Industry of Future showcases

Keys of industrial success

Disrupting business model and creating value avalanches

February 2018 edition
Introduction

• The Industry of the Future Alliance (IFA)

The IFA gathers and connects the skills and energies of professional organizations, scientific and academic actors, business financing organizations, businesses and local authorities.

Its ambition is to help the digital transformation of the industrial network, especially SMEs and midcaps.

To reach this goal, IFA has put in place a process of auditing and labeling companies that have succeeded in their transformation, in order to share their experiences and inspire the leaders of companies undertaking their own digital transformation.

• The study

This study analyzes the Industry of the Future showcases’ transformations. It shows that successful transformations are generally the result of a combination of multidisciplinary initiatives within a global coherence.

These well-coordinated initiatives have been engineered to reinforce each other and generate value avalanches for the company’s ecosystem.

This edition captures this alchemy on a sample of 12 of the 35 showcases labeled in 2016-2017, it highlights the French industrial competitiveness within a global context.

This edition and the following can be downloaded directly on the IFA website, on which you may also find information about the labeling process.

IFA website:

http://www.industrie-dufutur.org/
Methodology

These emblematic transformations have been described through influence diagrams, which visually highlight how sequences of initiatives can generate value avalanches.

**Challenges:** elements that require and trigger the transformation.

**Initiatives:** solution to the challenges, such as technological, business or organizational transformations and innovations.

**Function:** concrete examples of capabilities to support the initiatives in the context of the company.

**Results:** outcome of the transformation, meeting challenges and often beyond (avalanche of value).

Even if each strategy is fully unique, invariants shared by these transformations are emerging. These invariants represent the universal keys to understand the mechanisms of success.

In the following pages, these invariant are gathered in three index tables, which allow the reader to compose easily the dynamics of his own industrial transformation.
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Adapt production to fragmented market and offer
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Augmented reality
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Organizational innovation
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Reinforcement of local networks (attractiveness, competences,...)
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Implementation of change, fast, appropriate and incremental
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Production resources sharing (new economy)
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Decrease or eliminate stocks
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Fluidity of operations (no paper, digital continuity)
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12 examples among 2016-2017 Industry of Future showcases
(by alphabetical order)

Baud Industries  p.8  Latécoère  p.20
Bouygues -Viibe  p.10  Saunier Duval  p.22
Dagoma  p.12  SAVRéso - OptimData  p.24
Faurecia  p.14  Sunna Design  p.26
Fonderies de Sougland  p.16  Velum  p.28
Gravotech  p.18  XYT  p.30
Context

Baud Industries is a family group founded in 1978 with 500 employees and 100 million turnover. The factory in Vougy, Haute Savoie, specializes in bar turning, high precision machining of metal parts. Baud Industries addresses several sectors such as automotive, connectivity, home automation, watchmaking and devices.

Labeled project

High-precision machining must meet a major challenge: offer increasingly complex and precise parts while keeping prices as low as possible. To meet this challenge Baud Industries has built an intelligent machining cell that self-corrects in real time. The cell also embeds a digital twin to achieve virtual pre-series without immobilizing the machine.
Digital twin and smart aggregation on production measurements to minimize process variations, increase machining precision and boost Overall Equipment Effectiveness.

«This project has capitalized on a lot of knowledge, it will be duplicated on other machines, both technologically and in its philosophy.»

Renald BAUD
General Manager
renald.baud@baud-industries.com
Context

Within the Bouygues Construction branch, the Bouygues Construction Matériel subsidiary provides equipment used on construction sites. The Chilly Mazarin site located in Essonne, employs more than 200 people, one of their missions is the maintenance of 300 tower cranes. Viibe is a startup that provides professionals with a remote maintenance service via a web application. This service allows a multifunctional relationship between the field operator and experts.

Labeled project

Tower cranes represent a critical asset on the construction site, their continuous availability is a key issue for Bouygues Constructions Matériel. BCM has been able to respond to this challenge by integrating Viibe's innovative solution, which allows to return control on maintenance to the operator in a simple and fast way. The way this startup solution has been collaboratively implemented within a large group is exemplary.
Agile and incremental deployment of the solution
Real time exchanges of images, documents and text through augmented reality. Expert can annotate video filmed by the operator in real time.

Data lake on equipment (exploitation, load, down-time..) Draw use patterns from analysis
Real time exchanges of images, documents and text through augmented reality. Expert can annotate video filmed by the operator in real time.

Pay-to-use Business model

Recruitment plan of 19 people in Viibe
Deep knowledge on tower crane uses: design closer to customers’ needs
Intervention traceability Root causes analysis
Suppress useless trips (ROI positive from 2 interventions avoided)

-20% repair costs
Increase solving rate per call. Reduce solving time

Results

Challenges
Strategy to induce agility to better face change by working with startups
300 tower cranes being critical assets (site stop risk). Commitment on maintenance reactivity

Initiatives
Startup integration process (benchmark, test/fail/learn/repeat, deploy, invest)
Multifunctional tele assistance web-based application. Dialog between operator and expert

Ex. of Functions
Agile and incremental deployment of the solution
Pay-to-use Business model

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Message from the transformation Leader
Marc PREMPAIN
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«Human benefits are a clear sense of closeness, and satisfaction from the team»
Bouygues Construction Matériel

« We are very attentive to operators’ feedbacks so that we can propose robust and ad-hoc solutions » Viibe

Collaboration between large group and a startup for an extremely simple tele maintenance of critical assets.

Dagoma is a startup based in Roubaix, it produces and markets all-purpose 3D printers, as well as accessories (eg: filament) and software solutions. It also manages a database of 3D printable items on its site.

To make 3D printers affordable for the general public, Dagoma came up with the idea of making their 3D printers printable themselves. By distributing the plans of its printers in open-innovation, Dagoma also allows its users to take part in their innovation, improvement. These two breakthrough innovations enable Dagoma to offer products at a competitive price, while simplifying its use through cloud-based applications for ease of use.

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**Labeled project**

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**Uses**

3D printing

**Breakthrough**

Community

Open Innovation

**Costs**

Ease of use

Training

Achieve 20% product margin and distribute 80% to the creator. Users propose their creations, if convincing there are marketed online by Dagoma. On-line place of mutual help and ideas sharing between users. User chooses its model from a bank of items and print it with in one click on his own printer. Users propose their creations, if convincing there are marketed online by Dagoma. On-line place of mutual help and ideas sharing between users. Printers are upgraded/repaiired by users with their own printers. Sharing of upgrades. Production: 450 printers produce (print) other printers 24/24 and 7/7. Less support needed hence more time for employee to do more R&D and commercial missions. Continuous inexpensive innovation. Cost reduction hence affordable market prices. Innovate for product comes down to improve the production tool. Make it easy to use for general public. 3D printing identified as a technology of the future providing that its use is democratized. Competitive markets on costs: Need to propose best-cost 3D printers: innovate and produce inexpensively. « Within the company, values are very strong: Creativity, Audacity, Sharing, Passion, Respect. Everyone is encouraged to undertake, learn, make decisions and test any idea that goes in the direction and vision of Dagoma. »
Faurecia is a global automotive supplier that develops, manufactures and markets seats, interior systems (dashboards, door panels, decorative elements and acoustic modules ...), emission control technologies (exhausts). The Faurecia site, in Caligny, (in the Normandy countryside, on the periphery of Flers) manufactures mechanisms for car seats.

The Caligny site was built in 2008, it emerged from a group of 3 Faurecia factories. In the context of the economic crisis of 2008, Caligny, supported by the group, was able to redress the balance, and regain profitability. In order to anchor its production in Normandy, the site has launched the "Caligny inside" project. This project is composed of 3 topics: employees, enterprise network, and digital transformation.
Olivier Zanusso, Plant GM

Message from the transformation Leader

« The ‘Industry of Future’ label rewards the efforts made by all employees. This award highlights the innovative positioning and future orientation of our site and we are very proud to be one of the 40 most modern industrial sites in France »

Emblematic lesson

Creation of an open regional network of partners. Competitiveness through continuous improvement and digital solutions
Founded in 1543, the Sougland Foundries will be 475 years old in 2018. This PMI is one of the oldest French, European and World Industrial Enterprises. More than 1500 cast iron or steel parts are referenced in many sectors of activity (shipbuilding, iron and steel, incineration, railway ...). It has an internal R & D department and combines three skills: foundry, machining and mechanical welding for a global and integrated production.

Labeled project

The Sougland Foundries have capitalized on their unique know-how and a strong customer culture to ensure the transformation of a traditional company into a new business model and the new economy. With an evolution of its value chain, it now proposes ‘à la carte’ Manufacturing as a Service solutions to customers-partners. Its expertise and integrated resources, combined with its foundry experience, guarantee a complete mastering from design to production and beyond.
Mastery of more than 300 alloys answers every client issue. Study alloys’ structure with scanning electron microscope, mechanical tests, digital simulation on flow, mold prototyping by 3D printing. Measure and analyze temperatures and cycle time to optimize and supervise operations. A client can ask for a study on the ideal alloy + prototype and produce in another foundry. Create a R&D department to launch research on alloys and thus capitalize on historic employee know-how. Adopt business unit structure and apply lean management. Break up & offer value as services: design office, methods, production, inspection, storage. Recover data from different step in the process with IOT sensors. Huge possibilities on metal alloys: client often choose classic ones. Ability to adapt for organization and employees. Competitive market on costs and delivery time.

Results

Guarantee of conformity, delivery time, costs reduction, turnover and profit growth, customized offer by compartments: international markets winback, customer relationship: more of a partner rather than supplier, Co-creation, overall offer to address every needs (customized, best costs, delivery time, quality).

Ex. of Functions

Measure and analyze temperatures and cycle time to optimize and supervise operations. Study alloys’ structure with scanning electron microscope. Mechanical tests. Digital simulation on flow. Mold prototyping by 3D printing. Employees are more autonomous and better involved in decisions. A client can ask for a study on the ideal alloy + prototype and produce in another foundry. Those who need short delivery time and better conformity do buy the entire value chain from Sougland.

Challenges

Sell on value: consulting or research on ideal metal alloys. Huge possibilities on metal alloys: client often choose classic ones. Ability to adapt for organization and employees. Competitive market on costs and delivery time.

Message from the transformation Leader

Yves NOIROT
General Manager
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« Having evolved a very old industrial company towards the industry of the future is a proof that, with a voluntarist project carried out in an integrated way and within an adaptive system, any industrial company can transform itself and fully incorporate the new technologies of the XXI century.»

Emblematic lesson

Offer value by compartments to maximize the client-company value. Innovation and knowledge capitalization to master alloys and processes and differentiate through related services. IFA – Industry of the Future Showcases – February 2018 edition p. 17
Gravotech is an medium size company of 920 people, headquartered in Lyon, with 3 production sites and 85% of its sales turnover in exports. World leader in laser and mechanical cutting, engraving, scratching and permanent marking solutions for the customization, signage and traceability markets.

Labeled project

By digitizing the product lifecycle through a platform linking together customers, sales networks and corporate services, Gravotech has managed to make the Group's teams more autonomous and reactive, allowing them to refocus on more value-added tasks. The platform has also helped to improve the Group's sales performance and increase the level of customer service to the customers.
Message from the transformation Leader

Sabri MOURAD
Innovation Director

« Our Support Center platform is at the center of our Showcase for Industry of the Future label. This platform has also become for us a real "Digital Showcase" of our know-how allowing quick access to the right information, at the right time, simply and quickly, as we wanted at the beginning of the project. »
As a global "tier 1" partner of the world's leading aircraft manufacturers (Airbus, Embraer, Dassault, Boeing, Bombardier and Mitsubishi), Latécoère operates in all segments of the aerospace industry (commercial, regional, business and military aircraft), with two fields of activity: Aerostructures and Interconnection Systems.

To meet the challenges of the aeronautics sector Latécoère made the choice to invest 25 to 30 M Euros in a new factory in Montredon. Latécoère integrates in this digital and automated factory the production of basic parts, which it was previously delegated to "best cost" countries. The project involves a complete digital overhaul of the industrial organization, working methods and information systems. As such, an industrial partnership has been set up with Dassault Systèmes and Visiativ to provide digital continuity throughout the project phases.
Challenges
- Clients request increased reactivity of the supply chain
- Global competitive market: need to lower the costs to meet market pressure

Initiatives
- From buy to make: Construction of a new production site dedicated to elementary parts manufacturing for aeronautics
- Complete Digital twin of the factory to guide design and optimize performance
- GPS beacons on machines
- Production monitoring with MES

Ex. of Functions
- 100% automated production (robots in production line, cobots in finishing process, and AGV for logistics)
- No paper, everything is digitized
- Simulate and new machines arrival and optimize their positions in the factory
- Real time position tracking of machines
- Real preproduction are faster and safer: cost and time saving

Results
- Relocation of large series
- Valorize workforce, Employee perform added-value tasks
- Smoother operations and cost reduction
- Archiving and document search much faster
- Monitor better factory design through digitization. Shorten the delivery time
- Reactivity: fast decision making tools to identify and correct production drifts

Message from the transformation Leader
Serge BERANGER
Innovation Director

« The digital model of the Montredon plant allows all the actors of the project to interact and collaborate in order to design, simulate, operate and optimize the industrial operations »
The Nantes site, the only French industrial site of the Vaillant Group, is both a production site and an R&D center, installed for more than 50 years in the city.

In the factory, 520 employees design and manufacture an average of 1,300 products per day, mainly gas condensing wall boilers, as well as other innovative products using renewable energies (aerothermal heat pumps, solar thermal panels). These high energy performance products are marketed in particular under the Saunier Duval brand.

In the heart of the city of Nantes, the French site Saunier Duval has demonstrated its industrial competitiveness regarding production sites outside Western Europe. This result has been achieved by digitizing production data and using it in real time to ensure a higher level of product quality and value-added optimization.
Prevent musculoskeletal disorders with social partners involvement

Assembly Instructions are displayed on the line and updated in real time. Every process step of product assembly is verified. The cart in which the product is carried automatically sets its height according to operator’s size. Automatic setup of operational parameters and of the number of operators on each station. Check correct proceeding of operations (Torque tightening, connectivity, mandatory use of gripper).

Plan production according to daily demand thanks to custom home-made MES. Deploy identification system for operator and product with RFID technology. Monitor operation with connected tools.

Optimized takt time: according to demand target and variability. 0 finished product stocks. Just in time Production. Prevent musculoskeletal disorders with social partners involvement. Traceability of operations. New and temporary employees are included faster and can easily switch between stations. Less operational errors.

Fragmented market: 40 versions of finished products possible on a line. 30 years traceability requirement. Temp workforce brought by seasonal offer.

Eric YVAIN
General Manager
eric.yvain@vaillant-group.com

«Thanks to new technology introduction, we now adapt operations to the Human and not the other way around»

Context

SAVRéso, a company of 20 employees, specializes in outsourcing, commissioning and maintenance of industrial machinery for professionals. SAVRéso relies on a network of technicians working on the end-customer's sites to guarantee the availability and proper installation of equipment such as automated handling trucks. OptimData is a startup that connects equipment to analyze usage. The uses, transmitted to a community of performance, make it possible to communicate on the good practices of use of this equipment and thus to optimize its performances.

Labeled project

The collaboration with OptimData has enabled SavRéso to sustain the profitability of automated truck management companies. By Instrumenting and analyzing the uses of these trolleys, they were able to unite users and technicians around a common goal of performance, thus benefiting all stakeholders.
The equipment are seen as actors of a social network so that the operators take care of it, thus allowing the emergence of New Economy business models (sharing economy).
Sunna Design, created in 2011, employs 45 people and can produce up to 100,000 solar street lights per year. The start-up exports most of its production, mainly to emerging countries in Africa and South America. "The original idea was to build a factory that could be easily duplicated abroad. Both in terms of equipment and skills, "explains Thomas Samuel, the founder of Sunna Design.

Faced with the high variability of its offer Sunna Design implemented digital tools to support and train operators to operate on multiple stations. Production has also been fully modularized, including software for production scenarios, and hardware that allowing each station to adapt itself to the type of product manufactured. Thanks to this project Sunna Design has increased its production capacity tenfold.

Context

Labeled project

Skills

Self-Training

Simulation

Simpleness

Modularity

Virtual

Flexibility
Modularity of products and production processes, which are dynamically configured, and supported through augmented reality.

The technology of our products being particularly innovative it seemed obvious to us to respect this DNA and thus create a pilot line with such innovative processes to meet market demand.
Velum International is a SME located in Alsace in Bischoffsheim, specialized in the manufacturing of customized lighting solutions. It addresses various customers, such as merchants, industries, communities or the hotel industry. Velum also diversifies by offering consultancy to diagnose the lighting of its customers, identify the weak points and propose adapted solutions.

Several points in the VELUM approach drew the attention of the jury during the labeling process, such as the great flexibility of production that allows the company to offer 145,000 references, full digitization of production enabling customized offer to their client, human-centered approach and a transformation of the supply chain by sharing powder coating equipment with local industries.

IFA – Industry of the Future Showcases – February 2018 edition p. 28
We exchanged daily with employees, to pick good ideas in the right places. When we understand that wealth comes from our employees we have already taken a big step.
Created in March 2016, XYT is a start-up of the new economy located in Bretigny-sur-Orge. The new digital firm manufactures modular electric vehicles optimized for the last kilometers (urban logistics, individual mobility and soon passenger transport). The particularity of these vehicles lies in their modular, customizable and evolving character. XYT has a fleet of 80 vehicles currently operating on the roads and a good order book by 2021.

XYT has proposed an innovative business model concept, called "vehicle-as-a-platform", where the co-creation process of vehicles is highly customer-centric, also adopting a disruptive industrial strategy by focusing on decentralized certified assembly in local workshops. The vehicle becomes a space of value creation with modular layouts that can be customized easily and endlessly throughout the life of the vehicle.

**Message from the transformation Leader**

Simon MENCARELLI  
CEO

«We consider the car as a platform on which our partners can come and integrate different modules of leisure, work or learning»

**Emblematic lesson**

Factory inside garages thanks to disruptive modularity
A collection of Industry of Future showcase transformations examples.

Digital transformation is the first factor for global competitiveness. Through concrete examples of successful companies, this study reveals the key success factors of the French industrial transformation.