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**Decentralised architectures for optimised operations via
virtualised processes and manufacturing ecosystem collaboration**

Deliverable 4.4
CPS control engine

Workpackage: WP4 – CPS, IoT and analytics

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DISRUPT Project Profile

Contract No.: Horizon 2020: LEIT – ICT WP2016-17 - 723541

Acronym:	DISRUPT
Title:	Decentralised architectures for optimised operations via virtualised processes and manufacturing ecosystem collaboration
URL:	www.disrupt-project.eu
Start Date:	01/09/2016
Duration:	36 Months

Executive Summary

This report is the final version of the D4.4 and summarises the DISRUPT work in Task 4.4 towards the realization of the CPS control engine.

CPS role and approach is discussed within DISRUPT, outlining its positioning with respect to major CPS literature review. Technical specifications for CPS Module are presented, with a general overview on Functional requirements and Logical view.

CPS control engine has been conceived as a set of technical functionalities derived from pattern recognition and machine learning approaches, conceived as building blocks for basic handling of probability theory, of Linear Models for Regression (including Bayesian linear regression), and for Neural networks. Each of these fields is discussed extensively to understand implications, in order to come to a lean understanding of CPS modules instantiated in the various use cases. CPS Integration within DISRUPT is briefly discussed in terms of Data input and Event generation. CPS module is then presented in the cases of Arcelik and of CRF, with a similar structure addressing:

- End user use case recap for CPS
- CPS development for end user
- CPS Events

Major contributions of this task are the technical solutions in the area of system modelling, identification pattern and machine learning for continuous stream processing combined with shopfloor event messaging to implement the core of CPS module.