Data Connectivity Benefits And Current Challenges From E-Maintenance Perspective

Division of Operation And Maintenance

Johnny Asber
johh.asber@hotmail.com

Miguel Castaño
miguel.castano@ltu.se

The target of this research is to go through all existing information related to industry 4.0, Digital twin and e-Maintenance to illustrate the integration process with all the promised benefits and challenges and also to come up with what is missing.

Introduction

Recent improvements of Digital twin technologies show promised advantages that could serve Industry 4.0 with all its effective tools for excellent performance. Some of Those tools are represented by

1. Maintenance schedule activities of the same facility
2. Maintenance team wisdom
3. Easy products maintainability

Therefore, such integration would allow to obtain better performance, higher revenue and optimum employees community by delivering

1. Self-improved enterprises (strategies, schedules,…etc.)
2. *Self-developed products (meet the real customers needs)*
3. *Self-developed* employees at different levels
4. *A whole set of wisdom*

Some important moments in this research:

The merging process, Industry 4.0 and Digital twins in one virtual model, aims to achieve one or more
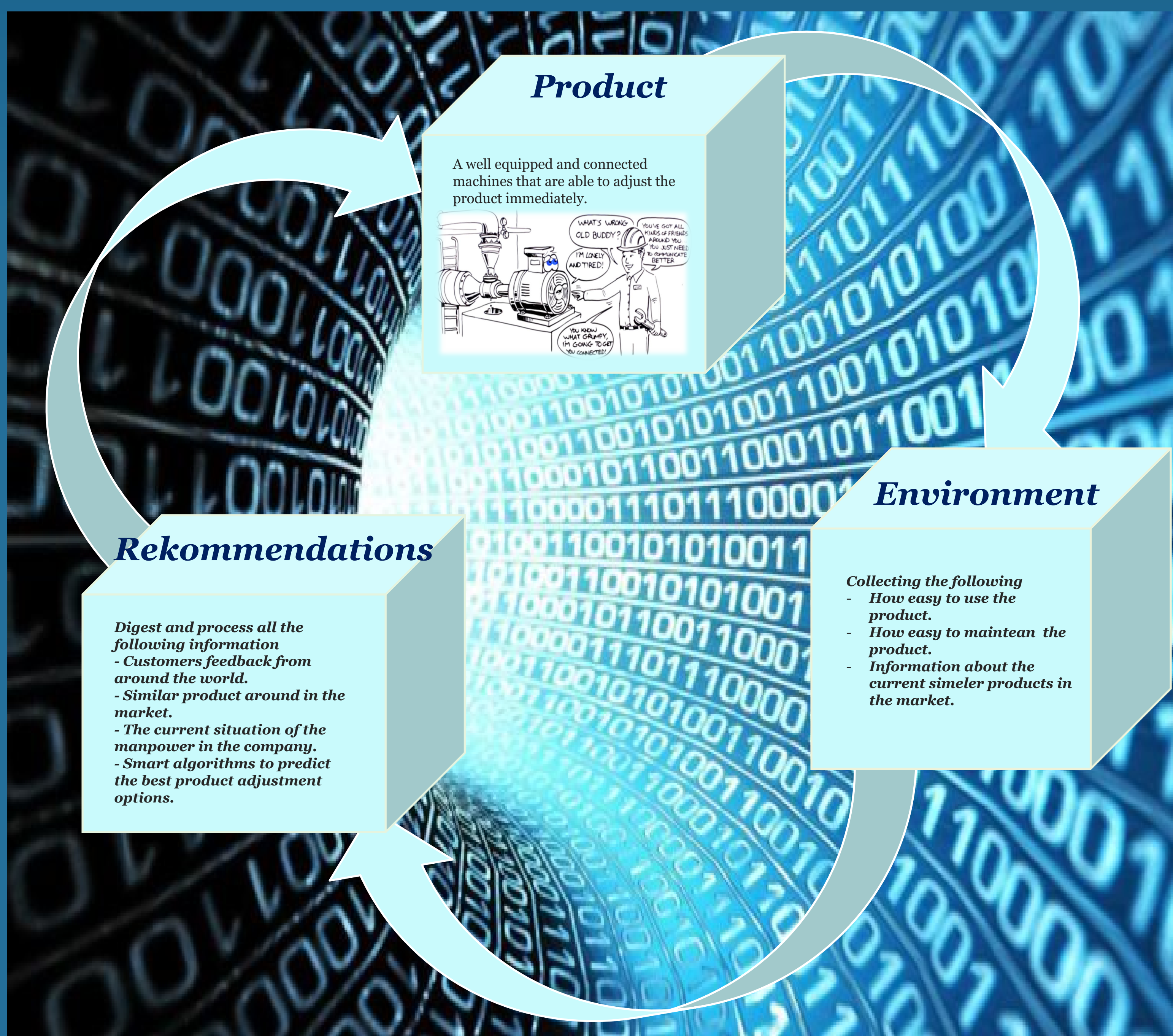
Self-developed products

Industry 4.0 based basically its performance on collecting data related to each step of the production process separately. Of course this still effective, but looking to the recent revolution of "Digital twin", the Industry 4.0 has a good chance to obtain a whole set of wisdom as never before. Digital models can digest all information of a certain environment and its behavior, and then make the required simulations, (J, Hochhalter et al, 2014). Furthermore, can improve the maintenance procedures related to the product itself, were reducing the downtime related to products maintenance will increase customers satisfaction.
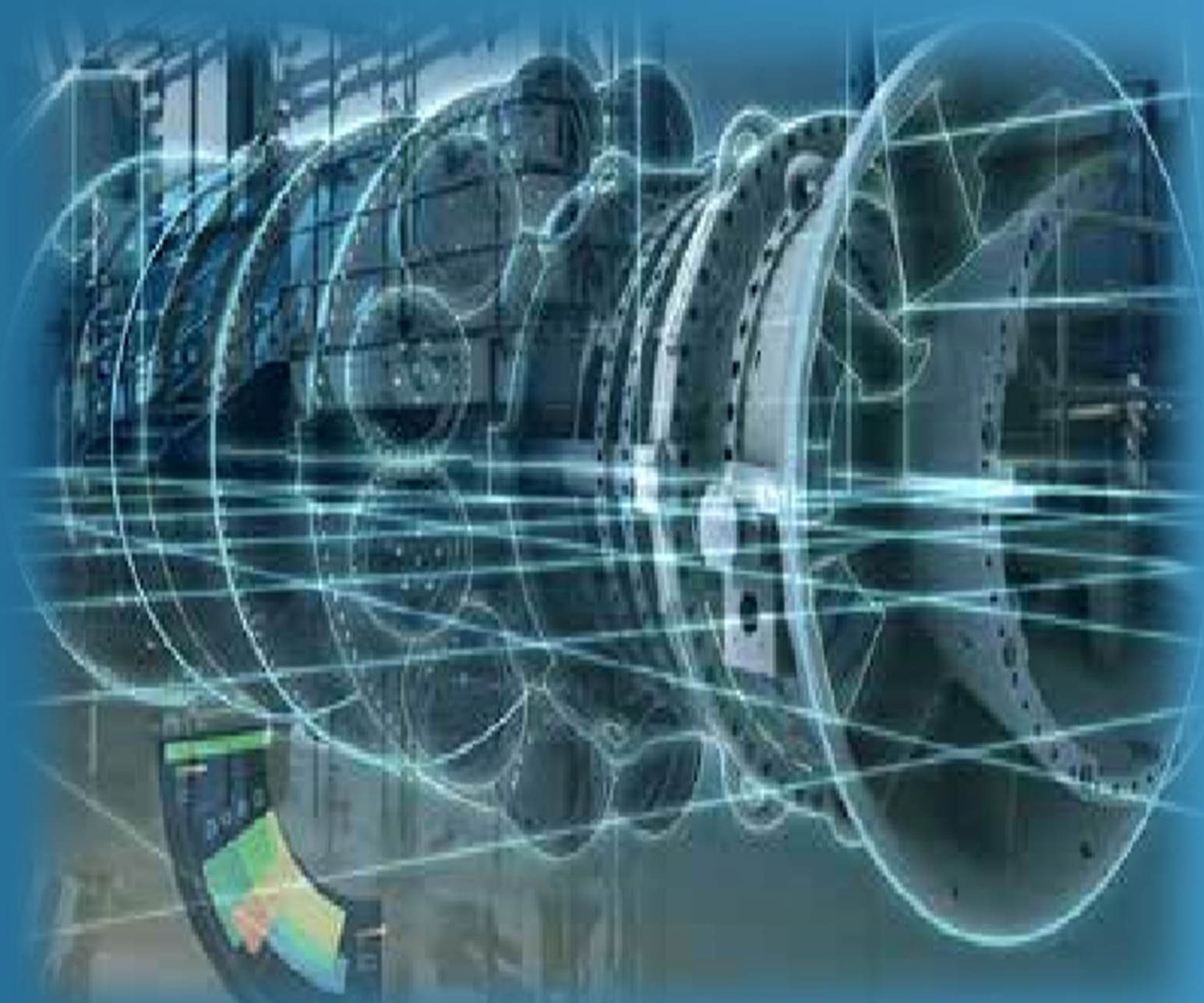
Self-developed crews

A virtual model has many different applications that could be useful, when it comes to talk about the process of teaching and enhancing the work team's performance. It could be also useful for reinforcing facility maintenance trainers with new skills and tools to overcome the several different barriers between the trainer and the worker. Knowing the best and fastest way, to deliver information to workers in different environments and conditions, could be very important in the learning process.

The research lead us to detect the missing part that is able to accelerate transferring the idea to reality

Product

A well equipped and connected machines that are able to adjust the product immediately.

Environment

Collecting the following
- How easy to use the product.
- How easy to maintean the product.
- Information about the current simeler products in the market.

Rekommendations

Digest and process all the following information
- Customers feedback from around the world.
- Similar product around in the market.
- The current situation of the manpower in the company.
- Smart algorithms to predict the best product adjustment options.

Self-developed Product Cycle

Virtual model for testing new ideas without risk

Vertual model for team training

Wanted!

A good strategy to prepare a world wide class of engineers that are able to record and extract data in a standardized way to facilitate the workflow of all digital models around the world

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