

Manufacturing IT Platforms

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Some questions for you

- Do you plan to integrate a new manufacturing platform as a part of your IT System strategy?
- Are you confused in complex playground IT manufacturing platforms?
- Have you analysed all the features which ensure a zero-defect strategy in your company?
- How can you proceed towards a zero-defect strategy for products and processes?

A European digital framework for manufacturing

Digital transformation, manufacturing ecosystems, supply chain management, product & service innovation, and smart manufacturing are the key themes driving the evolution of the manufacturing sector worldwide. In the middle of the global digital battle, and more concretely, on the B2B platform battle, Europe requires long-term strategies and action plans not only to attain a privileged position in the market, but also to sustain it. Accordingly, Europe has started by addressing platforms most valuable features which will be necessary to gain global acceptance and generate sufficiently large ecosystem around them [1].

A wide-ranging variety of approaches and platforms. ZDMP position

It is difficult to identify a commonly accepted definition of what a digital manufacturing platform is. This lack of consensus derives from a wide application of digital solutions around manufacturing digitalisation. Extensive use of concepts and related solutions such as Industrial data platforms, Digital industrial platforms, Digital industrial IoT platforms, IoT platforms, CPS platforms, Digital B2B platforms, Digital business platforms, and Platforms for connected factories, resolve to a jungle of terms, solutions, and applications. Considering the context of the ZDMP project, the EFFRA (European Factory of the Future Research Association, www.effra.eu) definition is an appropriate starting point [2]. The European B2B platform landscape is characterised by high proliferation and fragmentation of diverse solutions with few signs of consolidation. “Success in the B2B platform battle, however, requires commercial platforms to be collaborative, simple, scalable, secure, and trusted” [1]. From a business point of view, platforms offer a wide variety of business models and revenue streams based on a diverse mix of open / close ecosystems and one / multi-sided markets. The following figure proposes a way of classifying the platforms that interact with the industrial environment adopting different strategies:



The classification follows a top-down approach and, each segment in its turn, contains a set of options of ZDMP related categories. This platform classification goes from a high and horizontal positioning, without a clear sector orientation (generalists), to a specific one, where platforms are developed for concrete products or assets. From a conceptual point of view, some segments are totally or partially included in others.

General Platforms: Platforms segmented as “General” come from large and dominant companies, initially positioned in a concrete domain of the data value chain. In turn, there can be many sub-categorisations of General Platforms. For example: Network-centric platforms are stronger in the communications and network capacity area, whilst platforms designed specifically for application enablement offer stronger capabilities on that level. Following this logic, platforms provided by device manufacturers are stronger in device management and so forth.

Industrial platforms: The industrial internet of things (IIoT) is positioned as an extension of standard IoT to meet the requirements of industrial sector and corresponding applications. Industrial and manufacturing platforms tend to be mixed due to the wide platform strategic approach. But there are industrial processes where manufacturing is not involved and where IoT has a leading role. One example is “After sales service” for connected assets with extensive usage of IoT technologies, but it is not a manufacturing-related issue. Fleet management, Asset life cycle strategy and many other issues are considered as industrial processes that are not directly involved in manufacturing itself, but play a key role in business model.

Manufacturing platforms: Platforms in this category offer services and applications related to manufacturing in a broader sense. However, they are only focused on manufacturing and not on other industrial-related issues.

The next 3 sub-segments position their offering in different spaces of the manufacturing platforms, but always focused on asset management and providing broader or specific knowledge of the asset.

Asset Management Platforms: These IoT platforms addressing the assets’ management. Monitoring, maintenance and life-cycle assessments, among others, are their principal features. This type of platforms has a limited offer of product and process quality mechanisms. However, quality aspects related to the condition of the asset itself is an interesting feature.

Manufacturer Centred Platforms: These platforms are offered by device / equipment makers and serve a dual objective: to provide complementary services and obtain recurrent incomes (servitisation), as well as to assure the customers’ loyalty. There is also a third objective: Generation of knowledge about asset behaviour. This can bring benefits for both sides: The maker and the customer. However, the customer side frequently erects barriers such as an unwillingness to give information on their critical processes and the way they are implementing the process at the device / equipment side. The platform often covers the whole data value chain (end-to-end platforms), from sensors installed in products to cloud-related features.

Product Centred Platforms: Also known as Product Data Management IoT (PDM), these platforms are offered for a family of products such as pumps, compressors, and specific parts like bearings, etc. The objective is to “sell” the knowledge that vendors have around specific products. This knowledge, algorithms, etc. are the part of the platform, so customers can take advantage of them. Product makers can take advantage as well, by enrichment of existing knowledge. Moreover, specific services making use of assets behaviour are offered, allowing customers to identify deviations from the normal operation by comparing the assets current operation with expected one. The platforms may be specialised in products of one specific manufacturer or cover comparable products from other manufacturers.

In addition to the typologies mentioned above, other small platform groups which might be orthogonal to these. On such group is the category of “Open Source Platforms”. Such platforms could occupy a space related to IT manufacturing zero defects where the open strategy could attract certain players who do not want to be tied to a particular platform.

What will ZDMP achieve

The ZDMP platform has been designed to be a reference vehicle that allows companies to access products and services related to zero defects, an aspect that has been defined as strategic to achieve the European manufacturing strategy. Additionally, ZDMP will pay special attention to SMEs and will consider an open-source slant. This initial approach will provide ZDMP with a referential position. It will, in turn, allow ZDMP to generate a powerful ecosystem, an aspect that makes the platform even more powerful. If managed, it allows it to acquire value and grow progressively. In turn, the platform will be surrounded by all kinds of other platforms, which will compete with ZDMP but also collaborate. These platforms will evolve and occupy new positions in the arena, requiring ZDMP to be able to adapt to new competitors and to continue to offer differential value. It will have to coexist with large platforms, often generalist, and small platforms from specific asset manufacturers.

The European Commission has outlined a strategic approach in which IT platforms play a decisive role in achieving manufacturing strategies. Furthermore, it believes that the concept of zero defects in products and services will be essential for the competitiveness of European businesses. Within this strategy, it believes that SMEs play a crucial role in the ecosystem and promotes the idea of enhancing their competitiveness through different IT tools. And finally, the open-source approach is seen as a deferential and somewhat opposite to the strategy of many of today's dominant platforms.

The ZDMP platform considers all of the above concepts as essential in its approach as a platform. It will allow ZDMP to generate a powerful ecosystem, an aspect that makes the platform even more powerful. Well managed, it allows it to acquire value and grow progressively. In turn, the platform will be surrounded by all kinds of other platforms, which will compete with ZDMP but also collaborate. These platforms will evolve and occupy new positions in the arena, requiring ZDMP to be able to adapt to new competitors and to continue to offer differential value. It will have to coexist with large platforms, often generalist, and small platforms from specific asset manufacturers.

ZDMP Links

• Component	None
• Work Package	WP3 – Business Approach: Market, Exploitation and Sustainability
• Tasks	T3.1 – Market Analysis and Competition

References

- [1] Lemke, M.,2018, *“Business to Business platforms: the race that Europe cannot afford to lose”*
- [2] EFFRA, 2019. *Digital manufacturing platforms.*