Deliverable 4.3

ZDM Data Analytics

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Revision History

REVISION	DATE	INVOLVED PARTNERS	DESCRIPTION
0.1	14/08/2018	NISSA,	Initial, commented table of content
0.2	17/08/2018	NISSA	Review and internal alignment of table of content
0.3	24/09/2018	NISSA	Integration of content for section 2 and 3
0.4	28/09/2018	UNIVPM, LOC	Review of document and feedback on content/structure
1.0	04/10/2018	NISSA	Final Revision

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Executive Summary

The objective of this deliverable is to present the update in the development of the ZDM Data Analytics Environment. Code is available on: https://git.nissatech.com/D2LabLite.

An important work was done in the analysis of the outcomes from the early PoCs in order to understand what should be improved to address the challenges from use cases. For example, the improvement of the approach for the variation detection to enable better root-cause detection in the case of anomalies and unusual behavior (requirements from the Electrolux use case).

A new architecture for ZDM Data Analytics Environment is presented which enables an easier deployment of the system in industrial environment. The deployment can be done in several ways (shop floor / edge, private cloud, public cloud) offering a huge flexibility to users for the usage of the system. In order to achieve this, several abstractions are done, whereas the most important is that related to the way how the industry data can be imported in the system (concept of adapters).

A script-based installation procedure that enables an (almost) automatic installation is developed. Personnel with corresponding access rights needs to put the script and package on the machine and execute the corresponding script.

The deliverable reports on implementation of the integration with other components (MAS and ZDM KM framework) and initial testing.

One of the important aspects is that ZDM Data Analytics is a foundation for the development of Data-driven Twin concept, as a metaphor for enabling data-driven innovations by formalizing the knowledge derived from data across distributed and heterogenous systems. For the multistage production this concept has a special importance since our approach breaks the silos of "stages" horizontally and enables an integrated, multi-stages analysis of the collected data.

In that way it is possible to get the knowledge which is not "only" that there are correlations between the parameters in different stages but also what is the model that underpins these correlations, e.g. what is the normal and what unusual correlation and what are the main causes of an "anomalous" behaviour. Moreover, the proposed approach can include contextual parameters (e.g. environment) and enables understanding which of those and how are influencing the process parameters in different stages.