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RESCCUE

RESILIENCE TO COPE WITH CLIMATE CHANGE IN URBAN AREAS.

DATA MANAGEMENT PLAN

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Document history

DATE	VERSION	AUTHOR	COMMENTS
14/10/2016	1.0	Marc Velasco	
31/10/2016	1.1	Marc Velasco	First completed version
14/11/2016	2.0	Montse Martínez	Second version of the document
01/12/2016	Final 1	Marc Velasco	The reviews of the two reviewers, as well as other contributions, have been included
31/10/2017	Final 2	Marc Velasco	D8.2 was rejected by Laura Palomo, and the several comments that she sent have been addressed and included in this new version of the document.

1. **Changes with respect to the DoA**
   This deliverable has been considered as Confidential, whereas in the original DoA was considered Public. This change will be included in the next amendment of the GA, so the actual dissemination level is shown.

2. **Dissemination and uptake**
   CO = Confidential, only for members of the consortium (including the Commission Services)

3. **Short Summary of results (<250 words)**
   Deliverable 8.2-Data Management Plan (DMP) has been developed by Aquatec within task 8.2 of WP8- Project Management. The DMP is an instrument to ensure an effective implementation of the *Open Research Data Pilot* initiative of RESCCUE. It specifies which of the data generated by RESCCUE project will be open and how these data will be exploited and made accessible (for verification and/or reuse) and, on the contrary, which of the data will be preserved, considering also that this project deals with some cases with Critical Infrastructures.

   With this document, the data management life cycle for the data to be collected, processed, and/or generated is established and clear to all partners in the consortium. As part of this, there is the need now of making research data findable, accessible, interoperable and re-usable (FAIR), which is also tackled in this document.

   Updated versions of this D8.2 will be submitted in M24 and M48. These Plans will address the points set in the DMP template of the EC Guidelines on FAIR Data Management in HORIZON 2020 (EC, 2016b).

4. **Evidence of accomplishment**
   This report

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1 Introduction

This document is developed as part of RESCCUE (RESilience to cope with Climate Change in Urban arEas - a multisectorial approach focusing on water) project, which has received funding from the European Union's Horizon 2020 Research and Innovation program, under the Grant Agreement number 700174.

The Data Management Plan (DMP) corresponds to Deliverable 8.2 of Work Package 8 (WP8) – Project Management. WP8 will ensure an optimal coordination and management of RESCCUE, guaranteeing the effective implementation of the project activities. The specific objectives of WP8 include:

- Manage the Project and the consortium in an efficient and result-oriented manner to ultimately ensure the fulfilment of the whole project objectives
- Ensure an effective interaction with the European Commission and the coordination of the legal, financial and administrative aspects of the project
- Implement coordination procedures, the quality-control of results and streamlined decision-making and re-planning procedures when necessary

This document intends to identify and specify what kind of data is used and generated in RESCCUE, how to handle it, store it, etc. Given that the RESCCUE project is dealing in some cases with Critical Infrastructures (CI), and is part of the Open Research Data Pilot (EC, 2016a), a methodology on how to proceed in all cases is presented, in order to guarantee the proper exploitation and accessibility of data, making sure the Directive 2008/114/EC is respected (EC, 2008).

Updated versions of this D8.2 will be submitted in M24 and M48. This Plan will address the points set in the DMP template of the EC Guidelines on FAIR Data Management in HORIZON 2020 (EC, 2016b).

This document is to be used by all partners to efficiently handle data, and make sure that the several obligations that RESCCUE has in terms of data are properly fulfilled by all partners at all time.

2 Objectives and methodology

A data management plan or DMP is a document that outlines how data are to be handled both during a research project, and after the project is completed.

The goal of a DMP is to consider the many aspects of data management, metadata generation, data preservation and analysis, which ensures that data are well-managed in the present, and prepared for preservation in the future.

As stated in the Guidelines on FAIR Data Management in Horizon 2020 (EC, 2016b), a DMP must include information on:

- the handling of research data during and after the end of the project
- what data will be collected, processed and/or generated
- which methodology and standards will be applied
- whether data will be shared/made open access and
- how data will be curated and preserved (including after the end of the project)

Consequently, these several items will be included in this Deliverable 8.2, describing the data management life cycle for the data to be collected, processed and generated by the RESCCUE Project.

On the other hand, it is of key importance to make sure that the research data is findable, accessible, interoperable and re-usable (FAIR).

In addition, RESCCUE is part of an Open Research Data Pilot (ORD pilot). The ORD pilot aims to improve and maximise access to and re-use of research data generated by Horizon 2020 projects (EC, 2016a). Nevertheless, this has to be balanced with the protection of scientific information, commercialisation and Intellectual Property Rights (IPR), and specifically in the case of RESCCUE where CI are analysed, the security and requirements of Directive 2008/114/EC must be taken into account.

The methodology to produce this DMP, is based on the Guidelines on FAIR Data Management in Horizon 2020 (EC, 2016b) the Digital Curation Centre (DCC) online tool called DMP Online (https://dmponline.dcc.ac.uk) and the Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020 (EC, 2016a).

Consequently, following these guidelines that present a methodology to create a DMP, it has been decided to divide the document in the following sections:

3. Research data management and sharing
4. Metadata and FAIR data
5. Protection of critical infrastructures and sensitive information
6. Ethics and Legal Compliance
7. Responsibilities and Resources
8. References

3 Research data management and sharing

3.1 Data classification and management

RESCCUE project deals with the resilience of cities, specifically in the case studies of Barcelona, Bristol and Lisbon, in terms of urban services response in critical situations derived from climate change. The assessment of the response and interdependencies of the urban services (water services, transport, telecommunication, energy supply or solid waste collection) both for current and future scenarios is therefore the basis of the research. And the expected results involve, among others, the hazard, vulnerability and risk assessment of the urban services operation, including the identification of critical infrastructures.

In order to achieve all the project objectives, data will have to be complied, methodologies will be developed, models will have to be built and finally datasets will be generated. In Deliverable 7.4 – Dissemination and Exploitation Plan, a thorough analysis of all the project results was done. As a result, a table listing all the results of the RESCCUE Project was built, classifying the information per type of result, WP, TRL level, etc.

Part of the information presented Table 1 from D7.4 has been used here to prepare this Table 1. Whereas in D7.4 all the RESCCUE results were described, no matter if they were methodologies, models, tools, software, datasets or publications, here Table 1 only focuses on the datasets that will be the data generated by RESCCUE that has to be properly managed.

Table 1 – Summary of the expected for RESCCUE results

Description of result	Associated WP	Result owner(s)	Delivery date	Format and data specifications	End-users
Climate downscaled projections, decadal and seasonal simulations	1	FIC	M18	Ascci files with climate data per variable, model, scenario, etc.	Model owners or other climate researchers that will use this information as inputs for their research
Extreme climate scenarios	1	FIC, Aquatec	M24	Ascci files with climate data per variable, model, scenario, etc.	Model owners or other climate researchers that will use this information as inputs for their research
Drought and water quality analysis	2	Cetaqua	M36	Excel sheets presenting the water deficits for the future scenarios	Water companies and the Catalan Water Agency
Urban drainage simulations in Barcelona	2	Aquatec, BCASA	M36	Shape files presenting the hazard maps for the several scenarios	Other researchers, all the stakeholders that might have flooded assets and the general

					population of the city
Assessment of marine model impacts	2	Aquatec	M36	Raster files presenting the hazard maps for the several scenarios	Waste water operators, public administrations and general population
Assessment of bursting pipes impacts in Barcelona	2	Aquatec, AB	M36	Shape files presenting the hazard maps for the several scenarios	Water companies and other stakeholders that might have flooded assets
Simulations of the electric model in Barcelona	2	IREC, Endesa	M36	Maps and ascii information presenting the affected areas	All the stakeholders that have critical infrastructures depending on the electric network
Simulation of impacts on the traffic model	2	Barcelona CC	M36	Maps and ascii information presenting the impacts	Local police and other public administrations
Urban drainage simulations in Lisbon	2	Hidra and CML	M36	Shape files presenting the hazard maps for the several scenarios	Other researchers, all the stakeholders that might have flooded assets and the general population of the city
Simulations of the energy distribution model in Lisbon	2	EDP	M36	Maps and ascii information presenting the affected areas	All the stakeholders that have critical infrastructures depending on the electric network
Urban drainage simulations in Bristol	2	BCC	M36	Shape files presenting the hazard maps for the several scenarios	Other researchers, all the stakeholders that might have flooded assets and the general population of the city
Tidal and Fluvial Flooding simulations in Bristol	2	BCC	M36	Shape files presenting the hazard maps for the several scenarios	Other researchers, all the stakeholders that might have flooded assets and the general population of the city
Integrated flooding – traffic simulations in Bristol	2	Uni Exeter	M36	Maps and ascii information presenting the impacts	Local police and other public administrations

Impact assessment in the energy sector	3	IREC	M36	Maps and ascii information presenting the impacts	All the stakeholders that have critical infrastructures depending on the electric network
Flood direct damage assessments	3	Exeter, Cetaqua, Aquatec	M36	Depth damage curves and shape files with the impacts for all the scenarios	Other researchers, public administrations and insurance companies
Flood indirect damage assessments	3	Cetaqua	M36	Ascii files presenting the impacts for all the simulated events	Other researchers, public administrations and insurance companies
Assessment of CSO impacts	3	Aquatec	M36	Shape files presenting the impacts for all the scenarios	Other researchers, water agencies and public administrations
Assessment of transport indirect damages	3	Cetaqua, Exeter	36	Ascii files presenting the impacts for all the simulated events	Other researchers, public administrations and insurance companies
Assessment of city resilience in Barcelona	4	Aquatec	18	Hazur project outputs, to be accessed via the web tool	Other researchers, service operators and public administrations
Assessment of city resilience in Bristol	4	Urban-DNA	18	Hazur project outputs, to be accessed via the web tool	Other researchers, service operators and public administrations
Assessment of city resilience in Lisbon	4	Hidra	18	Hazur project outputs, to be accessed via the web tool	Other researchers, service operators and public administrations
Adaptation measures and strategies database	5	Cetaqua	18	Database containing all the strategies compiled	Other researchers, service operators and public administrations

All the information presented here compiles all the datasets that will be generated in the project. As it will be later explained in section 4, this information will be made publically available and discoverable, by publishing the metadata in the Inspire portal and uploading the datasets in Zenodo. More details related to that can be found in that section.

It is worth noting that some other project results will not be in the form of datasets, but as tools, methodologies, deliverables, publications, etc. All the information related to these type of results can be found on the exploitation plan on D7.4.

In addition to the information presented in Table 1, it also important to show the information that the RESCCUE project will use to generate its outputs. Following, in Table 2 there is brief overview of the data that will be needed in each WP.

The data necessary to develop RESCCUE project will be collected by the responsible and contributors involved in each task. In general, though, primary data will mainly be collected at the case studies (Barcelona, Lisbon and Bristol) by the case-study responsible (Aquatec, LNEC and University of Exeter, respectively).

In this case, this input information will be handled differently, as this information is not generated by the project and therefore, there is no need to make it publicly available. Additionally, some of this information is private (its property of some of the project stakeholders) or has been purchased to use it on the project (as some of the climate information). Therefore, the RESCCUE partners will not be allowed to share it, but only to use it to generate the outputs:

Table 2 – Summary of input data used in the RESCCUE project classified per Work Package

WORK PACKAGE	INPUTS	
	Data	**Source(s)**
WP1-Climate Change Scenarios	Climatic data/models	-Public data from: PCMDI GHCN-daily ISH/ISD -AEMet -IPMA -Met Office
	Future climate scenarios	Public data from IPCC
WP2-Hazard Assessment for Urban Services Operation	Measured data, sectorial studies, etc. in the 3 pilots	-Public data -Know-how from Barcelona CC, CML and Bristol CC
WP3-Vulnerability & Risk Assessment for Urban Services Operation	Methods for quantification of impacts of identified hazards in urban areas	-Public data -Know-how from UNEXE, Aquatec, CETaqua and LNEC
WP4-Integration in a software tool	Relevant information from case studies	-City councils -Urban services providers
WP5-Resilience and adaptation strategies ready for market uptake	Resilience strategies	-Public information coming from previous research projects -Know how from partners
WP6-Validation Platform & First Applications	Resilience studies undertaken by third parties	-Reports from C40, 100RC, UN-Habitat and others

3.1.1 Data confidentiality

Within the RESCCUE Project, some of the results and datasets generated could be potentially used for unfair purposes, that is, to cause a complete collapse of a city through the failure of its main urban services. Accordingly, apart from detailing what key data the project will collect and generate, how it will be exploited or made accessible, in the context of RESCCUE project it is very important to determine which of this data needs to be protected and how it will be done.

As stated in the guidance document "Guidelines for the classification of research results" (European Commission, 2015), the results of a project must be classified if its unauthorized disclosure could adversely impact the interests of the EU or of one (or more) of its Member States. E.g. some of the information produced by a project could potentially be used to plan terrorist attacks or avoid detection of criminal activities.

The European Commission identifies 4 levels for classifying results: EU TOP-SECRET, EU SECRET, EU CONFIDENTIAL or EU RESTRICTED. It is also stated that the classification of results produced by research projects normally depends on the subject and the type of research results being produced. According to the objectives of RESCCUE project, the subject of research results can be classified within the category of critical infrastructures and utilities research, understood as assets and systems (e.g. buildings and urban areas; energy, water, transport and communications networks; supply chains; financial infrastructures, etc.) which are essential for maintaining vital social functions (health, safety, security, economic or social well-being). On the other hand, the type of research being performed in RESCCUE project involves: hazards, vulnerability and risk assessment for these critical infrastructures and utilities/services and for different scenarios.

However, the level of detail of the RESCCUE results will not provide added value in the sense that highly detailed information about criticalities or vulnerabilities of the critical infrastructures will not be made available. Therefore, there is no need in protecting the project results with the category of EU CONFIDENTIAL.

On the other hand, in order to protect these results in the case study areas, it has been decided to change the dissemination level of several deliverables, from public to **confidential**. The list of confidential deliverables are listed below. First of all we list the ones changing now to confidential:

- D2.2: Multi-hazards assessment related to water cycle extreme events for current scenario
- D2.3: Multi-hazards assessment related to water cycle extreme events for future scenarios
- D3.4: Impact assessments of multiple hazards in case study areas
- D4.1: Report from HAZUR® implementation in each city

And those that were already categorized as confidential:

- D4.2: City RESILIENCE Assessment software (HAZUR® Assessment)
- D4.3: City RESILIENCE Management software (HAZUR® Manager)
- D5.3: Functional design of a resilience assessment operational module

3.2 Data sharing

3.2.1 Open access to peer-reviewed scientific publications

RESCCUE research partners will publish project results in Open Access. Open access can be defined as the practice of providing on-line access to scientific information that is free of charge to the end-user and that is re-usable. To meet this requirement, beneficiaries will ensure that these publications can be read online, downloaded and printed (free of charge, online access to any user).

The links to abstracts of research articles published in scientific journals will also be made available in the project website.

The open access to publications procedure will comprise 3 steps:

1. Selecting the open access route (green or gold open access)
2. Providing open access to publications
3. Depositing the data in repositories (online archive) in order to allow for replicability of the results

Several project partners have some budget in WP7 in order to pay the fees for open access publishing and in addition, the coordinators of the Dissemination and Exploitation tasks (Cetaqua) have some budget available to support all partners with Open Access publications.

Thus, all publications generated by the RESCCUE project will be made available online through open access in peer reviewed scientific journals.

3.2.2 Open access to research data

RESCCUE is an Open Research Data Pilot. Within the framework of Horizon 2020, the Open Research Data Pilot aims to improve and maximise the access to and re-use of research data generated by projects. The Open Research Data Pilot applies to two types of data:

a) Data, including metadata, needed to validate the results presented in scientific publications (published in scholarly journals);
b) Other data (e.g. curated data not directly attributable to a publication or raw data), including associated metadata.

The research data that will be produced, as it could be seen in Table 1, will be of interest to other researchers, public administrations, service operators and other stakeholders as well as

the general population. In order to allow for replicability of research results, the information generated will be made available so other can reproduce the methodologies used in RESCCUE.

Accordingly, the data generated in the project will be available in a research data repository so that it will be possible to access, mine, exploit, reproduce and disseminate it, free of charge for any user. Possible repositories to include these data are: Registry of Research Data Repositories (www.re3data.org) or Zenodo (zenodo.org). After an analysis of both, Zenodo has been selected as the data repository that will be finally used in RESCCUE.

4 Metadata and FAIR data

The Guidelines on FAIR Data Management in Horizon 2020 (EC, 2016b), clearly state that making research data findable, accessible, interoperable and re-usable (FAIR), is on the main roles of the DMP.

In order to so, these guidelines present a template of DMP that has been designed to be applicable to any Horizon 2020 project that produces, collects or processes research data. This template consists of a set of questions that should be answered with a level of detail appropriate to the project, addressing each one of the FAIR principles.

In this first version of the DMP, submitted on the month 6 of the project (and resubmitted on M18), it is not required to provide detailed answers to all the questions, because the DMP is intended to be a living document in which information can be made available on a finer level of granularity through updates as the implementation of the project progresses.

In the RESCCUE DoA, it was stated that revisions of the DMP would be presented on M24 and M48. However, if significant changes occur affecting this version of the DMP, other revisions of 8.2 will be prepared and submitted so the DMP properly addresses the actual state of the project.

4.1 Making data findable, including provisions for metadata

In order to make data findable, the main tool is to assure that data used and produced in the project can be discoverable with **metadata**. Since there are several ISO metadata standards produced by ISO committees including ISO 19115 (Geographic information — Metadata) and ISO 19119 (Geographic information — Services), the RESCCUE consortium will take advantage of the schemas already defined to define its metadata.

In addition, the European INSPIRE Directive (2007/2/EC) aims to create a European Union (EU) spatial data infrastructure. This Directive requests that Member States shall ensure that metadata are created for the spatial data sets, and that those metadata are kept up to date. In order to do so, INSPIRE created an online portal called “INSPIRE GeoPortal” (http://inspire-geoportal.ec.europa.eu/) that can be used to store and search for metadata. This portal will be used in RESCCUE in order ensure that the project data will be findable.

Given that data will be linked to each of the research sites, Barcelona, Bristol and Lisboa, to a certain service and timeframe, naming conventions will be established in order to clearly identify the dataset by its name. Additionally, a set of keywords will be defined for dataset, in order to ease the search of the metadata. These keywords will be defined in accordance with the terminology that is defined in the glossary of the RESCCUE project, which is currently being defined while the several frameworks of the different WPs are being prepared.

All these metadata will be stored in the "INSPIRE GeoPortal" making sure that all the RESCCUE partners follow the same criteria. In addition, the Keyword "RESCCUE" will always be included in order to easily track the project results. An internal guide on how to generate the metadata of the RESCCUE results will be prepared and circulated to all the RESCCUE partners.

4.2 Making data openly accessible

The A from FAIR stands for accessible, which is precisely the main goal of the Open Research data pilot that was presented in section 3.2.2. As stated there, the research data generated by the RESCCUE Project will be shared in the Zenodo repository.

This will be of special relevance for the data used to publish results, in order to ensure replicability of research results. Only on the cases in which the key stakeholders do not give permission to disclose the results (when the vulnerabilities of the networks that they manage are being presented), the data will not be updated to Zenodo. On the rest of the cases, the RESCCUE results will be found there.

4.3 Making data interoperable

Making data interoperable, means that data exchange and re-use between researchers, institutions, organisations, countries, etc., should be available. The main goal of all this is to facilitate the re-combination of the data produced with different datasets from other origins. In order to do this, the use of standard formats and of available (open) software applications is promoted.

In RESCCUE, the main pathway to make data interoperable will be to include the metadata in the INSPIRE GeoPortal as presented before, as well as upload the datasets to the Zenodo repository, so other researchers are able to use this information with different software applications (no matter if they are open or not).

Finally, a terminology glossary has been prepared, using the most common ontologies available from each of the fields that RESCCUE is dealing with. It can be find in D5.1, including all the definitions that are of interest for the project and thus, the results obtained will be easily understood and therefore re-used by others.

4.4 Increase data re-use

As explained in Section 3.1.1 and detailed in Section 5, although RESCCUE is an Open Research Data Pilot, the fact of dealing with some infrastructures that are considered as critical, limits the application of the ORD pilot.

Therefore, the data will be licensed to permit the widest re-use possible, when no limitiations are identified by the key stakeholders.

All data generated and collected in RESCCUE will undergo a quality check in order to analyse its individual plausibility and consistency, making sure that others can directly use it to do their assessments and validate the research done by the RESCCUE team.

As in some cases similar results will be generated for different case studies, data harmonisation will also be of critical importance both for increasing data re-use in general, but also to ease the comparison of RESCCUE results in the three research sites.

5 Protection of critical infrastructures and sensitive information

5.1 Context

As presented earlier, some of the assessments that will be done in the RESCCUE project will be dealing with Critical Infrastructures (CI). The Directive 2008/114/EC (EC, 2008), defines "critical infrastructure as an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions".

As introduced in section 3.1, there is a guidance document "Guidelines for the classification of research results" (EC, 2015), in which the dissemination levels of research results are presented. In these guidelines there is a specific section regarding CI, where different levels of dissemination are required for different types of studies such as threat assessments, vulnerability assessments, specifications, capability assessments and scenarios assessments.

5.2 Methodology

Since the work done in RESCCUE will involve hazard, vulnerability and risk assessment for some CI and other assets not considered as critical, as it was explained in section 3.1, the dissemination level of some deliverables has been changed in order to avoid initial disclosure of the results. This implies that some of the project deliverables will be limited to the consortium members and the commission services. However, in many cases this will not imply that the research results can not be later published, and only when the key stakeholders specifically limit it, the information will be made available for further re-use.

For this Data Management Plan, the several network operators belonging to the consortium and the Project Advisory Board of RESCCUE were contacted in order to gather a list of the CI existent in each network. However, at this stage, it was not possible to compile an exhaustive list because i) some of these CI have not yet been defined (such as transport infrastructures in Spain); ii) detailed information can't be disclosed by the managers of the CI; or iii) it is not yet known at which level of detail some of the sectorial models will be considered and so, there is no clear knowledge whether their CI will be included or not.

The latter is probably one of the crucial aspects to be considered here, as the RESCCUE project deals with a scope at a city level and therefore, there is not a lot of details of the specific critical infrastructures and other sensitive information used. Consequently, although information about CI is used, no sensitive data regarding these infrastructures is disclosed and therefore, there would be no security measures to be taken in this sense (unless, as mentioned earlier, the key stakeholders specifically request that).

From the several discussions that occurred during the preparation of D8.2, some general principles regarding CI were learnt.

In Spain, the CNPIC (Centro Nacional para la Protección de Infraestructuras Críticas) is the Centre that manages CI, which depends from the Ministry of Interior. Although, as explained

before, they still haven't identified all the CI from all the fields, they are using this principle in order to identify them: "the infrastructures that have been considered as critical for now, are the ones that might have impacts to the whole city (e.g. Barcelona). Therefore, localized impacts, even being severe, they are not considered critical as of now".

By adopting this general definition in the three RESCCUE research sites during the assessment phase, a clear identification of the CI will be available and so, the results that have to be considered as confidential will also be clearly identified. However, in most of the cases, this will only be possible after the assessment is completely finished.

Since the Hazur tool will be compiling information from several networks, containing several CI, a specific "Terms and Conditions" explaining the data sharing and legal framework will apply when information is included in the tool. These "Terms and Conditions" are being prepared now and will be included as annex to the DMP in the future versions.

However, in order to be able to take as much benefit as possible of the multi-sectorial approach, while trying to avoid any disclosure of critical or sensitive information, some general recommendations are proposed for the use of the Hazur tool and the presentation of final results:

- Represent CI by its "zone of influence" rather than a singular point to not reveal its location
- Completely anonymize the data of CI so that there is no spatial attributes stored within HAZUR
- In order to establish interdependencies, use generalized nomenclature e.g. "Exchange box #12", so the infrastructures affected by this CI know that it is an exchange box but do not know anything else.

5.3 Systems security

As it has been presented, although some sensitive or confidential information might not be made available publicly, this information will be stored in at least two systems: Hazur and Basecamp.

Consequently, the security characteristics of both systems was assessed to make sure that the minimum standards were reached. Hazur is hosted in classical servers in a OVH data center with maximum physical security (servers can only be physically accessed by authorized employees, access restricted by security badge control system, video surveillance and security personnel, 24/7 on-site, rooms fitted with smoke detection systems and technicians on site 24/7) and high availability infrastructure (Systematic double power supply and generators with an initial autonomy of 48 hrs.)

The servers have the following characteristics:

Virtualization	64-bit OpenVZ
SLA	99.98%, reboot in 10 mins in the event of hardware failure
Scalability	Upgrade whenever you want from our control panel. No need to transfer our data nor to reinstall our VPS.

Anti-DDoS	Included
IP	1 IPv4 and 1 IPv6 included (all ports open)
Management	Web Control Panel, RESTful API, KVM, root access
Reboot and reinstallation	Unlimited, at any time via the Control Panel
Monitoring	Detailed monitoring and key performance indicators
Backup	Once a week

OptiCits is considering different options to upgrade the software hosting in order to increase both the software performance and the data access security.

Regarding Basecamp, they guarantee the security and confidentiality of the information stored there, by using encrypted protocols via HTTPS. Whenever data is in transit, everything is encrypted, and sent using HTTPS. Any files uploaded are stored and are encrypted at rest, and backups of data are encrypted using GPG.

Additionally, all data is written to multiple disks instantly, backed up daily, and stored in multiple locations. Uploaded files are stored on servers that use modern techniques to remove bottlenecks and points of failure.

The servers operate at full redundancy. The systems are engineered to stay up even if multiple servers fail. Their state-of-the-art servers are protected by biometric locks and round-the-clock interior and exterior surveillance monitoring. Only authorized personnel have access to the data center. 24/7/365 onsite staff provides additional protection against unauthorized entry and security breaches.

Their software infrastructure is updated regularly with the latest security patches. Their products run on a dedicated network which is locked down with firewalls and carefully monitored. While perfect security is a moving target, they work with security researchers to keep up with the state-of-the-art in web security.

6 Ethics and Legal Compliance

Ethics will be taken into account in the way data is stored, regarding who can see/use it and how long it is kept.

The consent for data preservation and sharing obtained from data producers, or data owners, will be strictly fulfilled according to applicable license rules. The identity of external participants will be secured through anonymization, when and if applicable. The terms of use, curation and sharing of all datasets made available in the scope of RESCCUE, by data producers and data owners, will be established in formal consent agreements.

The formal consent agreements will state who will own the copyright on the data to be collected or created, along with the license(s) for its use and reuse. When applicable, permissions to reuse third-party data and any restrictions needed on data sharing will also be referred in the associated metadata.

However, ethics should not only be taken into account in the way data is stored and shared, but also regarding many other issues as all consortium members are subject to the EU Directive on Data Protection and its national transpositions. Therefore, there are several aspects to be considered, such as details on what type of personal data will be collected; details on data transference to non-EU countries; or examples of the Information Sheets and Consent forms to be used.

There are a lot of subjects that could be analysed here but as of now, it is not yet clear which ones will apply to the RESCCUE Project. Therefore, in next updates of this DMP this information will be accordingly studied in more detail.

7 Responsibilities and Resources

Aquatec (as Project Coordinator) as well as the leaders of WP1 to WP6 (where most of the project data is produced) are responsible to implement the DMP and ensure that it is duly reviewed and timely revised.

The data management activities within each WP should be assured by the person responsible for data management at WP level.

RESCCUE has 3 research sites that will be studied across several project activities and WPs. The responsibilities for data management activities are centralised in the WP leader and in the person(s) responsible for data management (data capture, metadata production, data quality, storage and backup, data archiving and data sharing) at each research institution coordinating a research site: CETaqua, FIC, Opticits, UNEXE, LNEC and Aquatec.

8 References

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European Commission (2016b). *Guidelines on FAIR Data Management in Horizon 2020* – Version 3.0 – available online: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf