



## **Energy aware BIM Cloud Platform in a COst-effective Building Renovation Context**

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**Project Number 820434**

### **D7.1 Open Data Use Plan (Data Management Plan)**

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**Responsible partner: TALOS**

#### **Project Partners:**

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**DOCUMENT CONTROL**

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1.0	Creation of the document	16/06/2019
2.0	Inclusion of all partners feedback	3/7/2019

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## **EXECUTIVE SUMMARY**

The Deliverable 7.1, “Open Data Use Plan” contains preliminary information about the data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved. The purpose of the Data Management Plan is to provide an analysis of the main elements of the data management policy that will be used by the consortium with regard to all the datasets that will be generated by the project. This deliverable also outlines how the research data collected, or generated, will be handled during and after the ENCORE project, describes which methodology for data collection and generation will be followed, and whether and how data will be shared.

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## **1. BUILDING A DATA MANAGEMENT PLAN IN THE CONTEXT OF H2020**

### **1.1 PURPOSE OF THE ENCORE DATA MANAGEMENT PLAN**

ENCORE is a Horizon 2020 project participating in the Open Research Data Pilot. This pilot is part of the Open Access to Scientific Publications and Research Data programme in H2020<sup>1</sup>. The goal of the program is to foster access to data generated in H2020 projects.

Open Access refers to a practice of giving online access to all scholarly discipline-information that are free of charge to the end-user. In this way data become re-usable, and the benefit of public investment in the research will be improved.

The EC provided a document with guidelines<sup>2</sup> for projects' participants in the pilot. The guidelines address aspects like research data quality, sharing and security. According to the guidelines, projects participating need to develop a Data Management Plan (DMP).

The DMP describes the types of data that will be generated or gathered during the project, the standards that will be used, the ways how the data will be exploited and shared for verification or reuse, and how the data will be preserved.

This document has been produced following these guidelines and aims to provide a consolidated plan for ENCORE partners in the data management plan policy that the project will follow. Therefore, the project beneficiaries adhere to:

- Develop and keep up-to-date a Data Management Plan
- Deposit the project data in a research data repository
- Ensure third parties can freely access, mine, exploit, reproduce and disseminate published data
- Identify or provide the tools needed to validate the data

The pilot applies to data and metadata needed to validate the scientific publications produced in the project and other data specified in the Data Management Plan.

### **1.2 BACKGROUND OF THE ENCORE DMP**

The ENCORE DMP is written in reference to the Article 29.3 in the Model Grant Agreement called “Open access to research data” (research data management). Project participants must deposit their data in a research data repository and take measures to make the data available to third parties. The third parties should be able to access, mine, exploit, reproduce and disseminate the data. This should also help to validate the results presented in scientific publications. In addition, Article 29.3 suggests that participants

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<sup>1</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-pilot-guide\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf)

<sup>2</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-data-mgt\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf)

will have to provide information, via the repository, about tools and instruments needed for the validation of the project outcomes.

The DMP will be important for tracking all data produced during the ENCORE project. Article 29 states that project beneficiaries do not have to ensure access to parts of research data if such access would lead to a risk for the project's goals. In such cases, the DMP must contain the reasons for not providing access.

## 2. DATA MANAGEMENT PLAN OVERVIEW

The DMP covers the complete research data cycle of ENCORE project as described in Figure 1 below. In Step 1 of the DMP, ENCORE will produce raw data (generated through measurements and simulations, collected through market researching, etc.). The data will then be processed and analysed into more usable forms; i.e. reports, publishable documents, data tables, codes, etc. In Step 2, the data will be preserved using appropriate naming rules and metadata schemes. The project's open access policy will be applied to determine which datasets shall be made accessible (share) for re-use in Step 3. The publicly accessible datasets will then be re-used by the public for verification.

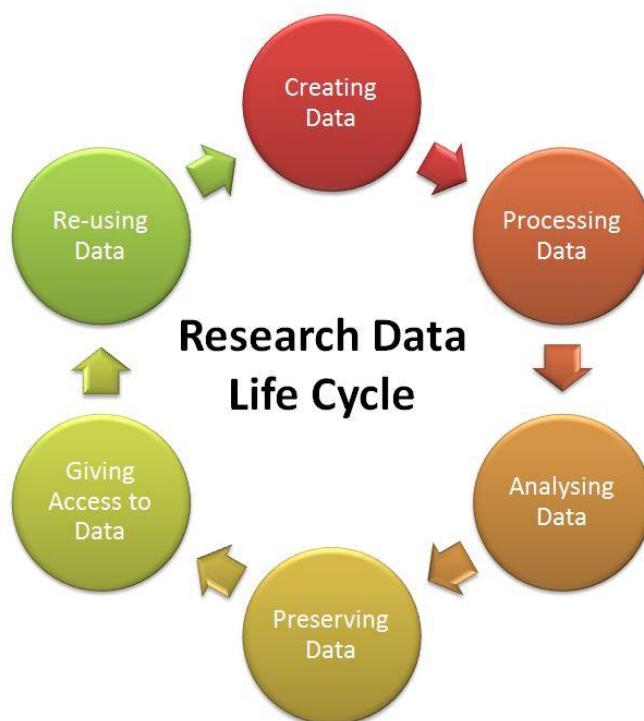


Figure 1 Research data life-cycle

This initial Data Management Plan is written during the first 6 months of the project, when little or no data have been produced. The overview therefore is a prediction on those datasets that are likely to be produced during the project lifetime. Information on their author, curator, access and relation to the workplan are given when possible.



### **3. GENERAL PROVISIONS**

The General Provisions indicate the general rules in order to ensure that the data are Findable, Accessible, Interoperable, Reusable (FAIR).

#### **3.1 MAKING DATA FINDABLE**

##### **3.1.1 Metadata**

Metadata are data on the research data themselves. They enable other researchers to find data in an online repository and is, as such, essential for the reusability of the dataset. By adding rich and detailed metadata, other researchers can better determine whether the dataset is relevant and useful for their own research. As described in the project Grant Agreement (Article 29.2), the bibliographic metadata include all of the following:

- The terms “European Union (EU)” and “Horizon 2020”
- The name of the action, acronym and grant number
- The publication date, and length of embargo period, if applicable
- A persistent identifier

Note: All publications resulting from ENCORE project must acknowledge the financial support by EU by the statement: “ENCORE project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 820434.”

##### **3.1.2 Persistent and unique identifier**

DOI and Creative Common’s license numbers will be used as persistent identifiers on open data repositories.

##### **3.1.3 Data discovery**

All datasets will be referenced and indexed in the most common internet search engines. Datasets will be therefore immediately discoverable with as simple web search. In addition, Open and Embargoed datasets will be discoverable on Zenodo.

##### **3.1.4 Data identification**

All Open and Embargoed datasets have a DOI. This DOI might be the same of the publication the data have been used for, if the publisher required data upload contextually to the publication.

Restricted and Closed datasets do not have a DOI, however, their metadata do have. The metadata clearly reference the dataset they refer to.

##### **3.1.5 Keywords**

All Open and Embargoed datasets are tagged with the keywords “H2020”, “ENCORE”, “820434”, and at least one additional keyword indicative of the content of the dataset.

## 3.2 MAKING DATA ACCESSIBLE

### 3.2.1 Openly available datasets

The ENCORE project datasets will be first stored and organized in a database by the data owners (personal computer or on the institutional secure server) and on the project database. Some datasets, for which the Consortium declares no confidentiality or IPR issues, will be also stored in Zenodo, the open access repository of the Open Access Infrastructure for Research in Europe (OpenAIRE). In such case, data access policy will be unrestricted. An embargo period may incur if collected datasets are linked to green open access publication. Access level to datasets are specified as:

- O = Open
- E = Embargo, followed by expiry date
- R = Restricted
- C = Closed

### 3.2.2 Accessibility of files

Most data files are accessible with common and free software:

- .png, .tif, .jpg, .raw: Any image viewer such as XnView, IrfanView, GIMP etc.
- .pdf: Acrobat reader
- .xls, .xlsx: Google sheets, LibreOffice Calc
- .doc, .docx, .odt, .txt: Google docs, LibreOffice Writer
- .xml, .csv, .sql: any text editor, or database import tools/viewers.

Additional filetypes that may be agreed during the progress of the project, will be described accordingly within the ENCORE services which produce or use them.

### 3.2.3 Repositories

All datasets that will be produced within the ENCORE project, will be uploaded to Zenodo, with their respective access rights.

## 3.3 MAKING DATA INTEROPERABLE

### 3.3.1 Data and metadata vocabularies

All datasets use standard vocabularies widely accepted by the respective communities. Controlled vocabularies will be used in descriptive metadata fields to support consistent, accurate, and quick indexing and retrieval of relevant data. Keywords (see section 3.1.5) and their synonyms will be used for indexing and subject headings of the data and metadata.

### 3.3.2 Mapping of non-common ontologies

Non-common, non-obvious ontologies are explained in the metadata of the individual datasets.

## 3.4 MAKING DATA REUSABLE

### 3.4.1 Data licensing

Creative Common Licensing will be used to protect the ownership of the datasets. Both Share-Alike and NonCommercial-ShareAlike licenses will be considered for the parts of datasets that can be publicly available.

### 3.4.2 Third party access

Third parties must request access rights to Restricted and Closed data according to the procedure indicated in the respective metadata. Access rights to third parties will be evaluated by the data owner on a case-by-case basis. In general, third parties will have to state the purpose on why access rights are needed, and sign a Non-Disclosure Agreement.

### 3.4.3 Reasons for restriction

Restricted and closed data are raw experimental results which still need to undergo rigorous evaluation, data which might undermine the beneficiaries' IP protection and commercialisation strategies if published, or data containing sensitive information.

### 3.4.4 Long-term reusability

Unless otherwise indicated, all Open and Embargoed data will be available for indefinite time and curated until two years after project conclusion. Restricted and Closed data will be available and curated until two years after project conclusion.

## 4. DATA GENERATED IN ENCORE PROJECT

ENCORE will produce data in a wide range of R&D activities that are summarized in Table 1 below. This list is considered as initial and will be modified (addition or removal of datasets) as the project evolves, however, any deviations will be described as required in the coming deliverables. Once generated (or collected), these data will be stored in several formats, which are: Documents, Images, Data and Numerical Codes.

No.	Data description	Main partners involved
1.	ENCORE Ontology	ATB
2.	ENCORE KEES Knowledge Repository	ATB
3.	Panoramic Images of Office Floor	CNR
4.	Textured 3d Models	CNR

5.	Building Environmental Data (Temperature, Humidity, Solar Radiation, UV Radiation, Precipitation, Wind Speed, Wind Direction, Electricity Heating, Electricity Lightning etc.)	SGW
6.	Status of Building Site Resources	SGW
7.	Building Status	UNIVPM
8.	Descriptive Account of The Workplan Components	UNIVPM
9.	KPIs Evaluation Results	UNIVPM
10.	Structure and Description of The Decision Tree	UNIVPM
11.	Pictures and Videos Collected During ODAVS Activity	UNIVPM
12.	Project Information Model Resulting from the On-Site Survey	UNIVPM
13.	Paper Dataset used for Describing the Algorithms	UNIZF/FER
14.	Weather Database	LAURENTIA
15.	Building Geometry Database.	LAURENTIA
16.	BIM Object Database: Constructive Solutions and Technical Facilities (Lighting, Heating, Cooling)	LAURENTIA

**Table 1 Types of data to be generated in ENCORE project**

All datasets described in Table 1 above are described in details under Section 6.

Beside the datasets described in Table 1 above, the following categories of outputs will be made “Open Access” (to be provided free of charge for public sharing) and, as such, will be included in the Open Research Data Pilot, and thus be managed according to the present Data Management Plan:

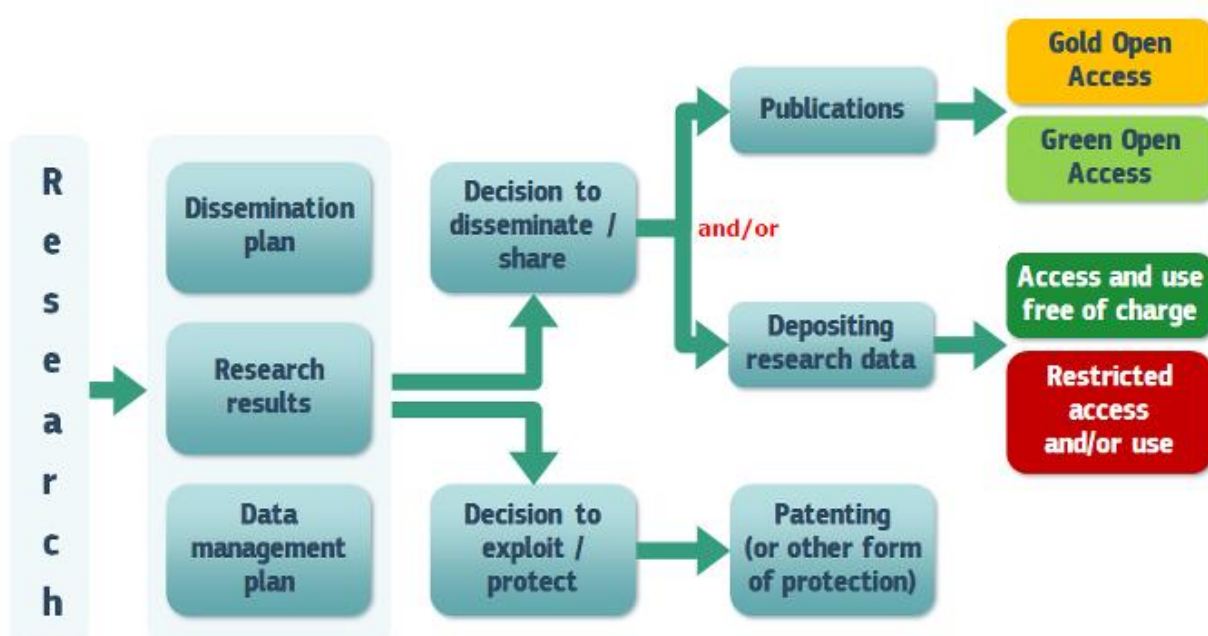
- Public deliverables:
  - D1.1 – State-of-the-Art and Market Requirements (ULL)
  - D1.3 – The ENCORE concept (ATB)

- D1.4 – The ENCORE architecture (ATB)
- D1.5 – Pilot Cases and Use Case Scenarios (BIM Equity A/S)
- D2.2 – Full Data Acquisition Service (DAS) Prototype (UNIZG-FER)
- D2.4 – Full Image Processing and Reconstruction Service (IPRS) Prototype (ETH-Zurich)
- D2.6 – Full BIM Resources Repository Management Service (BRM) Prototype (LAURENTIA)
- D2.8 – Full Knowledge Extraction and Object Enhancement Service (KEES) Prototype (ATB)
- D2.10 – Final Design of the BIM-based support tool for digital modelling and information generation (ATB)
- D3.2 – Full On-Site Design Analysis and Verification Services (ODAVS) Prototype (ULL)
- D3.4 – Full Automated Work Planning Services (AWOPS) Prototype (ULL)
- D3.6 – Full Construction Project Management Services (CPMS) Prototype (UNIVPM)
- D3.8 – Final Design BIM-aided holonic management systems for building renovation (UNIVPM)
- D4.2 – Full Energy Savings Simulation Service (ESS) prototype (ULL)
- D4.4 – Full Comfort Simulation Services (CS) prototype (ULL)
- D4.6 – Full Building Monitoring & Diagnostics Services (BM) prototype (SPA Consultoria)
- D4.8 – Final Design of the Real-time estimation of energy and comfort performances (SGW)
- D5.2 – Full Prototype (ATB)
- D5.3 – ENCORE Final version (ATB)
- D6.2 – Final Validation Procedure (ULL)
- D6.4 – Final Validation Report (UNIVPM)
- D6.5 – Assessment Reports (BIM Equity A/S)

- D6.6 – ENCORE Methodology Workbook (UNIVPM)
  - D7.1 – Open data use plan (TALOS)
  - D7.2 – Project Presentation and brochure (TALOS)
  - D7.3 – Project website (TALOS)
  - D8.2 – Impact Assessment Plan (ATB)
- Articles published in Open Access scientific journals
  - Conference and Workshop abstracts / articles

## 5. ENSURING PROPER COMMERCIALISATION AND IPR PROTECTION OF GENERATED RESULTS

For all data types, the Consortium will examine the aspects of potential conflicts against commercialisation and the IPR protection issues of the knowledge generated before deciding which information needs to be made public and when. The decision process, summarized in Figure 2 below, will be overseen by the Exploitation Manager.



**Figure 2 Open access to research data and publication decision diagram (from Guidelines to the Rules on Open Access to Scientific publications and Open Access to Research Data in Horizon 2020)**

As stated in the Grant Agreement (Article 29.3) “As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data if the achievement of the action’s main objective would be jeopardized by making those specific parts of the research data openly accessible.” Such an exception applies to ENCORE project when

the project findings present high innovation level (possibility of commercialisation). In this case, the consortium will consider two forms of protection:

- to withhold the data for internal use or
- to apply for a patent in order to commercially exploit the invention and have in return financial gain.

In the former case, appropriate IPR protection measures (e.g. Non-Disclosure Agreement) must be taken for data sharing outside the consortium. In the latter case, publications will be delayed until the patent filing is completed. Otherwise, the results will be made “Open Access” by depositing the research data into an online repository service or by publishing in journals adhering to suitable “Open Access” (‘green’ or ‘gold’). In parallel, public deliverables will be stored on the following locations:

- the ENCORE project website
- the ENCORE page on CORDIS website where all public deliverables submitted to the European Commission are hosted.

## 6. DATASETS

### 6.1 ENCORE ONTOLOGY

Dataset reference and name	ENCORE_820434_ATB_ENCORE_Ontology_
Purpose and relation to the objectives of the project	ENCORE ontology is the structural model to enable semantical enhancement of identified objects with additional information, such as sensory data, etc. as defined in the DoA  ENCORE ontology will be based on ifcOWL/BOT ontologies, that relate all the elements of the building, its systems and sub-systems, being able to obtain the relations between the previously identified elements.
Data types	Ontology files (.owl)
File formats	The dataset contains the ENCORE ontology on OWL format. OWL is the standard data format for ontologies. OWL files can be viewed and processed by ontology editors, such as Protégé which is a free and open source system.
Reuse of existing data	N/A
Data production methods	Software

Data utility	The ENCORE ontology and ENCORE KEES Knowledge Repository is usable to any individual using the ENCORE Platform.
Potential for reuse	The ENCORE ontology will be published as open source under Apache 2.0 license.
Curator	ATB

## 6.2 ENCORE KEES KNOWLEDGE REPOSITORY

Dataset reference and name	ENCORE_820434_ATB_KEES_Knowledge_Repo_
Purpose and relation to the objectives of the project	<p>ENCORE KEES Knowledge Repository is one of the services of the ENCORE project, which is defined in the DoA</p> <p>ENCORE KEES Knowledge Repository will be able to properly identify individual objects isolated by the IPRS Service and relate them to the rest of elements in the model. Additionally, the KEES will enhance the identified objects with attributes or properties obtained from on-line available data such as GIS repositories, or statistics, or even environmental data obtained from the field.</p>
Data types	The data sets of the ENCORE KEES Knowledge Repository contain the persisted data (instances of ENCORE ontology).
File formats	TBD
Reuse of existing data	Processed and aggregated data will be shared by partners that do not collect data for the advancements of the project.
Data production methods	Data monitored by the ENCORE platform. Those data include data from IPRS, monitored houses, etc.
Data utility	The ENCORE ontology and ENCORE KEES Knowledge Repository is usable to any individual using the ENCORE Platform.
Potential for reuse	In addition to the project, the dataset will be useful for other research groups / industrial organisations, etc.
Curator	ATB



### 6.3 PANORAMIC IMAGES OF OFFICE FLOOR

Dataset reference and name	ENCORE_820434_CNR_panoimages_images
Purpose and relation to the objectives of the project	Set of panoramic images of an office floor to test automatic indoor reconstruction algorithms. The dataset is part of the effort towards the BIM modelling of the building indoor.
Data types	Equirectangular images in JPG or PNG-format. Equirectangular images are the standard output of off-the-shelf panoramic cameras and can be read and processed by several tools.
File formats	.png & .jpg
Reuse of existing data	Set of panoramic images are a very common type of data and several open access repositories exist from where these data can be downloaded. Our dataset will contribute to extend this common resource for other researchers and practitioners in the field.
Data production methods	Acquired by Institute of the National Research Council of Italy (CNR).
Data utility	Both datasets are fairly common type of data that can be used in visualization applications and lighting environment acquisition.
Potential for reuse	The data will be freely re-usable.
Curator	CNR

### 6.4 TEXTURED 3D MODELS

Dataset reference and name	ENCORE_820434_CNR_3DModels_geo_1.0
Purpose and relation to the objectives of the project	Textured 3D models obtained by algorithms developed in Encore by CNR.  The dataset is part of the effort towards the BIM modelling of the building indoor.
Data types	Textured 3D model specified as obj files (for the geometry) and JPG/PNG file (for the textures). Obj is a very common ASCII

	3D format which can be easily converted in many other with open tools such as Meshlab ( <a href="http://www.meshlab.net">www.meshlab.net</a> )
File formats	.obj
Reuse of existing data	Textured 3D models are a very common type of data and several open access repositories exists from where these data can be downloaded. Our dataset will contribute to extend this common resource for other researchers and practitioners in the field.
Data production methods	have been obtained from OFFICE_panoramic_images by an algorithm developed at ISTI-CNR in collaboration with CRS4
Data utility	Both datasets are fairly common type of data that can be used in visualization applications and lighting environment acquisition
Potential for reuse	The data will be freely re-usable.
Curator	CNR

## 6.5 BUILDING ENVIRONMENTAL DATA (TEMPERATURE, HUMIDITY, SOLAR RADIATION, UV RADIATION, PRECIPITATION, WIND SPEED, WIND DIRECTION, ELECTRICITY HEATING, ELECTRICITY LIGHTNING ETC.)

Dataset reference and name	ENCORE_790197_SGW_Building_Env_Data_
Purpose and relation to the objectives of the project	<p>The listed data streams are collected in order to access building environment comfort levels and energy efficiency.</p> <p>This is a critical element required for the Building Monitoring Services. This will allow the assessment of design conditions aimed at reducing energy consumption while maintaining the building comfort levels. By monitoring these parameters across time building performance degradation can be identified.</p>
Data types	filtered CSV format with data covering monthly periods.
File formats	.csv
Reuse of existing data	None in principle.

Data production methods	All data to be automatically collected by electronic sensors
Data utility	Those data will allow the assessment of environmental comfort parameters, as well as energy consumption used to achieve this. This will allow the validation of the building regeneration solutions and a better knowledge how different spaces are used and how to optimise comfort, energy and function
Potential for reuse	Since the data will be available in .csv, it is possible for them to be reused in the future.
Curator	SGW

## 6.6 STATUS OF BUILDING SITE RESOURCES

Dataset reference and name	ENCORE_790197_UNIVPM_AWOPS_ResourceStatus
Purpose and relation to the objectives of the project	The building site renovation work is performed on the basis of human (workers and managers), tools, machines, and materials resources. The status of the resources with respect to a masterplan is monitored and collected at several times of the process.
Data types	Quantitative and qualitative description of resources. It will need numbers (values) and attributes (metadata) along with semantics.
File formats	W3C/IFC standards or SQL file type will depend on the final format
Reuse of existing data	No
Data production methods	ENCORE Platform
Data utility	Data are very specific to this project and contextualized in time. They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset

Curator	UNIVPM
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## 6.7 BUILDING STATUS

Dataset reference and name	ENCORE_790197_UNIVPM_AWOPS_BuildingStatus
Purpose and relation to the objectives of the project	The building site renovation work makes the building evolve during time. The status of these evolutions has to be recorded and annotated or classified. The status is used for assessments and control of the operations of the working site and for the re-planning decisions
Data types	Quantitative and qualitative description of the status of the building at certain time. It will need numbers (values) and attributes (metadata) along with semantics. Some images, as primary source, are possible as well.
File formats	W3C/IFC standards or SQL file type will depend on the final format. See section 3.3.
Reuse of existing data	No
Data production methods	ENCORE Platform
Data utility	Data are very specific to this project and contextualized in time. They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset,
Curator	UNIVPM

## 6.8 DESCRIPTIVE ACCOUNT OF THE WORKPLAN COMPONENTS

Dataset reference and name	ENCORE_790197_UNIVPM_AWOPS_WorkPlan_
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Purpose and relation to the objectives of the project	<p>The workplan for renovation is due a description that can be structured in many equivalent ways depending on its components and its context. It is usually in form of workflows and relative graph-based notations, plus a description of the resources and actors involved, along with the timings and the objectives of the work.</p> <p>Quantitative and qualitative description of the workflow and its components.</p> <p>It will need numbers (values) and attributes (metadata) along with semantics. Some images, as primary source is a possibility as well.</p>
Data types	W3C/IFC standards or SQL file type will depend on the final format
File formats	W3C standards or SQL file type will depend on the final format
Reuse of existing data	Pricelists will probably be reused by the consortium partners.
Data production methods	AWOP SERVICE
Data utility	Data are very specific to this project and contextualized in time. They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset.
Curator	UNIVPM

## 6.9 KPIs EVALUATION RESULTS

Dataset reference and name	ENCORE_790197_UNIVPM_CPMS_KPIsEvaluationResults
Purpose and relation to the objectives of the project	<p>Key Performance Indicators, are usually defined according to standards as EN 15232 and /or ISO 22400. A KPI entity is typically described through the following structure:</p> <p>KPI description:</p>

	<ul style="list-style-type: none"> <li>• Content:                             <ul style="list-style-type: none"> <li>○ Name</li> <li>○ ID</li> <li>○ Description</li> <li>○ Scope</li> <li>○ Formula</li> <li>○ Unit of measure</li> <li>○ Range</li> <li>○ Trend</li> </ul> </li> <li>• Context:                             <ul style="list-style-type: none"> <li>○ Timing</li> <li>○ Audience</li> <li>○ Production methodology</li> <li>○ Effect model diagram</li> <li>○ Notes (including information on constraints, usage, etc.)</li> </ul> </li> </ul>
Data types	Quantitative and qualitative description of the fields in the KPI description
File formats	W3C standards or SQL file type will depend on the final format
Reuse of existing data	No
Data production methods	CPM SERVICE
Data utility	Data are very specific to this project and contextualized in time. They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset,

Curator	UNIVPM
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## 6.10 STRUCTURE AND DESCRIPTION OF THE DECISION TREE

Dataset reference and name	ENCORE_790197_UNIVPM_CPMS_DecisionTree_
Purpose and relation to the objectives of the project	The decision tree is a graph with edges and nodes and annotations. It will capture the decomposition of goals in the conduction of the constructions. There are many equivalent notations available, both graphical and textual, depending on the recipient of information (human or machine). Usually authors rely on a modified Newick notation or SQL.
Data types	Can be text, and/or SQL, plus graphic formats, bitmaps or vector-based
File formats	W3C standards or SQL file type will depend on the final format
Reuse of existing data	No
Data production methods	CPM SERVICE
Data utility	Data are very specific to this project and contextualized in time. They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset,
Curator	UNIVPM

## 6.11 PICTURES AND VIDEOS COLLECTED DURING ODAVS ACTIVITY

Dataset reference and name	ENCORE_790197_UNIVPM_ODAVS_MEDIA_
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Purpose and relation to the objectives of the project	The ODAVS activity consists mostly on the collection and dynamical creation of digital images about the environment in which the actor is immersed
Data types	Images and annotations.
File formats	W3C/IFC standards or SQL file type will depend on the final format
Reuse of existing data	No
Data production methods	ENCORE PLATFORM, Mixed/Augmented reality device
Data utility	Data are very specific to this project and contextualized in time. They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset,
Curator	UNIVPM

**6.12 PROJECT INFORMATION MODEL RESULTING FROM THE ON-SITE SURVEY**

Dataset reference and name	ENCORE_790197_UNIVPM_ODAVS_PIM_
Purpose and relation to the objectives of the project	W3C standards or SQL file type will depend on the final format
Data types	The model is likely to include diagrams or 2D symbols to represent generic elements of the design, with some critical elements developed in more detail. As the design progresses, the model will be developed and the level of detail will increase, including, first, objects based on generic representations, and then specific objects with specifications and method statements attached along with information about space allocation for operation, access, maintenance, installation, replacement and so on. A series of federated building information models, including non-graphical data and associated documentation, and



	comprising native and industry foundation classes (IFC) files. Construction operations building information exchange files and other structured data such as schedules. Reports and other documentation. These may be read-only PDFs, but native files can be more useful, as their contents can be more easily interrogated, copied and edited.
File formats	W3C/IFC standards or SQL file type will depend on the final format.
Reuse of existing data	No
Data production methods	ENCORE Platform
Data utility	They can be used for patentability analysis. They might be otherwise useful for research, teaching or demonstrational purposes.
Potential for reuse	It will be possible to re-use the dataset,
Curator	UNIVPM

### 6.13 PAPER DATASET USED FOR DESCRIBING THE PROPOSED ALGORITHMS

Dataset reference and name	ENCORE_790197_UNIZFFER_Paper_01_1.0.0
Purpose and relation to the objectives of the project	In order to be able to build 3D maps and BIMs of buildings we will propose a set of algorithms that perform using the data collected from our flights. This data will be made public in order for scientific community to be able to test and verify.
Data types	All datasets indicated contain tabular data in .csv format. The format was chosen for ease to operate and facilitate interoperability
File formats	<ul style="list-style-type: none"> <li>• telemetry - csv .txt</li> <li>• point cloud - .ply</li> <li>• images - .png</li> <li>• video - .avi</li> </ul>

Reuse of existing data	No
Data production methods	Images, point clouds and telemetry data will be collected online during flights.
Data utility	Data are very specific to this project and contextualized in time. They will become obsolete within 1 year from their generation. They might be otherwise useful for teaching or demonstrational purposes
Potential for reuse	It will be possible to re-use the dataset, since it will be published in csv format and will be openly accessible by the end of the project.
Curator	UNIZG/FER

#### 6.14 WEATHER DATABASE.

Dataset reference and name	ENCORE_790197_LAURENTIA_WEATHER_DB_
Purpose and relation to the objectives of the project	This weather database will contain hourly information about some weather parameters of a list of cities and regions. These parameters are needed to make the energy assessment of the buildings during a whole year.
Data types	Text
File formats	Data: text format tables that are readable by common data analysis software, or encrypted for specific data treatment software  There will be a text file for each city or region
Reuse of existing data	Processed and aggregated data will be shared by partners that do not collect data for the advancements of the project. Energyplus weather information will be taken account.

Data production methods	
Data utility	The collected dataset will be used for energy assessment of existing buildings.
Potential for reuse	In addition to the project, the dataset will be useful for other technicians who will be able to use them for energy assessment.
Curator	LAURENTIA

### 6.15 BUILDING GEOMETRY DATABASE.

Dataset reference and name	ENCORE_790197_Laurentia_Bulding_Geometry_DB_
Purpose and relation to the objectives of the project	This database will contain information about the form and size of the existing buildings in order to create a BIM model for each building which is going to be evaluated for its energy performance.
Data types	Text
File formats	Data: text format tables that are readable by common data analysis software, or encrypted for specific data treatment software
Reuse of existing data	Processed and aggregated data will be shared by partners that do not collect data for the advancements of the project. Data will be collected from cadastre in Spain and other sources will be analysed.
Data production methods	Use of webservices
Data utility	The collected dataset will be used for generating geometric models of existing buildings.
Potential for reuse	Not easy because probably those data will need to be processed
Curator	LAURENTIA

### 6.16 BIM OBJECTS DATABASE: CONSTRUCTIVE SOLUTIONS AND TECHNICAL FACILITIES (LIGHTING, HEATING, COOLING)

Dataset reference and name	ENCORE_790197_LAURENTIA_BIM_OBJECT_DB_
Purpose and relation to the objectives of the project	A collection of BIM Objects about constructive solutions and technical facilities for analysing the energy demand and consumption for existing buildings.
Data types	Text
File formats	Data: text format tables that are readable by common data analysis software, or encrypted for specific data treatment software. Intended to use IFC format.  There will be a file for each BIM object.
Reuse of existing data	Processed and aggregated data will be shared by partners that do not collect data for the advancements of the project. Data will be collected from available BIM objects libraries such as NBS.
Data production methods	TBD
Data utility	The collected dataset will be used for integrating this information with the geometric building model in order to analyse the energy performance of existing buildings.
Potential for reuse	In addition to the project, the dataset will be useful for other technicians who will be able to use them for energy assessment.
Curator	LAURENTIA