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DR-BOB

DEMAND RESPONSE IN BLOCKS OF BUILDINGS
DELIVERABLE: D1.3 DATA MANAGEMENT PLAN (UPDATE)

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Project Consortium



Deliverable Administration & Summary			
D1.3 Data Management Plan (Initial)			
Lead Beneficiary: Teesside University			
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DoA	This task will include the elaboration of the Data management plan for the participation to the 'Pilot on Open Research Data in Horizon 2020'. Its implementation will be split across the other Work packages according the data to be delivered.		
	Data management plan for the participation to the 'Pilot on Open Research Data in Horizon 2020'.		
Contribution of partners	TU structured and drafted the report with specific input to the data set description from the respective Task Leaders: Pierre Boisson, Andrei Ceclan, Richard Charlesworth, Tracey Crosbie, Regis Decorme, Federico Galluzzi, Izabella Geapana, Papa Niamadio, Federico Noris, Igor Perevozchikov, Sergio Rodriguez, Luc van Summeren.		
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EXECUTIVE SUMMARY

DR BOB is a H2020 funded innovation project demonstrating the economic and environmental benefits of demand response in blocks of buildings. An initial Data Management Plan (DMP) report was made public in month six. The initial DMP outlined how data collected or generated by the DR BOB project, in terms of how it will be organized, stored, and shared. It specifies which data will be open access and which will be confidential within the consortium, as far as it is possible to do so at this stage. Furthermore, the report has been developed following the Horizon 2020 guidelines (EC DG R&I, 2015) with additional guidance from the UK's Digital Curation Centre (DCC), via the web resource DMP Online <https://dmponline.dcc.ac.uk/>, and the joint OpenAIRE and EUDAT webinar "How to write a Data Management Plan" (OpenAIRE and EUDAT, 2016).

Open access (OA) is understood as the free, online provision of re-useable scientific information to other users. There are many good reasons to make the data and findings from publically funded research openly available to the research community, the commercial sector and civil society. Much of the data gathered by the project is for the purpose of project management and delivery rather than new knowledge creation; it is therefore likely that much of the data is categorised as confidential (Consortium). However, the project will seek to openly disseminate its research findings, except in cases where there are defined exploitable outcomes, privacy concerns or there will be a high administrative burden for a dataset or limited worth to other users.

The initial report highlighted the most significant datasets identified are the quantitative and qualitative datasets produced by the Evaluation and Monitoring work package (see Sections 3.10 and 3.11, p21-23). It is these data that will validate the impact of the project and the conclusions drawn in scientific publications arising. It is intended that where possible these data will be made available through open access repositories.

Section 1.5 of this report includes a summary to all the updates to the initial DMP in term of newly added project datasets, namely, datasets created for T6.1, 6.3 and 6.4. Additionally it contains some changes to some of the datasets described in the initial DMP ([D 1.3 DMP \(Initial\)](#)).

Key words: H2020, open access, data, metadata, data management, energy, built environment, demand response.

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ACRONYMS AND ABBREVIATIONS

CP	Consumer Portal
DMP	Data Management Plan
DR	Demand Response
DEMS	Decentralized Energy Management System
DRMS	Demand Response Management System
LEM	Local Energy Manager
ME	Market Emulator
NDA	Non-Disclosure Agreement
OA	Open Access
RTDS	Real-time Data Store
URI	Uniform Resource Identifier
VEP	Virtual Energy Plant

1 INTRODUCTION

1.1 REPORT STRUCTURE

This report has the same structure to the previous Initial DMP report. The report begins by outlining its purpose, intended audiences, and the process for ongoing development. Sub section 1.5 summarises the DMP update changes. Section 2 outlines the concepts of open access publishing and open access data in scientific research. Related issues such as a classification for project datasets and an overview of copyright licensing for open access are then discussed. Each project dataset is then described in detail in Section 3, beginning on page 12, using a standardised template. Finally, conclusions are drawn and references presented.

1.2 AIMS AND OBJECTIVES

DR BOB is a H2020 funded innovation project demonstrating the economic and environmental benefits of demand response in blocks of buildings. This Data Management Plan (DMP) outlines how data collected or generated by the DR BOB project will be organised, stored and shared. It specifies which data will be open access and which will be confidential within the consortium, as far as it is possible to do so at this stage.

1.3 INTENDED AUDIENCE

The first audience for this report is internal; there are ten partner organisations participating in DR BOB working on four demonstration sites across Europe. The DMP will establish consistent practices between partners to increase the efficiency and robustness of data handling during delivery of the project.

The second audience for this report is the wider community of researchers, engineers and facilities managers interested in energy use in the built environment, particularly at its intersection with broader energy system. The DMP will describe the standard formats, meaningful metadata and open repositories to share data and enable other users to build on the knowledge gained during the project.

1.4 RELATIONS TO OTHER ACTIVITIES IN THE PROJECT

As the coordinating partner, Teesside University has drafted and elaborated the Data Management Plan document with input from the other partners.

All partners contribute to its implementation across the other work packages according to their particular activities. For instance, Work Package 5 – Monitoring and Evaluation, will collate and analyse the data generated by the implementation of the project technology in Work Package 4, using the structures and standards described in the DMP.

1.5 UPDATED DATA MANAGEMENT PLAN

An initial version of the DMP, prepared at the outset of the project, delivered month 6. This updated version of the DMP contains some significant changes to the project due to inclusion of newly added project datasets description, namely, datasets created for T6.1, 6.3 and 6.4.

These contain descriptions to the following activities:

- Development of public portal, video and promotional material (see section 6.1.1, p 24),
- Communication and Dissemination Planning and Execution
(see section 6.3.1, p 27),
- Project stakeholder dissemination and exploitation event (see section 6.4.1, p 28).

Additionally, this update report contains some changes to some of the datasets described in the initial DMP ([D 1.3 DMP \(Initial\)](#)). Table 1 shows a summary of the changes/new datasets.

Table 1: DMP update Changes.

Work package	Task	Change description/ new datasets
1	1.1	Task leader & data manager is now Sergio Rodriguez
1	1.3	Task leader is now Huda Dawood
2	2.2	New dataset has been created on business scenarios
2	2.3	For Datasets 2.3.1, 2.3.2 & 2.3.3 identified in the initial DMP, the software for gathering data from demonstration sites by the solution components (<u>VEP/DRMS, LEM, CP, ME</u>). However, The software VEP and DEMs have been merged as one software called <u>DEMS</u> (Decentralized Energy Management System)
6	6.1	New dataset has been created on the Development of public portal, video and promotional material
6	6.2	<ul style="list-style-type: none"> • An extra information has been added to the data set description (see point 5) • An extra information has been added to the standards section, namely, joining the DR-BOB dissemination network • An extra information has been added to data sharing, namely access to database through the DR-BOB internal SharePoint. • An extra information has been added to archiving and preservation, namely, data storage through Access database as well as online Google sheets service.
6	6.3	New dataset has been created on Communication and Dissemination Planning and Execution
6	6.4	New dataset has been created on Project stakeholder dissemination and exploitation event

2 APPROACH TO DATA MANAGEMENT

This report has been developed following the Horizon 2020 guidelines (EC DG R&I, 2015) with additional guidance from the UK's Digital Curation Centre (DCC), via the web resource DMP Online <https://dmponline.dcc.ac.uk/>, and the joint OpenAIRE and EUDAT webinar "How to write a Data Management Plan" (OpenAIRE and EUDAT, 2016).

2.1 DATA AVAILABILITY AND OPEN ACCESS

Open access (OA) is understood as the free, online provision of re-useable scientific information to other users. There are many good reasons to make the data and findings from publically funded research openly available to the research community, the commercial sector and civil society.

As the "Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020" (EC DG R&I, 2015) outline, more open access to scientific publications and data serves a number of purposes. It will i) improve the quality of research by building on a stronger body of existing work, ii) increase efficiency of research by reducing duplication of effort, iii) bring innovations to market quicker by reducing barriers to information flow, and iv) enhance the transparency of scientific progress. There is also the economic and ethical principle that information that has been paid for with public money should not have to be paid for again when it is required for use by other researchers, industry, or citizens.

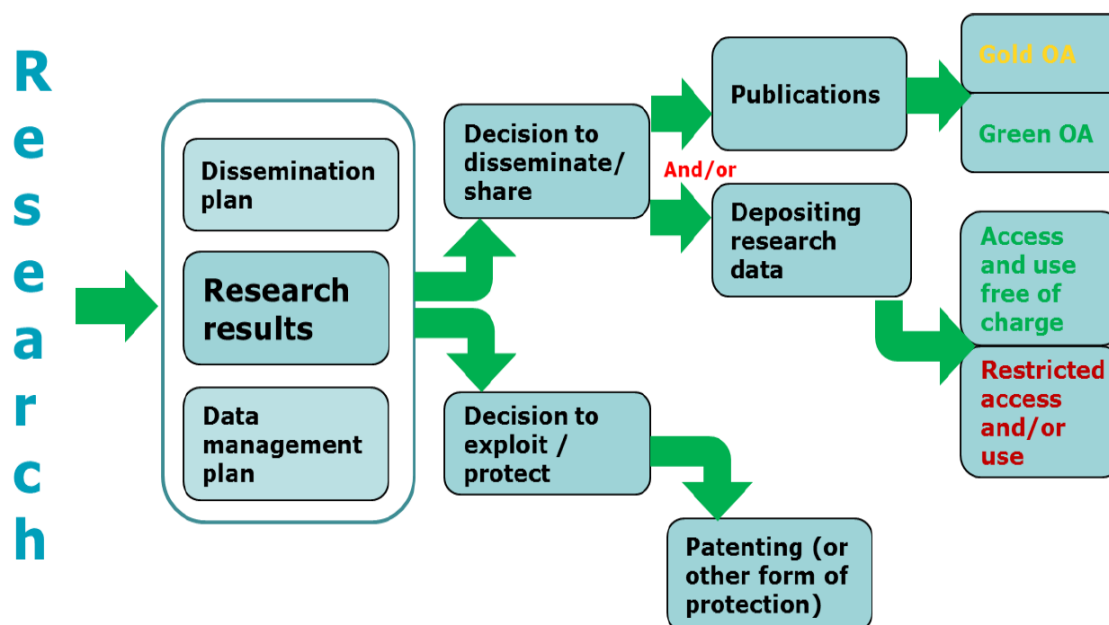


Figure 1 Open access to scientific publication and research data in the wider context of dissemination and exploitation (Reproduced from EC DG R&I (2015) H2020 Programme Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020)

As outlined above, the first decision to be made in research dissemination is whether to publish research findings or to protect some aspects for commercial exploitation. The Draft IPR

Management Report (D1.2), led by TU to be delivered in month 12, will outline the key datasets, outputs and processes that will determine the path for different aspects of the DR BOB project. This will have input from Task 2.5, Management of Exploitable Results, led by R2M. The process will involve a patent search, the clarification of each partners' legitimate interests in relation to the project outputs, and the introduction of IPR agreements between partners prior to dissemination of findings. The Interim Exploitation Plan (D2.5, month 24) will clarify these findings and ultimately lead to the final Exploitation Plan (D2.6) at the close of the project in month 36.

2.1.1 CLASSIFICATION OF DATA AVAILABILITY

Data availability is therefore categorised at this stage in one of three ways:

Open	Data that is shared for re-use or that underpins a scientific publication.
Consortium	Confidential data that is accessible to all partners and the Energy Expert Group, but retained within the consortium and subject to the project Non-Disclosure Agreement (NDA).
Private	Data that is maintained by an individual partner for their own purposes.

Much of the data gathered by the project is for the purpose of project management and delivery rather than new knowledge creation; it is therefore likely that much of the data is categorised as Consortium. However, the project will seek to openly disseminate its research findings, except in cases where there are defined exploitable outcomes, privacy concerns or there will be a high administrative burden for a dataset or limited worth to other users. The two main aspects of this dissemination approach are open access to scientific publications and open access to research data. Each is considered in the following sections.

2.1.2 OPEN ACCESS PUBLISHING

Open access publishing is essentially defined as the free availability of peer-reviewed scientific publications for any user. There is no single legal definition in the context of H2020 but the DR-BOB Grant Agreement specifies that the project will:

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

(b) ensure open access to the deposited publication — via the repository — at the latest: (i) on publication, if an electronic version is available for free via the publisher, or (ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.

(c) ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.” (EC 2016, Article 29.2)

To achieve this, we will use both “green” and “gold” open access routes. “Green” open access, or self-archiving, is the release of a final peer reviewed manuscript through an online repository, possibly after an embargo period, whereas “gold” open access relates to open access publishing.

Teesside University is committed to ensuring that the outputs of its research are readily accessible and has developed the TeesRep online repository and portal. This facility can host

academic outputs, i.e. journal articles, conference papers and book chapters, authored or co-authored by Teesside University academics, indefinitely with a persistent identifier.

For scientific publications not co-authored with Teesside University academics, the project will create a TeesRep record with a persistent identifier and full metadata describing it. This will then link to a copy of the output held in another web repository, most likely the EU FP7 funded [Zenodo](#), but still create a coherent set of records in the TeesRep repository.

As well as the deposited publications, bibliographic metadata from TeesRep are openly accessible and can be re-used without prior permission for not-for-profit purposes, provided the URI (Uniform Resource Identifier) or a link to the original metadata record is given (Teesside University, 2015, para 3.4). All deposits in TeesRep will be assigned a persistent identifier registered with the Handle System, run by the not-for-profit Corporation for National Research Initiatives (CNRI) and authorized by the DONA Foundation.

Manuscripts will be deposited by authors in a timely manner, within three months of acceptance to a journal, and released to public access within one month, although in some cases publishers request an embargo period.

Gold open access is via traditional academic journals but shifts the fees for publishing from readers to researchers. One off charges, of the order of €2000 per paper, are usually levied at the time of acceptance. Teesside University has €6,000 allocated in Other Direct Costs (EC 2016, Section 3.4.2) to pay such fees for its publications arising from the project.

DR-BOB will make other public deliverables, such as technical reports, working papers and conference papers, which are not scientifically peer reviewed, openly accessible via the project website, www.dr-bob.eu, and other online research dissemination platforms such as ResearchGate.

2.1.3 OPEN DATA

The DR BOB project has not been mandated to participate in the 'Pilot on Open Research Data in Horizon 2020' but has committed to do so voluntarily. The rationale is very similar to that related to open access of scientific publications; research integrity will be increased through transparency, impact will be greater through re-use, duplication of efforts will be reduced, and civil society will benefit from better value from its financial contribution.

There are four main aspects of open data summarised in the acronym FAIR (Force 11, 2016):

Findable	data has a unique, persistent ID, located in a searchable resource, and documented with meaningful metadata
Accessible	data is readily and freely retrievable using common methods and protocols, metadata is accessible even if the data is not
Interoperable	data is presented in broadly recognised standard formats, vocabularies and languages
Re-useable	data has clear licences, and accurate meaningful metadata conforming to relevant community standards and identifying its content and provenance

The data management plan establishes how this approach will be realised in practice with the initial plan presenting an overview and greater detail provided in the interim and final reports as the work packages proceed.

Project datasets for dissemination will be open access by default, at the very least to validate scientific publications. However, not all of the project work packages will produce datasets that are intended for public dissemination; much of the data created and stored during the project is for internal management and communication within the consortium only. The distinction between datasets is clearly described in the dataset templates.

2.1.4 COPYRIGHT LICENSES

When material is widely shared, copyright licences protect the authors of work and grant specific rights to publishers and others to use this work. The European Commission encourages authors to retain their copyright whilst disseminating it as open access. Creative Commons provides legal tools to enable open access in these circumstances, with CC-BY and CC0 enabling re-use by third parties (Creative Commons, 2016).

Where research findings are published in a journal or other scientific outlet there should be consideration of the copyright agreement with the publishers, which may involve an embargo period. Submission in TeesRep requires the author to agree to a non-exclusive distribution licence, and a Creative Commons licence may be added at this stage.

At this initial stage it is not possible to define the copyright arrangement for each project dataset. The most appropriate licencing arrangements for each of the project datasets will be investigated as they are better characterised by their respective work packages and the Management of Exploitable Results Task 2.5. The mid-term and final data management plans will be updated to that effect.

2.2 DATA STORAGE & SHARING

The project has five main data storage and sharing facilities according to the type of data and its intended accessibility.

Private	Stored locally on organisational networks and assets, subject to institutional back up practices.
Consortium	TU IT services will host a SharePoint space which is secure, robust and accessible to all partners. Consortium data will be uploaded to this cloud storage for simple, secure access for all partners from within a web browser. Data is maintained with regular offsite backups.
Open	Three facilities will be used during the project. <ul style="list-style-type: none"> i) The project website www.dr-bob.eu, managed by TU, will be the first point of contact for public dissemination. It will host project technical reports and other materials such as events listings, blog articles, images, videos, links to partner organisations and related projects. ii) TeesRep will make scientific publications indefinitely accessible and discoverable in the mode of “green” open access publishing. iii) Large, re-useable data sets will be deposited in an open data repository, e.g. Zenodo, selected by the task leaders during the delivery of the relevant work packages.

3 DESCRIPTION OF PROJECT DATASETS

Datasets are numbered according to their primary work package and task number, as laid out in the project Description of Action. For instance the dissemination network dataset, the first dataset of Task 6.2 from Work Package 6 is named “Dataset 6.2.1”.

The description of the datasets below is based upon the Horizon 2020 Initial DMP template provided by the UK’s Digital Curation Centre (DCC) via the web resource DMP Online <https://dmponline.dcc.ac.uk/>

3.1 TEMPLATE: DATASET X.Y.Z

Information about each dataset has been collated by Task Leaders in the format presented below.

WP / Task & Data Manager	Work Package and/or Task numbers related to the dataset, and the Data Manager who takes responsibility.
Dataset reference / name	Dataset number and name
Availability	Private, Consortium or Open, as defined in section 2.1.1
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Keyword(s) that categorize data to make it linked/searchable
Data set description	Data description, origin, nature, scale, if it underpins a publication, who useful to, existence of similar data, possibilities for reuse.
Standards	Reference to existing standards in topic area governing data collection, aggregation, storage and sharing.
Data sharing	How the data will be shared, identification of repository, existence of embargo period if any, identification of software or tools necessary for reuse.
Archiving and preservation (storage/backup):	The procedure for long-term preservation, length of preservation, an estimation of costs and how this will be covered.

3.2 DATASET 1.1.1 PROJECT COORDINATION DATA

WP / Task & Data Manager	WP1 Sergio Rodriguez (TU)
Dataset reference / name	Project Coordination Data
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Project management; Communication; Templates
Data set description	<p>This dataset is related to the whole of WP1 and the general administration and coordination of the DR-BOB project.</p> <p>It contains the necessary documentation to efficiently and effectively communicate between partners and deliver the project outcomes.</p> <p>Key materials include:</p> <ul style="list-style-type: none"> • Document templates • Contact sheets and mailing lists for the project team • Activity log for project meetings • Agendas and minutes of meetings • Logos • Images of project sites and assets • Deliverables schedule and list of reviewers
Standards	No specific standards for these data.
Data sharing	Data will be stored on the project SharePoint space hosted by TU. Uploaded files will be in Microsoft Office in .doc, .docx, .xls, .xlsx, and .pdf formats.
Archiving and preservation (storage/backup):	Standard daily offsite backup of SharePoint.

3.3 DATASET 2.1.1 MARKET, BUSINESS PLANS AND EXPLOITATION DATA

WP / Task & Data Manager	WP2, T2.1, T2.4, T2.5 Federico Noris (R2M)
Dataset reference / name	Market, business plans and exploitation data
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Market and stakeholder assessment; Business plan definition; Exploitation plan data
Data set description	<p>This dataset is cumulative through three tasks, concerning the market conditions and opportunities at each site.</p> <p>T2.1 gathered and processed data regarding global, EU and target counties DR markets, programs, and participants and stakeholder benefits and needs. It mainly utilised existing publicly available data.</p> <p>T2.4: defines the services and products to offer to market for each site with financial and value flows among interested subjects, SWOT analysis and an identification of key relationships between parties.</p> <p>T2.5: clarifies result and business models of target stakeholders with benchmarking and target positioning profiles, cost-benefits assessment and a comprehensive set of value propositions.</p>
Standards	No specific standards for these data.
Data sharing	Data will be stored on the project SharePoint space hosted by TU in *.doc, *.docx, .xls and *.pdf formats.
Archiving and preservation (storage/backup):	Standard daily backup for SharePoint and other centralised systems.

3.4 DATASET 2.2.1 SITE TECHNICAL SURVEYS

WP / Task & Data Manager	WP2, T2.2 Igor Perevozchikov (NBK)
Dataset reference / name	Site Technical Surveys
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Location of the block of buildings / buildings' structures / energy bills / drawings / available technical equipment / HVAC systems / energy sources / heating/cooling set point / lighting systems / building control infrastructure / renewable energy production systems / energy storage systems / building occupant's information / local context / local stakeholder's/decision makers information / known issues / areas of improvements
Data set description	These data contain the responses to the questionnaires sent by NBK to the pilot site managers. These data have been used to define use cases and provide the scenarios for demonstration of DR technologies.
Standards	No specific standards for these data.
Data sharing	The questionnaire answers are shared via email or stored on the DR-BOB Sharepoint space hosted by TU in *.doc, *.docx or *.pdf formats.
Archiving and preservation (storage/backup):	Standard daily backup for SharePoint and other centralised systems.

3.5 DATASET 2.2.2 INTERVIEW AND WORKSHOP RESPONSES

WP / Task & Data Manager	WP2, T2.2 Igor Perevozchikov (NBK)
Dataset reference / name	Interview and Workshop Responses
Availability	Private and Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Facility managers / Building owners / Decision makers / Exploitation and maintenance companies / building's use / decision-making process / expectations from DR programs / technical/socio/economic constraints.
Data set description	<p>These data contain the records of the answers brought by local stakeholders and occupants during the individual interviews or/and collective workshops.</p> <p>These data will be used to define use cases and provide the scenarios for demonstration of DR technologies.</p>
Standards	No specific standards for these data.
Data sharing	The Interview and Workshops responses are shared via email or stored on the DR-BOB SharePoint space hosted by TU in *.doc, *.docx or *.pdf formats.
Archiving and preservation (storage/backup):	Standard daily backup for SharePoint and other centralised systems.

3.6 DATASET 2.2.3 BUSINESS SCENARIOS DESCRIPTION

WP / Task & Data Manager	WP2, T2.2 Igor Perevozchikov (NBK)
Dataset reference / name	Business scenarios description
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR-BOB; GA696114
Dataset Specific Metadata	Scenarios' description; maximum expected impact; report; number of events per year; DR programme; signals; assets involved; solution outline; explicit/implicit DR; start time; manual/auto control; response time; duration; purpose; operation
Data set description	These data describe use cases to be tested at all the demonstration sites during demonstration period and provide principal parameters of scenarios for demonstration of DR technologies. This dataset results from technical surveys (dataset 2.2.1) and individual interviews/collective workshop responses (dataset 2.2.2).
Standards	No specific standards for these data.
Data sharing	Data are stored on the DR-BOB SharePoint space hosted by TU in *.xlsx format.
Archiving and preservation (storage/backup):	Standard daily backup for SharePoint and other centralised systems.

3.7 DATASET 2.3.1 DEMONSTRATION SITE DATA

WP / Task & Data Manager	WP2.3 (also relevant to WP3) Richard Charlesworth (Siemens)
Dataset reference / name	Demonstration Site Data
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Assets; Baseline meter readings; Electricity Import; Electricity Export; Gas; Heat; Building Set Point Data; Site/Asset Demand Forecast
Data set description	<p>Asset and baseline data gathered from the demonstration sites that are involved in or impacted by Demand Response actions for the duration of the Project.</p> <p>Dataset to be used in the design phase of project WP2 and WP3.</p> <p>Variables will include a catalogue of assets, historic meter readings for gas, heat and electricity, import, generation and export, building set points and site/asset demand forecasts.</p>
Standards	<p>OpenADR for communication between central and local systems</p> <p>BacNet for BMS integration</p> <p>ModBus [TBC] for meter readings</p> <p>Data will be shared with the Consumer Portal (CP) through REST API.</p> <p>Other standards to be added following asset review.</p> <p>Asset survey and metering data to be stored in .csv, .xls or .xlsx format.</p>
Data sharing	<p>Asset survey to be stored in SharePoint</p> <p>Metering archive data to be managed by demo sites. Extracts for sharing to be uploaded to SharePoint after processing.</p> <p><u>VEP/DRMS (DEMS), LEM and CP</u> to connect to the Real-time Data Store.</p>
Archiving and preservation (storage/backup):	<p>Standard daily backup for SharePoint and other centralised systems.</p> <p>Daily export of measurement, metering and set point data from RTDS platform to server.</p> <p>Ad-hoc export of asset and building configuration data.</p>

3.8 DATASET 2.3.2 DR EVENT DATA

WP / Task & Data Manager	WP2.3 (also relevant to WP3) Richard Charlesworth (Siemens)
Dataset reference / name	DR Event Data
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Event Request; Participation; Settlement
Data set description	A record of demand response events and asset participation for each site for the duration of the project.
Standards	OpenADR for communication between central and local systems [There may be others, dependent on the demo site DR market] Data will be shared with the Consumer Portal (CP) through REST API. Data archived in .csv format.
Data sharing	<u>VEP/DRMS (DEMS), LEM and CP</u> to connect to the Real-time Data Store
Archiving and preservation (storage/backup):	Daily export of Event Request, Participation and Settlement data from RTDS platform to server.

3.9 DATASET 2.3.3 REGIONAL DATA FOR MARKET EMULATOR

WP / Task & Data Manager	WP2.3 (also relevant to WP3) Richard Charlesworth (Siemens)
Dataset reference / name	Regional Data For Market Emulator
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Weather Forecast; Grid Frequency Deviations; Market Prices; Ancillary Services; Balancing Market Requests [if available]
Data set description	Regional data to support the operation of the systems for the duration of the project, including weather forecasts, market prices, ancillary services and balancing market requests.
Standards	OpenADR for communication between central and local systems Data will be shared with the Consumer Portal (CP) through REST API. [There may be others, dependent on the demo site DR market] Data archived in .csv format.
Data sharing	The Market Emulator at each demo site will aggregate, store, simulate and share this data with the <u>VEP/DRMM (DEMS), LEM</u> and the Real-time Data Store.
Archiving and preservation (storage/backup):	Daily export of weather forecasts, market prices, ancillary services and balancing market requests from RTDS platform to server.

3.10 DATASET 5.1.1 EVALUATION AND MONITORING: QUANTITATIVE VALIDATION

WP / Task & Data Manager	WP5, Task 5.2, 5.3, 5.4, 5.5 Pierre Boisson (CSTB)
Dataset reference / name	Evaluation and monitoring: Quantitative validation
Availability	Open Access
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	KPIs; Energy consumption; Electricity Export; Gas; Heat; Indoor Environment; Weather; Balancing Market Requests [if available]; DR participation.
Data set description	<p>Task 5.1 will develop the evaluation protocol that will be used to monitor and validate the case study demonstrations in T5.2 to T5.5. It will consist in a methodological report including strategies for quantitative validation (key performance indicators) and qualitative validation (questionnaires, interviews schedules, surveys) to identify energy consuming routines and behaviours and to measure the impact of DR-BOB.</p> <p>The specifics of the quantitative data set will be defined by this process. Data will be gathered from the VEP/DRMS, LEM, CP, ME and aggregated at each site (TU, FP, TUCN, NBK/FCMB) in the Real-time Data Store.</p> <p>Expected content includes import, generation and export for:</p> <ul style="list-style-type: none"> • Gas • Heat • Electricity <p>Also, building set points, indoor environment data (temperature, humidity), weather forecasts, market prices, ancillary services and balancing market requests, asset/site participation, settlement records, CP display and user interactions.</p>
Standards	<p>IPMVP (International Performance Measurement and Verification Protocol, EVO) will be investigated as the main framework.</p> <p>The SAREF (Smart Appliances REference) and IFC4 ontologies may also be used to structure sensor and building data respectively to enhance the potential for re-use. These aspects will be investigated with the Linked Building Data research community e.g. via the SWIMing project.</p>

Data sharing	<p>Data will be gathered at each site by each instance of the Real-time Data Store.</p> <p>The dataset will be processed for anonymity and archived as a .csv file in an open access repository, such as Zenodo, eeMeasure or OpenRJ, according to its final specification, for reanalysis by other smart grid and energy demand projects.</p>
Archiving and preservation (storage/backup):	<p>Standard daily backup from the Real-time Data Store platform to a remote server.</p> <p>Consumer Portal (CP) will backup data to the internal GridPocket platform PowerVAS.</p>

3.11 DATASET 5.1.2 EVALUATION AND MONITORING: QUALITATIVE VALIDATION

WP / Task & Data Manager	WP5, Task 5.2, 5.3, 5.4, 5.5 Pierre Boisson (CSTB)
Dataset reference / name	Evaluation and monitoring: Qualitative validation
Availability	Open Access
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114
Dataset Specific Metadata	Findings and evaluations of demo sites; questionnaires; surveys; interviews; workshop data; stakeholders; behavioural data.
Data set description	<p>Task 5.1 will develop the evaluation protocol that will be used to monitor and validate the case study demonstrations in T5.2 to T5.5. It will consist in a methodological report including strategies for quantitative validation (key performance indicators) and qualitative validation (questionnaires, interviews schedules, surveys) to identify energy consuming routines and behaviours and to measure the impact of DR-BOB.</p> <p>The specifics of the qualitative data set will be defined by this process. Expected content for each demo site (TU, FP, TUCN, NBK/FCMB) includes questionnaires, surveys, interviews and workshop data. Insights from WP2 will be used as baselines.</p>
Standards	No specific standards for these data.
Data sharing	<p>Data will be gathered from each site and shared within the consortium through SharePoint.</p> <p>The dataset will be processed for anonymity and archived as .doc files in an open access repository, such as Zenodo, to validate publications arising.</p>
Archiving and preservation (storage/backup):	Standard daily offsite backup of SharePoint.

3.12 DATASET 6.1.1 DEVELOPMENT OF PUBLIC WEB PORTAL, VIDEO AND PROMOTIONAL MATERIALS

WP / Task & Data Manager	WP6, Task 6.1 Tracey Crosbie (TU)
Dataset reference / name	Development of public web portal, video and promotional materials
Availability	Consortium; other parties upon request.
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR-BOB; GA696114
Dataset Specific Metadata	Dissemination, communication, website, social media, Twitter, Facebook, Instagram.
Data set description	<p>This data set relates to T6.1, dissemination activities , web portal, & social media presence.</p> <p>It includes information on partner communication channels, the DR-BOB website, social media handles, promotional video, posters and leaflets.</p> <p>Other than project's partners, it is useful to other H2020 projects for the purposes of reusing.</p>
Standards	No specific standards for these data.
Data sharing	<p>Data will be stored on the project Shared Platform space hosted by Teesside university.</p> <p>Uploaded files will be in Microsoft Office in .doc, .docx, .xls, .xlsx, and .pdf formats. uploaded Videos will be in Vimeo .WebM.</p> <p>If it is deemed necessary to share any data with an external party the process for doing so will comply with conditions set down in the Data Protection Act (UK) or equivalent European/national legislation; as well as DR-BOB Consortium Agreement</p>
Archiving and preservation (storage/backup):	<p>Standard regular offsite backup of SharePoint.</p> <p>A backup copy is downloaded monthly by the data manager as a .csv file and stored on the consortium SharePoint in case of errors or accidental alterations or deletions.</p>

3.13 DATASET 6.2.1 DISSEMINATION NETWORK

WP / Task & Data Manager	WP6, Task 6.2 Régis Decorme (CSTB)
Dataset reference / name	Dissemination Network
Availability	Consortium
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR-BOB; GA696114
Dataset Specific Metadata	Dissemination; Stakeholders; Network; Contacts
Data set description	<p>DR-BOB dissemination network of interested stakeholders from the public and private sectors.</p> <p>This is a network that brings together interested stakeholders involved in demand response in blocks of buildings, potential beneficiaries, early-adopters, replicators and users of the results of the project, and builds upon the contacts and relationships of each project partner.</p> <p>The dissemination network contains the following information about each member of the network:</p> <ol style="list-style-type: none"> 1. Contact details (Surname, first name, country, organisation, email address etc.) 2. Field of expertise/type of stakeholder (Energy, ICT, building, End-user other) 3. Relationship to the DR-BOB demonstration sites (UK, Italy, France, Romania) 4. Language understood (English, Italian, French, Romanian) 5. Interest with regards to the DR-BOB project (General information, Events, DR Energy Management Solution, User Interfaces, Business models)
Standards	<p>In order to comply with data protection guidance relating to holding third party contact information, dissemination network members are only included in the list if:</p> <ol style="list-style-type: none"> 1. They have provided their details in the course of showing an interest in the network, 2. Are aware that they are to be added to the list, 3. Have actively opted in to the network. <p>It is also possible to join the DR-BOB dissemination network through a dedicated form available on the project website at http://www.dr-bob.eu/contact</p>

	<p>All electronic communication with dissemination network list members will include the following opt out option:</p> <p><i>If you wish to unsubscribe from this mailing list please send an email to regis.decorme@cstb.fr with the words UNSUBSCRIBE DR-BOB in the subject line.</i></p> <p>Partners are required to copy CSTB staff (that manage the list) into all electronic communications to dissemination network list members.</p>
Data sharing	<p>The dissemination network (stakeholders contact details) is stored on an online Google sheet and also through an Access database available through the DR-BOB internal Sharepoint. It is accessible only by DR-BOB project partners.</p> <p>The mailing list from the DR-BOB dissemination network is used mainly for carefully targeted communication, and general whole network covering mails are avoided.</p>
Archiving and preservation (storage/backup):	<p>The online Google Sheets service as well as the Access database provide a robust platform for data storage for the lifetime of the project and are accessible to all partners.</p> <p>A backup copy is downloaded monthly by the data manager as a .csv file and stored on the consortium SharePoint in case of errors or accidental alterations or deletions.</p>

3.14 DATASET 6.3.1 COMMUNICATION AND DISSEMINATION PLAN

WP / Task & Data Manager	WP6, Task 6.3 Tracey Crosbie (TU)
Dataset reference / name	Communication and Dissemination plan
Availability	Consortium; other parties upon request.
Mandatory Metadata	European Union; H2020; Demand Response in Blocks of Buildings; DR-BOB; GA696114
Dataset Specific Metadata	Exploitation, dissemination, communication
Data set description	<p>This data set relates to T6.3, the dissemination, exploitation & communication plan.</p> <p>It includes information on stakeholders, and target audiences, individual partner's exploitation plans, project promotional material and social media channels, basic market analysis.</p> <p>Other than project's partners it is useful to other H2020 projects for the purposes of reusing.</p>
Standards	No specific standards for these data.
Data sharing	<p>Data will be stored on the project Shared Platform space hosted by Teesside University.</p> <p>Uploaded files will be in Microsoft Office in .doc, .docx, .xls, .xlsx, and .pdf formats.</p> <p>If it is deemed necessary to share any data with an external party the process for doing so will comply with conditions set down in the Data Protection Act (UK) or equivalent European/national legislation; as well as DR-BOB Consortium Agreement.</p>
Archiving and preservation (storage/backup):	<p>Standard regular offsite backup of SharePoint.</p> <p>A backup copy is downloaded monthly by the data manager as a .csv file and stored on the consortium SharePoint in case of errors or accidental alterations or deletions.</p>

3.15 DATASET 6.4.1 PROJECT STAKEHOLDER DISSEMINATION AND EXPLOITATION EVENTS

WP / Task & Data Manager	WP6, Task 6.4 Federico Noris (R2M)
Dataset reference / name	Project Stakeholder Dissemination and exploitation event
Mandatory Metadata	Consortium
Dataset Specific Metadata <i>(keyword(s) that categorize data to make it linked/searchable)</i>	European Union; H2020; Demand Response in Blocks of Buildings; DR BOB; GA696114; Demand Response; Aggregators
Data set description <i>(data description, origin, nature, scale, if it underpins a publication, who useful to, existence of similar data, possibilities for reuse)</i>	Results of workshops; feedbacks from experts and anonymous questionnaires filled by attendees. Useful for/to: Dissemination; Stakeholders; Network; Contacts; Aggregators; Energy Experts; Energy Authorities; DSOs; TSOs; Energy Suppliers
Standards <i>(reference to existing standards in topic area governing data collection, aggregation, storage and sharing)</i>	Workshops are public events. Data management follows the same standards and rules commonly used for public events with participation of the public. Only public results of the project will be disclosed. Attendees are only required to provide their name and organization. Eventual feedbacks provided are noted down for inclusion in D6.4 and D6.5 which are public documents. Participation in questionnaires is anonymous and data is aggregated for assessment and publication.
Data sharing <i>(how data will be shared, identification of repository, existence of embargo period if any, identification of software or tools necessary for reuse)</i>	Notes from the workshops and results of anonymous questionnaires are stored by the DR-BOB consortium and accessible only by the DR-BOB consortium. For the latter, results can be stored in the project's local server (SharePoint) or using servers of commercial tools (e.g. Survey Monkey)

<p>Archiving and preservation (storage/backup): <i>(procedure for long-term preservation, length of preservation, estimation of costs and how covered)</i></p>	<p>Notes from workshops will be stored on SharePoint</p> <p>Results of anonymous questionnaire will be stored either on SharePoint or using the server of commercial tools (e.g. Survey Monkey) which guarantees backup and security.</p>
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4 CONCLUSIONS

This document represent an updated DMP to the previous initial DMP delivered in M6, where changes to certain WP's datasets have been highlighted as well as including new dataset templates, namely for T 6.1, 6.3 and 6.4.

The most significant datasets are the quantitative and qualitative datasets produced by WP5, the Evaluation and Monitoring work package (see Sections 3.10 and 3.11, p21-23). It is these data that will validate the impact of the project and the conclusions drawn in scientific publications arising. It is intended that where possible these data will be made available through open access repositories.

5 REFERENCES

- Creative Commons (2016) Creative Commons Licensing Types, <https://creativecommons.org/share-your-work/licensing-types-examples/>, accessed 27/07/2016.
- DCC (2016) Horizon 2020 DMP Template and Guidance, <https://dmponline.dcc.ac.uk/>, accessed 8th July 2016.
- EC DG R&I (2015) European Commissions Directorate-General for Research and Innovation, Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020, Version 2.0, Brussels, https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf
- European Commission (2016) Grant Agreement number: 696114 DR-BOB H2020-EE-2014-2015/H2020-EE-2015-2-RIA, Brussels
- Force11 (2016) The FAIR Data Principles, <https://www.force11.org/group/fairgroup/fairprinciples>, accessed 27/07/2016.
- OpenAIRE and EUDAT (2016) How to write a Data Management Plan, webinar and powerpoint resource, <https://b2drop.eudat.eu/index.php/s/pQIUcmLVPb8dcD4>, accessed 7th July 2016.
- Teesside University (2015) Open Access Publications Policy, April 2015 revision, Middlesbrough, UK, <http://hdl.handle.net/10149/556971>