DELIVERABLE 4.4

Structure and implementation of the cloud DB and plans for recalibration

Grant Agreement number: 723082

Project acronym: STREAM-0D

Project title: Simulation in Real Time for Manufacturing with Zero Defects

Project coordinator: INSTITUTO TECNOLÓGICO DE ARAGÓN

Call: H2020-FOF-2016

Topic FOF-03-2016: Zero-defect Strategies at System Level for Multi-stage Manufacturing in Production Lines

Project start date: 01/10/2016

Duration: 42 months

Reporting period: From 01/10/2017 to 31/03/2019

Disclaimer

Partners

No.	Name	Short name	Country
1	INSTITUTO TECNOLÓGICO DE ARAGÓN	ITAINNOVA	Spain
2	FERSA BEARINGS	FERSA	Spain
3	ZF TRW – LUCAS VARITY GmBH	ZF	Germany
4	STANDARD PROFIL	SP	Spain
5	LABORATORY FOR MANUFACTURING SYSTEMS AND AUTOMATION	LMS	Greece
6	ECOLE CENTRAL NANTES	ECN	France
7	INTEGRATED ENVIRONMENTAL SOLUTIONS LIMITED	IES	UK
8	STAMTECH SRL	STAM	Italy
9	DAY ONE SRL	DAY-ONE	Italy
10	CENTER FOR TECHNOLOGY RESEARCH AND INNOVATION LTD	CETRI	Cyprus

Document Information

Project	**STREAM-0D**
Work Package	**4**
Deliverable n.	**4.4**
Title	**Structure and implementation of the cloud DB and plans for recalibration**
Responsible beneficiary	**IES**
Involved beneficiaries	**All partners**
Type[1]	**R**
Dissemination level[2]	**CO**
Due delivery date	**31-3-2019**
Actual submission date	**31-3-2019**

1 **Types. R:** Document, report (excluding the periodic and final reports); **DEM:** Demonstrator, pilot, prototype, plan designs; **DEC:** Websites, patents filing, press & media actions, videos, etc.; **OTHER:** Software, technical diagram, etc.

2 **Dissemination levels. PU:** Public, fully open, e.g. web; **CO:** Confidential, restricted under conditions set out in Model Grant Agreement; **CI:** Classified, information as referred to in Commission Decision 2001/844/EC.

Executive Summary

The present document reports on the High Performance Computing cloud and web enabled database platform (Cloud DB) and API connection to provide secure collection, storage and accessibility of all the continuous data collected and generated in the STREAM-0D project.

The current version of the deliverable, due for M30, focusses on providing a first description of the structure and implementation of the Cloud DB.

Firstly, the document reports on the overall structure of the Cloud DB. The key features of the Cloud DB are to provide:

- a robust and scalable implementation using a well established platform (Microsoft Azure)
- data import and export via dedicated clients or API
- advanced data visualisation features
- data post processing via a dedicated syntax
- data verification via custom alerts
- different access levels and permissions.

The Cloud DB includes a backend GUI (Graphic User Interface) which is used to set up the incoming data. The backend UI allows through a user friendly workflow to set up post processing and analysis of the data, inspect the data through flexible plot visualisations, and create alerts to detect data issues and anomalies. The backend GUI allows to manage several data sets at the same time (e.g. different buildings) while maintaining them separate through granular user access permissions. Sections 2.1 to 2.5 of Chapter 2 of the present document explain in detail the use of the backend GUI.

Once the data has been set up it can be accessed via API, allowing its use in a variety of other applications (e.g. Data Driven Models, Reduced Order Models, other UIs, etc). API access is secured by tokens which can only be issued from the Cloud DB GUI. The API is in itself the core interaction method with the Cloud DB backend and includes a vast variety of methods to act on the data. A full API reference is available, but for the purposes of the STREAM-0D project a few Python scripts have been developed for its specific use cases, detailed in Section 2.6.

The deliverable then includes a series of chapters which will be further detailed as needed in the M36 update D4.6, to report on the updates on the Cloud DB, and the recalibration algorithms developed for each application. These chapters cover the use of the Cloud DB for the project purposes (described in Chapter 3), and the cloud-based recalibration (Chapter 4). Finally Chapter 5 discusses the implementation work carried out in the project by the partners and is updated as the work progresses.