR. In both cases two questionnaires on DMP and on GDPR compliance were circulated to the Harmonia partners and their feedback has been incorporated in the present analysis.

With regard to the Harmonia DMP, each of the Harmonia partners, who will be involved in the project's data management, has provided a list of the datasets that they intend to generate and process for the purposes of the project. Even though some of the lists are not finalised yet, which is absolutely justified given the early stage of the project, a clear perception of the current status of the project's DMP may be derived from the current information. In addition to that, all partners have provided an adequate level of safeguards as regards their compliance with the fair data principles. As the project progresses the Harmonia DMP will be updated for any amendments, insertions or corrections, whereas it will be made sure that any data management activities will continue to be conducted in compliance with the H2020 guidelines for making data Findable, Accessible, Interoperable, Re-usable (FAIR).

In terms of data ethics, a legal analysis of the personal data processing activities that will be conducted during the project's lifecycle has been included in D1.1. Based on the partners' feedback, it is concluded that such activities are being performed in compliance with the GDPR. Any minor shortcomings will be addressed as the project progresses and support on this matter will be provided to the partners throughout the project's execution.

7. Annex I: the Harmonia GDPR questionnaire

7.1 Sofia Municipality

	PERSONAL DATA PROCESSING ACTIVITIES FOR THE PURPOSES OF THE HARMONIA PROJECT- COMPLIANCE WITH THE GDPR *Please answer the following questions with regard to your involvement and/or work on the HARMONIA project*	**YES**	**NO**
1	Do you process personal data for the Project's purposes?	**YES**	
2	Does your processing involve special categories of data (e.g. health data, genetic data, biometric data)?		**No**
3	Does your processing operation involve a large volume of personal data?		**No**
4	Do you process personal data of children (younger than 16 years old)?		**No**
5	Do you process personal data that belong to vulnerable groups of people?	**YES**	
6	Do you apply invasive data processing techniques (profiling, data mining)?		**No**
7	Is the purpose of processing accurately defined?	**YES**	
8	Are the data you collect proportionate to the purpose of processing?	**YES**	
9	Do you store data for longer than it is required?		**No**
10	Do you encrypt your research data?	**YES**	
11	Do you use encrypted communication channels for transferring any personal data?		**No**
12	Do you implement an anonymisation process on the personal data you collect?		**No**
13	Will the data still be identifiable after the anonymisation?		**No**
14	Do you implement a pseudonymization process on the personal data you collect?		**No**
15	Do you destroy the data at the end of the period of retention?	**YES**	
16	Do you apply a security policy for the protection of personal data against accidental or unlawful destruction, loss or alteration?	**YES**	
17	Are data processors (e.g. contractors, outsourcing) involved in your data processing operation?	**YES**	

18	If yes, do you apply guidelines for data processors?	**YES**	
19	Do you use informed consent forms? Do you update such forms regularly?	**YES**	
20	Is such consent freely given? Is your request to consent presented in a clear and plain language?	**YES**	
21	Do you use pre-checked (opt-in) boxes?	**YES**	
22	Do you provide users with the right to withdraw their consent at any stage of processing?	**YES**	
23	Do you provide users with the right to ask for their data to be deleted?	**YES**	
24	Do you provide users with the right to correct their data?	**YES**	
25	Do you provide users with the right to access their data?	**YES**	
26	Do you provide users with the ability to export a copy of the data collected in an intelligible format?	**YES**	
27	Do you implement a security breach policy?	**YES**	
28	Is such policy reviewed regularly especially after the occurrence of a breach?	**YES**	
29	Is the policy communicated to all employees?	**YES**	
30	Is the processing of personal data performed by an undefined number of employees?	**YES**	
31	Can unauthorized individuals access the personal data processing system?		No
32	Are the roles of personnel with access to personal data clearly defined?	**YES**	
33	Are individuals with access to personal data bound by a confidentiality obligation?	**YES**	
34	Are there common user accounts?	**YES**	
35	Is there a specific password policy?	**YES**	
36	Do you implement effective backup and recovery mechanisms for personal data?	**YES**	
37	Are these backups protected?	**YES**	
38	Do you use Privacy Enhancing Technologies (PETs)?	**YES**	
39	Are the backed up personal data stored encrypted?		No
40	Are you able to restore availability and access to data in a timely manner in case of an incident?	**YES**	
41	Do you have a DPO?	**YES**	

42	If you do not have a DPO, do you have a person in charge for privacy matters to whom the data subject may address requests?		NO
43	Do you have a notification breach policy?	**YES**	
44	Do you support accountability (e.g. have in place auditing mechanisms)?	**YES**	

7.2 EARSC

	PERSONAL DATA PROCESSING ACTIVITIES FOR THE PURPOSES OF THE HARMONIA PROJECT- COMPLIANCE WITH THE GDPR *Please answer the following questions with regard to your involvement and/or work on the HARMONIA project*	**YES**	**NO**
1	Do you process personal data for the Project's purposes?	**X**	
2	Does your processing involve special categories of data (e.g. health data, genetic data, biometric data)?		**X**
3	Does your processing operation involve a large volume of personal data?		**X**
4	Do you process personal data of children (younger than 16 years old)?		**X**
5	Do you process personal data that belong to vulnerable groups of people?	**X**	
6	Do you apply invasive data processing techniques (profiling, data mining)?		**X**
7	Is the purpose of processing accurately defined?	**X**	
8	Are the data you collect proportionate to the purpose of processing?	**X**	
9	Do you store data for longer than it is required?		**X**
10	Do you encrypt your research data?	**X**	
11	Do you use encrypted communication channels for transferring any personal data?	**X**	

12	Do you implement an anonymisation process on the personal data you collect?		**X**
13	Will the data still be identifiable after the anonymisation?		**X**
14	Do you implement a pseudonymization process on the personal data you collect?		**X**
15	Do you destroy the data at the end of the period of retention?	**X**	
16	Do you apply a security policy for the protection of personal data against accidental or unlawful destruction, loss or alteration?	**X**	
17	Are data processors (e.g. contractors, outsourcing) involved in your data processing operation?		**X**
18	If yes, do you apply guidelines for data processors?		**N.A**
19	Do you use informed consent forms? Do you update such forms regularly?	**X**	
20	Is such consent freely given? Is your request to consent presented in a clear and plain language?	**X**	
21	Do you use pre-checked (opt-in) boxes?	**X**	
22	Do you provide users with the right to withdraw their consent at any stage of processing?	**X**	
23	Do you provide users with the right to ask for their data to be deleted?	X	
24	Do you provide users with the right to correct their data?	X	
25	Do you provide users with the right to access their data?	X	
26	Do you provide users with the ability to export a copy of the data collected in an intelligible format?	X	
27	Do you implement a security breach policy?	X	
28	Is such policy reviewed regularly especially after the occurrence of a breach?	X	
29	Is the policy communicated to all employees?	X	
30	Is the processing of personal data performed by an undefined number of employees?	X	
31	Can unauthorized individuals access the personal data processing system?		X

32	Are the roles of personnel with access to personal data clearly defined?	X	
33	Are individuals with access to personal data bound by a confidentiality obligation?	X	
34	Are there common user accounts?	X	
35	Is there a specific password policy?	X	
36	Do you implement effective backup and recovery mechanisms for personal data?	X	
37	Are these backups protected?	X	
38	Do you use Privacy Enhancing Technologies (PETs)?	X	
39	Are the backed up personal data stored encrypted?		X
40	Are you able to restore availability and access to data in a timely manner in case of an incident?	X	
41	Do you have a DPO?		X
42	If you do not have a DPO, do you have a person in charge for privacy matters to whom the data subject may address requests?	X	
43	Do you have a notification breach policy?	X	
44	Do you support accountability (e.g. have in place auditing mechanisms)?	X	

7.3 EURONET

	PERSONAL DATA PROCESSING ACTIVITIES FOR THE PURPOSES OF THE HARMONIA PROJECT- COMPLIANCE WITH THE GDPR *Please answer the following questions with regard to your involvement and/or work on the HARMONIA project*	**YES**	**NO**

1	Do you process personal data for the Project's purposes?	**x**	
2	Does your processing involve special categories of data (e.g. health data, genetic data, biometric data)?		**x**
3	Does your processing operation involve a large volume of personal data?		**x**
4	Do you process personal data of children (younger than 16 years old)?		**x**
5	Do you process personal data that belong to vulnerable groups of people?		**x**
6	Do you apply invasive data processing techniques (profiling, data mining)?		**x**
7	Is the purpose of processing accurately defined?	**x**	
8	Are the data you collect proportionate to the purpose of processing?	**x**	
9	Do you store data for longer than it is required?	**x**	
10	Do you encrypt your research data?	**x**	
11	Do you use encrypted communication channels for transferring any personal data?	**x**	
12	Do you implement an anonymisation process on the personal data you collect?	**x**	
13	Will the data still be identifiable after the anonymisation?		**x**
14	Do you implement a pseudonymization process on the personal data you collect?	**x**	
15	Do you destroy the data at the end of the period of retention?	**x**	
16	Do you apply a security policy for the protection of personal data against accidental or unlawful destruction, loss or alteration?		**x**
17	Are data processors (e.g. contractors, outsourcing) involved in your data processing operation?		**x**
18	If yes, do you apply guidelines for data processors?		
19	Do you use informed consent forms? Do you update such forms regularly?	**x**	
20	Is such consent freely given? Is your request to consent presented in a clear and plain language?	**x**	
21	Do you use pre-checked (opt-in) boxes?		**x**
22	Do you provide users with the right to withdraw their consent at any stage of processing?	**x**	
23	Do you provide users with the right to ask for their data to be deleted?	x	
24	Do you provide users with the right to correct their data?	x	

25	Do you provide users with the right to access their data?	x	
26	Do you provide users with the ability to export a copy of the data collected in an intelligible format?		x
27	Do you implement a security breach policy?		x
28	Is such policy reviewed regularly especially after the occurrence of a breach?		x
29	Is the policy communicated to all employees?		x
30	Is the processing of personal data performed by an undefined number of employees?		x
31	Can unauthorized individuals access the personal data processing system?		x
32	Are the roles of personnel with access to personal data clearly defined?	x	
33	Are individuals with access to personal data bound by a confidentiality obligation?	x	
34	Are there common user accounts?		x
35	Is there a specific password policy?	x	
36	Do you implement effective backup and recovery mechanisms for personal data?	x	
37	Are these backups protected?	x	
38	Do you use Privacy Enhancing Technologies (PETs)?		x
39	Are the backed up personal data stored encrypted?		x
40	Are you able to restore availability and access to data in a timely manner in case of an incident?	x	
41	Do you have a DPO?		x
42	If you do not have a DPO, do you have a person in charge for privacy matters to whom the data subject may address requests?	x	
43	Do you have a notification breach policy?		x
44	Do you support accountability (e.g. have in place auditing mechanisms)?	x	

7.4 URBASOFIA

	PERSONAL DATA PROCESSING ACTIVITIES FOR THE PURPOSES OF THE HARMONIA PROJECT- COMPLIANCE WITH THE GDPR *Please answer the following questions with regard to your involvement and/or work on the HARMONIA project*	***YES***	***NO***
1	Do you process personal data for the Project's purposes?	**YES**	
2	Does your processing involve special categories of data (e.g. health data, genetic data, biometric data)?		**NO**
3	Does your processing operation involve a large volume of personal data?		**NO**
4	Do you process personal data of children (younger than 16 years old)?	**YES**	
5	Do you process personal data that belong to vulnerable groups of people?	**YES**	
6	Do you apply invasive data processing techniques (profiling, data mining)?		**NO**
7	Is the purpose of processing accurately defined?		**NO**
8	Are the data you collect proportionate to the purpose of processing?		***NO***
9	Do you store data for longer than it is required?		**NO**
10	Do you encrypt your research data?		***NO***
11	Do you use encrypted communication channels for transferring any personal data?		***NO***
12	Do you implement an anonymisation process on the personal data you collect?	***YES***	
13	Will the data still be identifiable after the anonymisation?	**YES**	
14	Do you implement a pseudonymization process on the personal data you collect?		**NO** **(not sure)**
15	Do you destroy the data at the end of the period of retention?		***NO*** ***(probably)***
16	Do you apply a security policy for the protection of personal data against accidental or unlawful destruction, loss or alteration?		***NO*** ***(Don't know yet)***
17	Are data processors (e.g. contractors, outsourcing) involved in your data processing operation?	**YES**	
18	If yes, do you apply guidelines for data processors?	**YES**	
19	Do you use informed consent forms? Do you update such forms regularly?	**YES**	
20	Is such consent freely given? Is your request to consent presented in a clear and plain language?	**YES**	

21	Do you use pre-checked (opt-in) boxes?	**YES**	
22	Do you provide users with the right to withdraw their consent at any stage of processing?	**YES**	
23	Do you provide users with the right to ask for their data to be deleted?	**YES**	
24	Do you provide users with the right to correct their data?	**YES**	
25	Do you provide users with the right to access their data?	**YES**	
26	Do you provide users with the ability to export a copy of the data collected in an intelligible format?	**YES**	
27	Do you implement a security breach policy?		**NO**
28	Is such policy reviewed regularly especially after the occurrence of a breach?		**NO**
29	Is the policy communicated to all employees?		**NO**
30	Is the processing of personal data performed by an undefined number of employees?		**NO**
31	Can unauthorized individuals access the personal data processing system?		**NO**
32	Are the roles of personnel with access to personal data clearly defined?		***NO***
33	Are individuals with access to personal data bound by a confidentiality obligation?	**YES**	
34	Are there common user accounts?	**YES**	
35	Is there a specific password policy?		**NO**
36	Do you implement effective backup and recovery mechanisms for personal data?	**YES (not sure)**	
37	Are these backups protected?	**YES (not sure)**	
38	Do you use Privacy Enhancing Technologies (PETs)?		**NO (probably)**
39	Are the backed up personal data stored encrypted?		**NO (not sure)**
40	Are you able to restore availability and access to data in a timely manner in case of an incident?	**YES (not sure)**	
41	Do you have a DPO?		**NO**
42	If you do not have a DPO, do you have a person in charge for privacy matters to whom the data subject may address requests?	**YES**	
43	Do you have a notification breach policy?		**NO**
44	Do you support accountability (e.g. have in place auditing mechanisms)?	**YES**	

7. Annex II: Informed consent form (and procedure)

The following draft template for a consent form to be used by partners in the Harmonia Project it provided here for indicative purposes only. It is particularly emphasized that, in the event of non-native English-language speakers, or, at any event, in case of signatory parties having difficulty to read and understand this form in English, it should be provided to them translated (and adapted, as applicable) into their respective native languages.

In addition, the following procedural rules will apply as to the consent forms' management:

- Once the consent form is signed, the signatory party will be provided with written information on the Harmonia project and a copy of the signed form.
- The signatory party will have the right to withdraw at any time without giving reasons, without any cost and without any negative consequences.
- The consortium partner responsible for the respective consent forms' management will keep the signed consent forms securely stored as a file on appropriate data storage.
- Any potential modification or addendum to the Harmonia ethics and legal compliance procedures will be tracked and promptly re-introduced, as an amendment if necessary, to said consent forms; The signatory parties concerned will be duly informed.

Informed Consent Form

ABOUT THE HARMONIA PROJECT

The HARMONIA project will leverage existing tools, services and novel technologies to deliver an integrated resilience assessment platform working on top of GEOSS, seeing the current lack of a dedicated process of understanding and quantifying Climate Change (CC) effects on urban areas using Satellite and auxiliary data available on GEOSS, DIAS, urban TEP, GEP etc. platforms. HARMONIA will focus on a solution for climate

applications supporting adaptation and mitigation measures of the Paris Agreement. HARMONIA will test modern Remote Sensing tools and 3D-4D monitoring, Machine Learning/Deep Learning techniques and will develop a modular scalable data-driven multi-layer urban areas observation information knowledge base, using Satellite data time series, spatial information and auxiliary data, in-situ observing systems, which will integrate detailed information on local level of neighbourhoods/building blocks.

HARMONIA focuses on two pillars: a) Natural and manmade hazards intensified by CC: urban flooding, soil degradation and geo-hazards (landslides, earthquake, ground deformation) and b) Manmade hazards: heat islands, urban heat fluxes, Air Quality, Gas emissions. Sustainable reconstruction of urban areas and the health of humans and ecosystems are therefore top priorities. HARMONIA will take into account the local ecosystems of European urban areas, following an integrated and sustainable approach by incorporating the active communities' participation initiative, which will involve the use of a social platform.

Contact

Partner concerned: *[name, address & contact email]*

The complete list of the Harmonia partners, as well as, additional information on the Harmonia project can be found at the project's website: http://harmonia-project.eu/

YOUR CONSENT

This Consent Form provides you with information about the Harmonia project. Please read this information carefully. Ask questions about anything that you don't understand or want to know more about.

Participation in this project is voluntary. If you don't wish to take part, you don't have to. Likewise, you can choose to end your participation at any time, and do not need to tell anyone any reason. If you decide you want to take part in the project, you will be asked to sign the consent section.

PARTICIPATION

Possible benefits. You will not receive any pecuniary benefit from the participation in the Harmonia project other than learning more about Climate Change effects on urban areas, satellite and auxiliary data platforms, as well as the experience of participating in an innovation project and help to advance research and knowledge. Although we cannot guarantee participants will personally experience benefits from participating in the research study, others may benefit in the future from the information provided. In addition, the knowledge that we get from doing this research will be shared with you.

Possible risks. No risks associated with participating in this project were identified. During the project, new information about the risks and benefits of the project may become known to the researchers. If this occurs,

you will be informed and will discuss with the principal investigator whether this new information affects you.

Withdrawal. If you decide to withdraw from the project, please notify a member of the research team. If you decide to leave the project, the researchers would like to keep the personal information about you that have been collected. This is to help them make sure that the results of the research can be measured properly. If you do not want them to do this, you must tell them before you join the research project.

TERMINOLOGY

In this informed consent form:

- "**We**" or "**us**" refer to the Harmonia Project consortium member listed above, who will process your

personal data as data controller.

- "**Data Protection Legislation**" means the Regulation 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (the "GDPR"), as well as any legislation and/or regulation implemented or created pursuant to the GDPR and the e-Privacy legislation, or which amends, replaces, re-enacts or consolidates any of them, and all other national applicable laws relating to processing of personal data and privacy that may exist under applicable law.
- The terms "controller", "processor", "third party", "supervisory authority", "personal data", "processing", "data subject", shall have the meanings set out in the applicable Data Protection Legislation.

YOUR PERSONAL DATA PROCESSING

Purpose of the processing. Personal data collected during the Harmonia lifecycle will be processed according to Data Protection Legislation. In addition, we will do our best to make it impossible to identify you as the source of information. All personal data will be processed by the Harmonia consortium for the research purposes only, and for the limited duration of the project. Personal data shall not be disseminated, transferred outside the EU or used in a way incompatible with its initial purpose (research).

Processed data categories. Contact information related exclusively to your participation in the project (i.e. email address, correspondence and questionnaires).

Source of data. You (no collection from third parties).

Legal basis. Your consent (provided with this form).

PROCESSING METHOD AND RETENTION

We will aim to minimize the amount of personal data collected through the different activities.

Your personal data shall be retained until the end of the project unless the participant decide to cancel it before, and no longer than it is necessary for the purposes of fulfilling the obligations or tasks referred to rights of the person concerned. For example, we may retain your personal data if it is reasonably necessary to comply with any legal obligations, meet any regulatory requirements, resolve any disputes or litigation, or as otherwise needed to prevent fraud and abuse. To determine the appropriate retention period for the information we collect from you, we consider the amount, nature, and sensitivity of the personal data, the potential risk of harm from unauthorised use or disclosure of the data, the purposes for which we process the personal data, and whether we can achieve those purposes through other means, and the applicable legal requirements.

The personal data shall be processed within the European Union, that involves the processing in countries for which the Commission has taken a decision on the adequacy of the protection of personal data.

YOUR RIGHTS

Right to access, review, and rectify your data: You have the right to access, review, and rectify your personal data. You may be entitled to ask us for a copy of your information, to review or correct it if you wish to review or rectify any information. You may also request a copy of the personal data processed as described herein by sending an email to *<the above contact details>*. You can access and review this information and, if necessary, ask to rectify your information.

Right to erasure: You have the right to erasure of all the personal data processed by as described herein in case it is no longer needed for the purposes for which the personal data was initially collected or processed, in accordance with the Data Protection Legislation.

Right to object or restriction of processing: Under certain circumstances described in the Data Protection Legislation, You may ask for a restriction of processing or object to the processing of your personal data.

Right to data portability: You have the right to receive your personal data in a format which is structured, commonly used and machine-readable and to transmit this data to another controller (not necessarily a research participant).