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## Press Release

Nantes, 10 March 2020

### **The European project SimulaTion in REAL time for Manufacturing with zero defect (STREAM 0D) reaches its conclusion. Centrale Nantes takes stock of the promising results.**

**STREAM-0D is a European project bringing together research institutes and private companies; altogether 10 partners from 6 European countries, including the High Performance Computing Institute (ICI) at Centrale Nantes. The project's ambition is to take up one of the major challenges in manufacturing: that of zero-defect production.**

STREAM-0D got off the ground in October 2016, and will come to an end on 31 March. The time has therefore come to take stock of the progress made during these three and a half years on a project whose objective was to develop a technology for better and faster manufacturing, while reducing rejected units.

Two avenues were explored: a machine learning approach based on production data and real-time predictive simulation on which the High Performance Computing Institute (ICI) at Centrale Nantes worked. This work was led by Luisa Rocha da Silva, ICI director, and researchers José-Vicente Aguado-Lopez, Domenico Borzacchiello and Hugues Digonnet.

For the STREAM-0D project, the ICI used dimension reduction methods to develop Digital Twins for production lines. These developments were made possible thanks to the computing resources available at the Centrale Nantes Supercomputing Centre. The models produced were then made available to other partners, for the creation of optimization algorithms and cloud computing for example.

#### **From one hour to a millisecond! Real time.**

The significant added value of real-time is being able to spread the use of simulation. Real-time allows you to go beyond the limits inherent in design offices and bring simulation into the factory and integrate it into production lines. This has not been possible until now, and yet it is a key aspect of the Industry 4.0 paradigm.

The three end-users of the technology developed are companies in the automotive sector: FERSA Bearings, a European bearing manufacturer, Standard Profil, a manufacturer of sealing systems for automobiles, and ZF, a supplier of mobility systems for the automotive sector, with a focus on their brake production in the context of STREAM-0D.

#### **STREAM-0D Partners:**

Instituto Tecnológico de Aragón, project coordinator (Spain), High Performance Computing Institute (ICI) at Centrale Nantes, the Laboratory for Manufacturing Systems & Automation (LMS) of the University of

Patras, STAM, Day One, the Centre for Technology Research and Innovation (CETRI), Integrated Environmental Solutions (IES), Standard Profil, Lucas Varity GmbH (ZF-TRW) and Fersa Bearings.

**About Centrale Nantes**

*Founded in 1919, Centrale Nantes is a French engineering school and member of the Ecoles Centrale Group. Its undergraduate, Master and PhD programmes are based on the latest scientific and technological developments and the best management practices. At Centrale Nantes, research and training are organised into three key areas for growth and innovation: manufacturing, energy transition and healthcare. With research platforms ranging from digital simulation to prototyping using full scale models and an incubator with 20 years of experience in supporting start-up projects, the school has two major tools for innovation and creation, working hand in hand with industry. Centrale Nantes promotes its teaching and research capabilities at international level through around 100 partnerships with prestigious universities and schools worldwide.*

*Centrale Nantes welcomes 2,410 students, including 1,440 undergraduate students, 170 Executive Education and ITII degree apprenticeship students, 270 PhD students, 430 Masters students, and 100 Bachelor/Foundation Master students on its 40-acre campus.:*

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