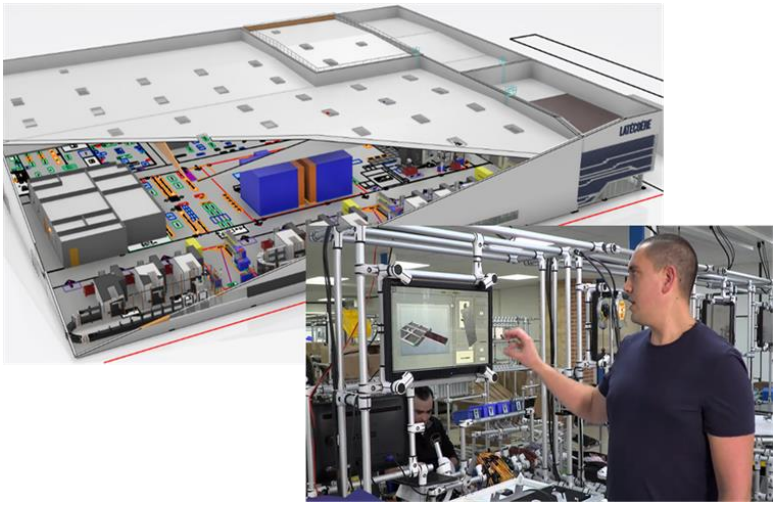
Industry of Future showcases

Keys of industrial success



Disrupting business model and creating value avalanches

Alliance INDUSTRIE DU FUTUR

MEMBRE FONDATEUR DE LA FRENCH FAB

February 2018 edition

La FRENCH FAB

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 showacases labeled in 2016-2017, it highlights the French industrial competitiveness within a global context.

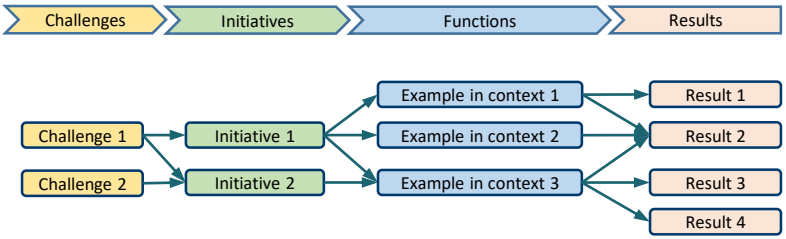
This edition and the following can be downloaded diretcly on the IFA website, on which you may also find information about he labeling process.

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

Index of reviewed Challenges

Meet seasonal demand
- p.22, p.26

Adapt production to fragmented market and offer
- p.18, p.22, p.26, p.28

Product and service traceability
- p.22

Agility and ability to transform, as a competitive advantage
- p.10, **p.14**, **p.16**

Production as closely as possible to consumption
- p.26

Intense competition on costs
- **p.8**, **p.12**, **p.14**, p.16, p.18, **p.20**, p.28

Availability guaranteed of critical assets
- p.10, p.24

Elimination of non-added-value operations
- **p.18**

Usages modeling and monitoring for business model profitability
- p.24

Customer experience and performance as a business lever
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Reactivity of value chain
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Company attractiveness to gather key competences
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Creation of opportunities through business model disruption
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Index of reviewed Initiatives

Internet of Things
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MES, ERP, Real time monitoring
- p.20, p.22, p.28

Augmented reality
- p.10, p.26

Virtual reality
- p.8, p.20, p.26, p.28

Process and product modularity
- p.26 , p.30

Modification of business model or value chain
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Organizational innovation
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Product and resource lifecycle management
- p.18

Digital collaborative platform for design and execution
- p.12, p.24, p.30

Cloud-based services
- p.12

Local industrial network development
- p.14

Index of achieved Results

Customer value creation (valuable customer experience)

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Flexible production adapting to demand

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Quality (measures, decrease errors…)

- p.8, p.10, p.14, p.16, p.22

Health, comfort at work (musculoskeletal injury, cognitive load,…)

- p.22, p.26

Man in the center, as an entrepreneur (formation, skills, etc.)

- p.10, p.12, p.14, p.18, p.20, p.22, p.26

Productivity by takt time reduction

- p.8, p.16, p.20, p.22, p.26, p.28, p.30

Maintenance and production costs cutting

- p.8, p.10, p.12, p.16, p.24, p.28, p.30

Compact production (space saving)

- p.26

Productivity through machine availability (supply, machine use)

- p.8, p.14, p.18, p.20, p.24, p.28

Business model impact and new value chains

- p.8, p.12, p.14, p.16, p.18, p.20, p.24,p.26

Reinforcement of local networks (attractiveness, competences,…)

- p.14, p.30

Implementation of change, fast, appropriate and incremental

- p.10

Production resources sharing (new economy)

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Decrease or eliminate stocks

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Fluidity of operations (no paper, digital continuity)

- p.18, p.20

Pilot project replication to the whole group

- p.14

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
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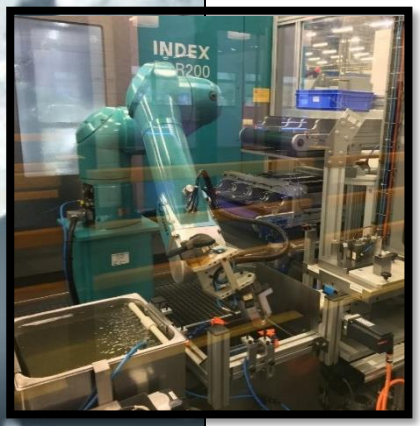
Gravotech	p.18	XYT	p.30

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.



Precision

Performance

Real-time

Predictive

Digital twin

Big data

Availability

Influence Diagram

Challenges

Competition facing low labor cost countries: cost-driven strategy while maintaining quality

Initiatives

- Digital twin of machining cell
- Tools instrumentation with power consumption sensors to measure the cutting effort
- Metrological measurements of the machined part transmitted to the machining machine

Ex. of Functions

1
- Virtual pre-production: Offline programming of the machining path and simulation in real conditions
- Calculation in hidden time of machine parameters and manufacturing orders of next series
- Optimization of the area of use of machining tools Automatically adjusts machining parameters
1
- Monitoring of deviation: if deviation: automatically replace the tool by a new twin tool.
1
- Real-time machining adjustment of current part according to metrological measures of previous parts

Results

- Equipment immobilization cut down from several weeks to 1 day
- Overall Equipment Effectiveness +20%
- Reduce chances of tool collision during real tests
- Cost cutting by increasing tools lifespan by +15-20%
- High precision (less uncertainty on quotation) and repeatability (resilient to process variability)
  - Commercial proposal to reduce specs
  - New markets watchmaking automotive

Illustrative videos

1

Message from the transformation Leader

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

Emblematic lesson

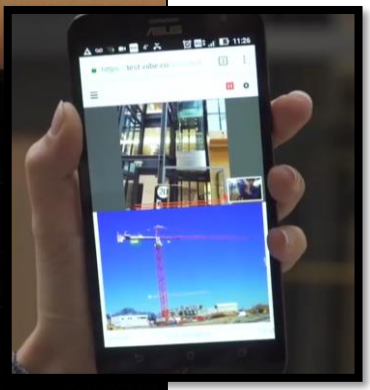
Digital twin and smart aggregation on production measurements to minimize process variations, increase machining precision and boost Overall Equipment Effectiveness

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.



Application
Feedback
Valorize
Traceability
Share
Collaboration
User-friendly
Agility

Influence Diagram

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

Illustrative videos

1

Ex. of Functions

Agile and incremental deployment of the solution

Pay-to-use Business model

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.

1

Results

Solution at best-cost, fit for purpose and quickly implemented

Recruitment plan of 19 people in Viibe

Deep knowledge on tower crane uses: design closer to customers' needs

Intervention traceability
Root causes analysis

Autotomize and valorize the operators
Skill improvement

Suppress useless trips (ROI positive from 2 interventions avoided)

-20% repair costs

Increase solving rate per call. Reduce solving time

Message from the transformation Leader

Marc PREMPAIN
Co-Founder Viibe
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Jérôme MINIER
BIM & Innovation BCM branch
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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***

Emblematic lesson

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

DAGOMA

Context

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.

Labeled project

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.

Uses
Breakthrough
3D printing
Community
Open Innovation
Ease of use
Costs
Training

Influence Diagram

Challenges

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

Initiatives

Cloud-based services and applications to choose/modify/print items

Create a community with users through a platform

Make all printers 40% printable themselves, distribution of plan in open innovation

Ex. of Functions

1

User loads existing printable items and modify them online (scale, rotation, definition)

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/repaired by users with their own printers. Sharing of upgrades

2

Production: 450 printers produce (print) other printers 24/24 and 7/7

Results

Fast and easy to use for everyone

Tracking of the most downloaded items. Trend analysis to orient the strategy

Achieve 20% product margin and distribute 80% to the creator

Jobs offered to outstanding users

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.

Illustrative videos

1

2

Message from the transformation Leader

Xavier Falaise
Project Manager
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« 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. »

Emblematic lesson

3D printers that self-produce and are distributed under open innovation.

faurecia

Context

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.

Labeled project

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.

Internal school
Ecosystem
Train
Digital
R&D
Big Data
Organization
Business Model

faurecia

Influence Diagram

Challenges

- Resilience to cyclic automotive context
- Reinforce attractiveness of Normandy countryside
- Competition through costs: cost target strategy

Initiatives

- Develop a local robust ecosystem which places the company at the center of a partnership network
- Create an internal school about new professions, methods and management
- Competitiveness through lean and digital

Ex. of Functions

- Setup of an exchange network between local industries, on regional topics and issues
- Collaboration with OEMs through the ARIA network
- Work together with Prod'eo (group of local startups) to meet challenges related to digital uses for production
- In-house trainings program leading to professional qualifications
- Engineering school branch (ENSI Caen) inside the plant in collaboration with R&D
- IOT & big data software to compare in real time the theoretical operations of hydraulic presses with the actual operations
- Implication of political sciences school for a study about socioeconomic impact of digital in the enterprise

Results

- Open to external environment. Anticipate changes
- Ramp-up skills inside the local ecosystem
- Solution marketed by startups, fostering the ecosystem growth
- Agile network of local experts competitive on digital innovations
- Valorization of collaborators. Improve their skills
- Better attractiveness thanks to local high-tech activity
- Micrometer precision reached on press-forming process
- Machine availability
- Global pilot project to be deployed in 250 sites

Illustrative videos

1

1

Message from the transformation Leader

Olivier Zanusso
Plant GM
olivier.zanusso@faurecia.com

« 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

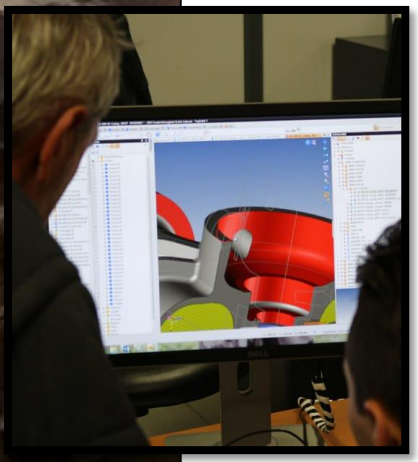
FONDERIES DE SOUGLAND®

Context

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.



Capitalize

Client

History

Simulation

Innovation

Know-how

R & D

Business Model

FONDERIES DE SOUGLAND

Influence Diagram

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

Initiatives

- Recover data from different step in the process with IOT sensors
- 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

Illustrative videos

1

Ex. of Functions

- Measure and analyze temperatures and cycle time to optimize and supervise operations
- 1 Study alloys' structure with scanning electron microscope
- Mechanical tests
- 1 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

Results

- Mastery of more than 300 alloys answers every client issue.
- 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,)

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

Context

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. Lhe platform has also helped to improve the Group's sales performance and increase the level of customer service to the customers.

Value
Knowledge
Time saving
Lifecycle
Excellence
Organization
Simplify
Dematerialize
Transform
Accelerate
Centralize

Influence Diagram

Challenges

Global market highly competitive: Need to reinvent themselves permanently

Fragmented market thousands of references, many technologies and over 60k clients: Requires a lot of information and skills

Data Management with paper is time-consuming and create errors : slow down innovation

Initiatives

Develop services offer

Creation of an "Innovation and Technology Center" composed of departments in charge of product lifecycle **and decision makers** (marketing, strategy, R&D, technical support)

Digital platform for support and product lifecycle management Accessible to the entire group (clients, commercial teams, headquarter, production sites..) with differentiated access rights

Illustrative videos

1

Ex. of Functions

Equipment instrumentation to allow tele maintenance

Understanding usage of equipment by customer

Offer to key accounts customized solutions from a dedicated R&D team

1 Online shop for spare parts with distributors

Support service resources centralized

1 Digitalize and consolidate all the documents and medias associated with products before-sales and after-sales (software, manuals, leaflet, video tutorials, 3D animation,)

Results

Reactivity during downtime: increase machine availability during production

Nourish marketing strategy (offer speech, and positioning)

Differentiate client on its market. Value co-creation

Business growth

Simplify communication and procedures Uniform support

Free time for employee who make more commercial activities

Clients master their equipments (reactivity and autonomy during breakdown)

Commercial teams master the products,, fine-tune their speech and improve their performance

Message from the transformation Leader

Sabri MOURAD
Innovation Director
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« 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»

Emblematic lesson

Overall project of complete modernization, and digitization of product lifecycle that lead to a very strong organizational transformation inside the Group

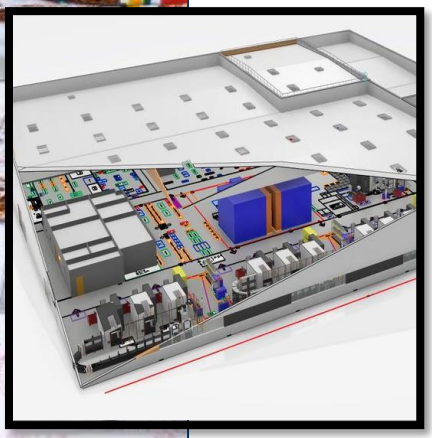
LATÉCOÈRE

Context

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

Labeled project

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. Latecoere 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.



Simulation

Added value

Reactivity

Digital twin

Supervision

Make or Buy

Digitization

Automated

LATÉCOÈRE

Influence Diagram

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

Illustrative videos

(Not available at publishing time)

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

Simulate the production line and its flows: virtual pre-production

The digital twin updates itself with KPIs to confront forecast to real production

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

Real preproduction are faster and safer: cost and time saving

Reactivity: fast decision making tools to identify and correct production drifts

Message from the transformation Leader

Serge BERANGER
Innovation Director
serge.berenger@latecoere.fr

« 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»

Emblematic lesson

100% virtualization of the design and of the execution system in order to optimize a new, 100% automated factory, which is targeted at relocating large series

Saunier Duval

Context

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.

Labeled project

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.

Comitment
Protection
Agility
Accompagny
Human
Involve
Traceability
IOT

Influence Diagram

Saunier Duval

Challenges

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

Initiatives

- 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

Ex. of Functions

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

Results

- 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

Illustrative videos

1

2

Message from the transformation Leader

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»

Emblematic lesson

Quality, traceability, flexibility and ergonomy thanks to deployment of IOT.

SAVRÉSO
Des professionnels à vos côtés

OptimData

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.

Connectivity
Training
Artificial intelligence
Distinction
IOT
Uses
Performances

Influence Diagram

Challenges

- Commitment on equipment availability
- Global competition: price erosion
- Proper product usage identified as a key business model lever
- Wrong use of AGV puts subcontractor profitability at risks: tires & batteries wear

Initiatives

- Switch from time based payment to use-base payment (AGV hauling time)
- AGV instrumentation with IOT sensors (GPS, accelerometer, battery state, hauling sensor…) Algorithms to detect patterns of use
- Creation of a community to gather users and maintenance technicians. The AGV itself posts articles in the blog as if they were human

Illustrative videos

1

Ex. of Functions

- Solution cost established on the basis of equipment performance
- Subcontractor optimizes the fleet according to market demand and vehicle availability (and their wear
- Offer predictive maintenances for the vehicles
- Recommendations to reorganize client's plant: Optimize path of AGV
- Coach on AGV use (charging cycle, correct hauling, avoid sudden brakes linked to operator passing by)
- Suggest trainings if incident are recurring to master the use of AGV

1

1

Results

- Client is more attentive to correct usage of the vehicles
- Increase subcontractor's profitability
- Machine availability increase
- Maximize AGV and consumable lifespan : cost saving
- Less frequent breakdowns, shorter travel time: customers' costs decrease
- Secure client's loyalty
- Business growth

Message from the transformation Leader

Alexis LAMY
SAVRéso Engineer
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Laurent COUILLARD
OptimData CEO
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« The important thing when running such a network is to unite the community around a common goal towards performance. To achieve this result, we must federate around the equipment use, through coaching and awareness »

Emblematic lesson

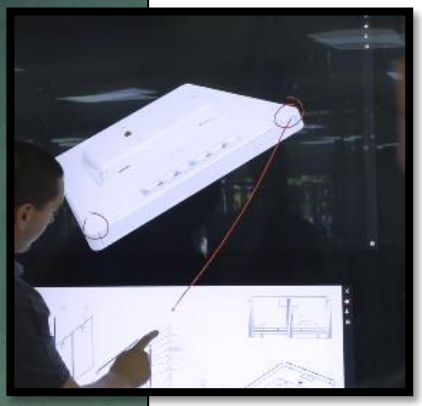
The equipment are seen as actors of a social network so that the operators take care of it, thus allowing the emergence of New Economy business models (sharing economy)

Context

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.

Labeled project

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.



Skills
Self-Training
Simulation
Business Model
Simpleness
Modularity
Virtual
Flexibility

Influence Diagram

Challenges

Produce close to where they deliver: Make production line replicable overseas

Strong and fragmented demand (ramp-up and flexibilty)

Temp workforce brought by seasonal offer

Initiatives

Divide production line in reconfigurable modules (using carts)

Digital twin of the line

Guide assembly with augmented reality

Illustrative videos

1

2

Ex. of Functions

1

Plug & play modules (electricity, ethernet):

Each module can adapt itself to manufacture a every references

Virtually study production line's ergonomics

Simulate production scenarios

2

2

Station filmed by a camera and displayed in real time on a screen in front of operator. Assembly instructions are added to image with augmented reality

Results

A new line can be installed in a week. New business model to sell licensed factory overseas

Space saving in production

Reduce harsh working conditions by 70%

Predict the unexpected. Stress linked to crisis is reduced

Production line is configurable according to daily demand

Production adaptable and efficient (x5)

Training time lowered by 80%
Possibility of a self-training on new jobs, new products.

Cycle time reduction

Message from the transformation Leader

Raphaël BAILLOT
R.D.I. Director
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« 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.»

Emblematic lesson

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

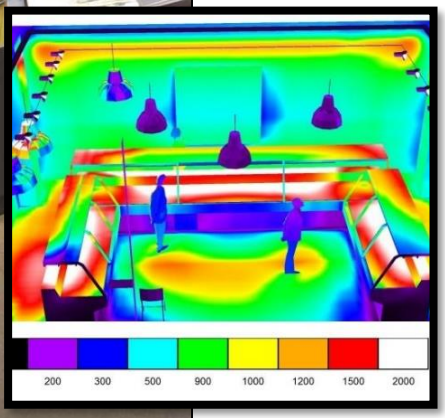
VELUM
ECLAIRAGE PROFESSIONNEL

Context

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

Labeled project

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



Client
Experience
Flexbility
Virtual
Differentiation
Listen
Sharing
Monitor

Influence Diagram

Challenges

- Differentiate offer
- Competitive market: Requires competitive advantages to face best-costs regions
- Save time and costs
- Fragmented market +10 000 refs/line

Initiatives

- 3D modeling of products and customer's premisses
- Insourcing: Creation of an automated powder coating line (lamp painting)
- ERP monitoring production according to customer needs

Illustrative videos

1

Ex. of Functions

- Client customize his lamps online with the support of an expert (rendering and type of light)
- Client simulate rendering of the solution in real condition, then confirm the order
- Manufacturing order of are pushed to ERP in real time from online client orders
- Powder coating equipment is shared with local industry
- Manufacturing orders control a customized packaging machine to improve customer service
- The full production process is digitized

1

1

Results

- Prototyping costs reduced
- Validation stage for needs accelerated
- Commercial advantage: customer can see the result and adapt
- Customized offer: high value creation
- Guarantee the supply stocks (no shortage)
- Investment better depreciated in a New Economy appraoch
- Automated, customized and on-demand production
- No end-product stocks

Message from the transformation Leader

Anne VETTER-TIFRIT
CEO
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« 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. »

Emblematic lesson

Competitiveness by giving power to digital, serving customer value, fluidity of production and flexibility

drive less **do more**

Context

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

Labeled project

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.

New Economy

Customizable

Modularity

Open innovation

Ecosystem

Decentralize

Disruption

drive less do more

Influence Diagram

Challenges

Opportunity for several niche markets (specialized vehicles)

Will to offer new disruptive economic model: manual automotive assembly with introduction of a new business model and a new value chain

User experience identified as a business lever

Initiatives

Create a digital marketplace

New industrial model: «vehicle-as-a-platform»

1

Modularity and model simplicity: 580 part vs 6 000 for standard vehicles

Illustrative videos

1

2

Ex. of Functions

Interconnect customers, industrial providers and local service workshops

2

Manuel assembly « lego-like » vehicles. Repairing are done in small local workshops « free garage » (decentralized model)

Mobility Development Kits (MDKs): toolbox for manufacturing and maintenance, and trainings

Mutualize 95% of the parts

2

Co-creation process for vehicle with the targeted users: online customization and evolution throughout vehicle's lifecycle

Results

Construction of an ecosystem of local industries: knowledge sharing, economic opportunities

Minimize the investment needed in heavy equipment, in line with New Economy

Fast assembly time (27 man x hours): Compete with OEM

Maintenance is made easier: optimize costs

Spare part stocks is reduced

Savings in customization costs

Interactive and customized client experience

Message from the transformation Leader

Simon MENCARELLI
CEO
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«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.

Analyze, methodology credit : DASSAULT SYSTEMES