Industrial Transformation in the Experience Economy

The French case: Industrie du Futur

3DEXPERIENCE®

I. Presentation of Dassault Systèmes

Dassault Systèmes, the 3DEXPERIENCE Company, provides businesses and people with virtual universes to imagine sustainable innovations. Its 3DEXPERIENCE Platform leverages the Company's world-leading 3D software applications to transform the way products are designed, produced, and supported, enabling businesses to craft delightful customer experiences.

With the 3DEXPERIENCE Platform, Dassault Systèmes' customers create "social enterprises" that involve their customers in the innovation process. With its online architecture, the 3DEXPERIENCE environment helps businesses to test and evaluate — anywhere in the development lifecycle of a product or service — the eventual experience they will deliver to their customers.

Since its creation in 1981, Dassault Systèmes develops technologies and solutions enabling disruptive innovations for its clients, from transport, smart products, consumer goods, natural resources, urban planning, construction, to biological system and chemistry. Dassault Systemes creates value for more than 220 000 clients of all sizes and operating in every sector, in more than 140 countries.

II. 3DS vision on the future of the industry

In the age of the Experience Economy, the value is no longer created by the product itself but by a variety of associated customized services, and ultimately by the experience the consumer derives from a usage. In order to be competitive and differentiate themselves, companies will have to produce experiences rather than products, and therefore adapt not only their offer but their production models and business model. The industry of the future is not a production system of goods, but a value chain fostering the definition and exchange of experiences in which online services complement the value of the product. Data thus constitute a strategic asset. The experience economy profoundly modified the industrial landscape and created at the same time new opportunities for companies. Technological disruptions enable companies to become more efficient and agile. The challenge is not only to produce better and at lower cost, but more importantly to invent new ways of producing in order address both the challenge of performance and innovation. This double goal can only be reached through digital continuity: it is critical for companies, especially for Small and Medium Businesses (SMBs), to seize this transformation which constitutes an outstanding opportunity of economic development.

Digital transformation is at the center of national industrial plans; it will allow companies to grasp the opportunities of the new economy. To tackle the issues of the industry of the future, digital platforms intended for the industry will become essential since they allow the connection of ideas, people, processes, machines and objects. Indeed, the traditional industry has shaped itself around ownership of physical assets to create value; today, the flow of data is structuring every sector. Mastering the stream of data allows the experience to be delivered to the consumer, and digital platforms are the necessary to coordinate the whole system and its actors. "Business to Consumer" (B2C) platforms exist but specialized industrial platforms are beginning to emerge. An ecosystem will grow around such industrial platforms to develop industrial applications.

Men and women are at the heart of this model which allow them to unleash their creativity and entrepreneurship to the benefit of innovation and change management. The impact of this transformation on jobs and skills is one of the major stakes. Taking into account all the resources of a company is necessary to successfully drive its digital transformation. One of the key issues is the enhancement of skills. Tools and processes require upgrades but also training of employees, ideally *in situ*, "learning by doing".

Training is essential to prepare today and tomorrow's operators. An acceleration of the transfer of new industrial practices is necessary in general and technical education, as well as a readjustment of educational models shifting towards project-based learning, powered by collaborative tools. The creation of centers of excellence will give students an access to self-training on innovative technologies used by industrials and on competitive training programs on a global scale. These centers also need to be accessible to professionals in order to foster knowledge sharing and lifelong learning. Competency centers based on Dassault Systèmes' 3DEXPERIENCE platform, are emerging in various countries, such as NIAR in the United States, the Franco-Chinese Center of Innovation with AVIC in China or Factory Lab in France. Schools and Universities are at the heart of these new learning and knowledge dissemination ecosystems.

III. The 3DEXPERIENCE platform

Dassault Systemes' platform is unique since it allows users to simultaneously define and run. The 3DEXPERIENCE platform ensures digital continuity based on its capability to manage data flow and to capitalize on information. It is data-driven and model-based. It integrates, from a unified cockpit, every applications, functionalities and software of Dassault Systemes' portfolio, as well as that of third parties. Each user has access to the applications and data corresponding to rights granted to his job(s) or role(s).

It is the only industrial platform on the market connecting all the actors of the value chain, from the product developer, to the producer, the marketer, and the final user. In addition, it also links suppliers of industrial services to clients via a marketplace.

The value of the 3DEXPERIENCE platform falls into around the four quadrants symbolized by this compass:

These quadrants represent the families of applications and functionalities at the heart of the unique value proposition proposed by the 3DEXPERIENCE platform. They foster the capacity to imagine, design, test and implement a user experience while involving stakeholders at each phase of the project.

North Quadrant: Innovative collaboration between every actors of the value chain

In the new economy all the actors are connected. The solutions proposed at the level of this quadrant enable to connect every actor of the value chain, from the designer to the final consumer. They allow stakeholders to exchange in order to foster innovation through collaboration and respond market demand in real time in a structured and/or social way.

West quadrant: Representation of the future through 3D modeling

The economy shifted from the product economy to the service economy followed by the usage economy, also called experience economy. This quadrant introduces solutions to imagine and model in 3D products as well as new materials.

South quadrant: Confluence of the virtual and the real (V+R) in simulation and production

The virtual world shapes a very precise representation of the real. Thanks to the virtual world it is now possible to plan, drive and control the real world. Available solutions in this quadrant allow the simulation of products and production processes. Therefore the changes simulated and validated in a virtual environment on the production lines can immediately be applied to a physical production line. This makes industrial processes more agile and hence more competitive.

East quadrant: Development of new services based on information intelligence

In the experience economy, data is essential and represents a strategic asset not only to optimize the production model, but also to develop new services. Solutions accessible from this quadrant enable the management and the analysis of data flows in particular through dashboards.

IV. The French initiative “Industrie du Futur”

1.1. Presentation of the national strategy

The national project “Industrie du Futur” was launched by the French Government in April 2015, in the scope of the revamped organization of the New Industrial France (*“Nouvelle France Industrielle”*). Capitalizing on the achievements of the plan Factory of the Future (*“Usine du Futur”*), started in 2013, this project intends to play a key role in the initiative of the New Industrial France with a broader scope. The goal of this national strategy is not only to encourage companies, especially SMBs, to modernize their production processes but also to support and coach them in the transformation of their business models, organizations, design methodologies and go to market. In this context, new tools such as digital technologies, additive manufacturing, new materials or cobotics are breaking the many silos existing in industry and services.

Whereas a great number of international initiatives are focusing on the automation and the optimization of production processes, the goal of the plan “Industrie du Futur” is to foster innovation and creation of new value chains connecting all stakeholders in the context of the new economy.

The Alliance for the Industry of the Future ("Alliance Industrie du Futur", AIF), a public-private partnership, was created in July 2015 to support the national plan and fulfill a double goal: modernize the production equipment and support companies in their digital transformation. By placing men and women at the center of its program, it intends to restore the passion for the future and to become the driving force of an attractive industry respectful of its employees. With the support from public authorities, the industry drives this transformation.

The AIF was created by eleven founding members. It now has thirty three members divided into four colleges: professional organizations, academic organizations, technological research organizations and organizations dedicated to the financing of companies.

The five priority action lines for AIF are:

- To support companies to transform towards the "Industrie du Futur "
- To develop the technological and digital offer
- To prepare men and women for this transformation: coevolution, prospective and training
- To promote French industry, particularly through showcase projects
- To reinforce standardization actions, especially at international level

1.2. The engagement of Dassault Systemes in this initiative

Since its creation in 1981, Dassault Systemes is at the center of major industrial transformations. The 3DEXPERIENCE platform allows to accelerate these industrial transformations. Bernard CHARLES, Chief Executive Officer of Dassault Systemes describes it as an "industrial platform for a data economy serving the usage economy"

Since 2013, Dassault Systemes contributed to the definition of this strategic plan and to supported its implementation ever since. Today Pascal DALOZ, Executive Vice President in charge of Brands and Corporate Development of Dassault Systemes, co-chairs the AIF in France. Dassault Systèmes is also actively involved in the AIF's various working groups, and is recognized within the AIF ecosystem as one of the major player of this transformation.

In addition, Dassault Systemes leads and collaborates on several projects in the scope of the Industry of the Future:

- **The Factory Lab**: it is a platform designed to accelerate the integration of technologies of the industry of the future for industrial players. It was co-founded by Dassault Systemes, PSA, Safran, DCNS, Actemium, the CEA-Tech (The robotics laboratory of the Commisariat à l'Energie Atomique), the CETIM (The laboratory of the French Mechanical Association) and the Arts et Métiers. This platform hosts companies of every size enabling them to work together on functional demonstrators linked to "Industrie du future" domains.
- **Innovation Center for Operation** (ICO): The Boston Consulting Group (BCG) France opened a "teaching factory" (*"usine-école"*) of 1 200 m^2 to allow its clients to boost their transformation towards the Industry of the Future. On these two production lines, designed with Dassault Systemes' 3DEXPERIENCE platform, every technology of the highly flexible an interconnected factories of tomorrow can be tested: collaborative robots, 3D printing, augmented reality, big data, etc.
- **Showcase Industry of the Future**: Various projects carried by clients of Dassault Systemes and other industrials were labelled "Industry of the Future". This label, a commitment of the engagement in the industry's transformation, is awarded to companies that have delivered an actual innovative project related to the organization of their production and business model, particularly through digital technologies.

- **Education and professional training projects**:
    - **The "EURLAB" project:** Linking three technical high schools in France, Italy and Germany, this collaborative project financed by the EU aims to develop a complete robotic activity from the steps of design to use.
    - **The "DEFI&CO" project**: The objective of this project is establishing a factory of the future in Rouen and a building of the future in Asnières to demonstrate, train and educate engineering students on digital processes.
    - **The "ACE - Attractivité, Compétences et Emploi dans la Filière Automobile" project**: The goal of this project is to modernize the digital processes (for instance PLM practices) of SMEs operating in the automobile industry.
    - The training centers for SMBs, such as the **Espace Numérique Entreprise** located in Lyon, aim to accompany SMBs in their digital transformation through consulting services.

Dassault Systemes also participates in major events focusing on the promotion of the Industry of the Future in France:

- **The Global Industrie event**: This show is dedicated to the Industry of the Future and brings together the whole ecosystem, gathering the main OEMs, their subcontractors, institutional representatives, as well as academic, professional and research federations. The next edition will take place from the **27th to the 30th of March 2018 in Villepinte**.
- **The "Entreprise du Futur" congress**: This congress gathers the whole ecosystem of decision makers, especially those of SMBs engaged in the digital transformation of their companies. The congress focuses on digital innovations and gives innovative companies and start-ups the chance to demonstrate their know-how and present their new digital tools in the fields of robotics, processes, communication, digital or aeronautics. The next edition will take place on the **18th of January 2018 in Lyon**.
- **Agora Industry – The Human in the heart of Industry** (*"Agora Industrie: l'Humain au Coeur de l'Industrie"*): This show concentrates on employability in the Industry of the Future. It intends to bring to the attention shared status reports and proposals regarding impacted jobs, competencies, initial and continuous training, management and work organization of the future. The goal is to raise public authorities' awareness on the ongoing transformation, including that of territories in order to facilitate it, to build closer links between educational and professional worlds and to propose a vision of the industrial company of the future, as dreamed by its future employees and entrepreneurs. The next edition will take place on the **12th of December 2017 in Paris.**