



EUROPEAN COMMISSION  
DIRECTORATE GENERAL  
JOINT RESEARCH CENTRE  
Directorate R - Resources  
**Director**

**CALL FOR TENDERS  
JRC/GEE/2018/R.6/0035/OC**

**Framework contract for the 3D Modelling of  
buildings on the JRC-Geel site**

**Tender specifications:  
Part 2- Technical Specifications**

## Contents

INTRODUCTION .....	3
1. SUBJECT OF THE CONTRACT.....	3
2. DESCRIPTION OF THE EXISTING SITUATION .....	3
2.1. AUTODESK VAULT .....	3
2.2. AUTODESK REVIT .....	3
2.3. AUTODESK AUTOCAD .....	4
2.4. POINT CLOUDS AND SCANNING .....	4
2.5. AUTODESK PLATFORM .....	4
3. DESCRIPTION OF THE SERVICES .....	4
3.1. MODELLING OF EXISTING BUILDINGS .....	4
3.1.1. CALCULATION OF THE BUILDING STRUCTURES.....	4
3.1.2. TECHNICAL INSTALLATIONS .....	5
3.2. CONNECTION BETWEEN REVIT AND AUTOCAD VAULT .....	5
3.3. ADJUSTMENT OF EXISTING PLANS IN THE EVENT OF MODIFICATIONS TO THE BUILDINGS.....	5
3.4. ADJUSTMENT OF EXISTING PLANS IN THE EVENT OF MODIFICATIONS TO THE BUILDINGS.....	5
4. OTHER REQUIREMENTS .....	6
4.1. TIMESHEETS.....	6
4.2. LANGUAGE.....	6
4.3. PROTECTION OF DATA .....	6
4.4. ACCESS TO NUCLEAR ZONES .....	7
5. ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS TENDER.....	7
ANNEXES .....	8

## **INTRODUCTION**

JRC-Geel (Belgium) is one of the six scientific sites of the European Commission's Joint Research Centre (JRC).

As the European Commission's scientific service, the JRC addresses key societal challenges, providing EU policy makers with independent, evidence-based scientific and technical support required for EU policy making.

JRC-Geel has a proud history of more than 55 years of scientific research and brings together multi-disciplinary expertise for developing new measurement methods and tools such as reference materials, promoting standardisation and harmonisation across the European Union to stimulate innovation and to protect consumers and citizens.

JRC-Geel employs about 250 individuals who work on biotechnology, food and feed safety, food fraud detection, healthcare, nanotechnology, nuclear safety and security, and threat detection. These activities are conducted in state-of-the-art laboratories and facilities.

More information can be found on our website: <https://ec.europa.eu/jrc/en>.

### **1. SUBJECT OF THE CONTRACT**

JRC-Geel has a surface area of 38 ha with 15 buildings. In a previous contract a start was made on creating new 3D building models and site plan(s) to chart the existing situation. 2D plans are derived from these 3D models.

### **2. DESCRIPTION OF THE EXISTING SITUATION**

For the performance of this assignment, we have chosen a number of technical options that must be continued in the execution of the new contract:

#### **2.1. AUTODESK VAULT**

Autodesk Vault is a data management software package that helps developers and engineers to organise plans, data and documentation efficiently. This database is installed on the JRC-Geel site. The software also allows for the follow-up of changes to documents via a programmed "document change acceptance workflow". We have chosen to further extend the Vault standard database with a functional database. This functional database includes additional information concerning the installations in the buildings. The data in the new plans are logically connected to this functional database. The contractor will have to work further on the current concept.

#### **2.2. AUTODESK REVIT**

The buildings and associated technical installations are modelled in 3D using Autodesk Revit, based on a point cloud that is obtained via scanning (see point 2.4 – Point clouds and scanning). From these 3D models 2D drawings (plan views and cross-sections) are created and are made available to end users.

### **2.3. AUTODESK AUTOCAD**

The entire site is fully measured in 3D and using AutoCAD 3D a detailed plan is created with the exact location of buildings and utilities on the site. This plan is recorded in AutoCAD Vault along with the functional database of the installations on the site.

### **2.4. POINT CLOUDS AND SCANNING**

The modelling of the buildings was carried out based on a point cloud obtained using a FARO scanner (FARO project scene LT). This point cloud was loaded in Revit as a basis for the 3D modelling.

For this assignment, the contractor has to provide a scanner that meets the above requirements as a minimum.

*In his offer, the contractor shall provide a proposed scanner and proof that it at least meets the above requirements.*

### **2.5. AUTODESK PLATFORM**

The current developments are carried out using Autodesk platform 2015. The costs for upgrading the Autodesk platform are not included in the scope of this assignment. At the start of this assignment, a platform will be established (version 2018).

## **3. DESCRIPTION OF THE SERVICES**

### **3.1. MODELLING OF EXISTING BUILDINGS**

The tender includes the following services for delivery:

- Modelling of building 210 based on an existing point cloud (RCP format) and existing 2D drawings
- Modelling of the remaining 8 buildings. A point cloud will need to be created for this purpose.

The modelling takes place on the spot on the JRC-Geel site. For this purpose, workstations will be made available. The contractor however shall provide the necessary hardware, software and licences. The modelling takes place in accordance with set agreements that are bundled together in the document entitled "Management of drawings" (annex 1). At JRC-Geel's request, modifications to this standard may be requested. The level of detailing is LOD 200 in accordance with the specifications of the BIM forum (see annex 2).

#### **3.1.1. CALCULATION OF THE BUILDING STRUCTURES**

Based on the point clouds, we intend to calculate the building structure in 3D using Autodesk Revit in accordance with the drawing standard. The calculation of the building structures includes among other things the walls, roofs, windows, doors, false ceilings, foundations etc.

In addition to 3D geometry, the intention is to provide the objects in the Revit drawing with the relevant data as described in the drawing standard. The contractor must provide these data in Revit so that a connection with Autodesk Vault is possible.

### 3.1.2. **TECHNICAL INSTALLATIONS**

The modelling of the technical installations is a major part of the tender. The technical installations include the following:

- Ventilation installations;
- Piping for heating, cooling, compressed air, technical gases, drinking water, extinguisher water etc;
- Fire detection and extinguishing;
- Electrical installation;
- Telephony;
- Other installations.

In addition to 3D geometry, the intention is to provide the objects in the Revit drawing with the relevant data as described in the drawing standard. The tenderer must provide these data in Revit so that a connection with Autodesk Vault is possible.

### 3.2. **CONNECTION BETWEEN REVIT AND AUTOCAD VAULT**

The drawings in Revit are connected to an SQL database in Vault. The contractor shall ensure that the new drawings and data are formulated in a consistent manner so that the link between the two systems remains intact. For further information, please refer to the document "Vault Revit connection" (annex 3). Before it is possible to load the modelled models in Autodesk Vault, a screening of the objects and associated data is required. The basic check takes place via an automatic add-on that is provided when the contract is awarded. It shall remain the contractor's responsibility to ensure that the data are accepted in the Vault database.

### 3.3. **ADJUSTMENT OF EXISTING PLANS IN THE EVENT OF MODIFICATIONS TO THE BUILDINGS**

The buildings and technical installations on the JRC-Geel site are regularly modified. It is important that the building plans also remain up to date.

This assignment also covers the adjustment of all plans for all models on the site based on the modification carried out.

### 3.4. **ADJUSTMENT OF EXISTING PLANS IN THE EVENT OF MODIFICATIONS TO THE BUILDINGS**

Given that the quality of the existing plans varies greatly from building to building, work will take place on an hourly basis. The following profiles or tasks must be offered by the contractor:

- General project management
  - Work organisation and follow-up;

- Consultation with JRC-Geel regarding the strategy to be adopted;
- Contract management.
- Technical installations for electricity and HVAC
  - Team leader;
  - Draftsman (MEP/BIM);
  - Functional analyst (knowledge of technical installations and the creation of objects and on-site performance of measurements, engineering qualifications required).
- Architecture:
  - Team leader;
  - Draughtsman (BIM);
  - Functional analyst (on-site performance of measurements, minimum level architect).
- Topography (3D scans):
  - Team leader;
  - Surveyor (including equipment);
  - Technical assistant: processing of surveying data in the contractor's office).
- AIM: Asset Information Management:
  - Technical assistant (on-site assistance with the loading of information in the database).

#### 4. **OTHER REQUIREMENTS**

##### 4.1. **TIMESHEETS**

As the contract is concluded on an hourly basis, the contractor shall provide monthly timesheets on which the hours worked can be consulted per category and per person.

##### 4.2. **LANGUAGE**

The data on the plans shall be formulated in English. The working language on the work floor shall be English or Dutch.

##### 4.3. **PROTECTION OF DATA**

To be able to guarantee that data are protected, the contractor must meet the following requirements:

- Own secure server capacity for the modelling of point clouds;
- Secure data connection between the servers of the contractor and JRC-Geel. For this purpose, the contractor shall furnish the necessary documents and system requirements for the creation of a security convention between the contractor and JRC-Geel. The secure connection must be established in accordance with the requirements as specified in the following link: [https://ec.europa.eu/info/files/security-standards-information-systems\\_en](https://ec.europa.eu/info/files/security-standards-information-systems_en).

The cost for the set-up and maintenance of the above requirements during the contract period must be included in the hourly rates as specified in the administrative annex.

#### 4.4. **ACCESS TO NUCLEAR ZONES**

The JRC-Geel site has a number of nuclear zones. The measurement of these zones for modelling purposes calls for specific access requirements. A medical examination is required for access to all nuclear laboratories on the site (Annex V of the framework contract and addenda: “Instructions for staff of external companies”, “Access to controlled areas” and “Medical entrance certificate”) and security clearance is also required for persons who require access to the inner perimeter of the nuclear zones. The contractor must have a safety manager certified by the National Safety Authority (NSA). He or she must organise the requests for staff members with the NSA. See FANC “Trustworthiness information brochure” for more information regarding this issue. (<http://fanc.fgov.be/nl/content/informatiebrochure-trustworthiness>)

#### 5. **ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS TENDER**

The bidder confirms and warrants that his/her tender is complete and unambiguous.

By signing his/her tender, the bidder acknowledges that it is legally binding if the contract is awarded within the specified period.

.....,

.....

Place

Date

.....

The tenderer  
(Stamp and signature)

## **ANNEXES**

ANNEX 1: MANAGEMENT OF DRAWINGS

ANNEX 2: LOD SPECIFICATIONS

ANNEX 3: VAULT-REVIT CONNECTION