The Industry of the Future Alliance (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.

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.

I would especially to thank François Bichet (TECH IN France - Dassault Systèmes) and Yannick Leprêtre (Symop - Fives) of their commitment within The Industry of the Future Alliance, as pilots of the working group ‘Showcase Industry of the Future’. Their involvement, through their analyzes and the methodology put in place, allows then to light these inspiring French industrials.

This edition captures this alchemy on a sample of 13 of the 35 showcases labeled in 2016-2017, it highlights the French industrial competitiveness within a global context.

Let’s continue together this great industrial adventure!
Elements that require and trigger the transformation.
Solution to the challenges, such as technological, business or organizational transformations and innovations.
Concrete examples of capabilities to support the initiatives in the context of the company.
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 invariants 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  
Adapt production to fragmented market and offer  
Product and service traceability  
Agility and ability to transform, as a competitive advantage  
Production as closely as possible to consumption  
Availability guaranteed of critical assets  
Elimination of non-added-value operations  
Usages modeling and monitoring for business model profitability  
Customer experience and performance as a business lever  
Expérience et performance client comme levier de business  
Reactivity of value chain  
Company attractiveness to gather key competences  
Creation of opportunities through business model disruption  
Differentiation of the offer

INDEX OF REVIEWED INITIATIVES

Internet of Things  
MES, ERP, Real time monitoring  
Augmented reality  
Virtual reality  
Process and product modularity  
Modification of business model or value chain  
Organizational innovation  
Product and resource lifecycle management  
Digital collaborative platform for design and execution  
Cloud-based services  
Local industrial network development
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Flexible production adapting to demand
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Quality (measures, decrease errors...)
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Health, comfort at work (musculoskeletal injury, cognitive load,...)
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Man in the center, as an entrepreneur (formation, skills, etc.)
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Productivity by takt time reduction
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Compact production (space saving)
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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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**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.

**EMBLEMATIC LESSON**

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

**MESSAGE FROM THE TRANSFORMATION LEADER**

« 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
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.

**Emblematic Lesson**

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

**Message from the Transformation Leader**

“Human benefits are a clear sense of closeness, and satisfaction from the team.”

Jérôme MINIER, BIM & Innovation BCM branch
j.minier@bouygues-construction.com

Marc PREMPAIN, Co-Founder Viibe
marc@viibe.com

**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

- **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

**Results**

- Solution at best-cost, fit for purpose and quickly implemented
- Recruitment plan of 19 people in Viibe
- Deep knowledge on tower cranes use, design closer to customers’ needs
- Intervention traceability Root causes analysis
- Autotomize and valorize the operators Skill improvement
- Suppress useless trips inutiles (ROI positive from 2 interventions avoided)
- -20% repair costs
- Increase solving rate per call. Reduce solving time

**Illustrative Video**

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

**CONTEXT**

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.

**LABELLED PROJECT**

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

**EMBLEMATIC LESSON**

« 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. ».

Xavier FALAISE, Project Manager
xavier@dagoma.fr

**MESSAGE FROM THE TRANSFORMATION LEADER**

**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**
  - 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
  - Production: 50 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

**3D Printing**

Open Innovation
Uses
Training
Breakthrough

**Costs**

**Ease of use**

**Community**

**Illustrative videos**

More information
**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.

**LABELLED 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.

**EMBLEMATIC LESSON**

Creation of an open regional network of partners. Competitiveness through continuous improvement and digital solutions.

**MESSAGE FROM THE TRANSFORMATION LEADER**

« The ‘Industry of the 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 ».

Olivier ZANUSSO, Plant GM
olivier.zanusso@faurecia.com

More information
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.

**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.

**MESSAGE FROM THE TRANSFORMATION LEADER**

« 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. »

Yves NOIROT, General Manager
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**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

**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 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)

**INFLUENCE DIAGRAM**

- Simulation
- Client
- History
- R & D
- Innovation
- Business Model
- Capitalize
- Know-how

**More information**

- Illustrative video
**CONTEXT**

Gravotech is a medium-sized company with 920 employees, headquartered in Lyon, with 3 production sites and 85% of its sales turnover in exports. It is a 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 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.

**EMBLEMATIC LESSON**

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

**MESSAGE FROM THE TRANSFORMATION LEADER**

“Our Support Center platform is at the center of our Showcase for Industry of the Future. 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. »

Sabri MOURAD, Innovation Director
sabri.mourad@gravotech.com

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**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

- **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)
  - Data Management with paper: Time-consuming and create errors; slow down innovation
  - Digital platform: for support and product lifecycle management: Accessible to the entire group (clients, commercial teams, headquarter, production sites), with differentiated access rights

- **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
  - Online shop for spare parts with distributors

- **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)

- **More information**

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**More information**
**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.

**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.

**MESSAGE FROM THE TRANSFORMATION LEADER**

« 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. »

_Serge BERENGER, Innovation Director_  
serge.berenger@latecoere.fr

**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

**Ex. of Functions**

- 100% automated production (robots in production line, cobots in finishing process, and AGV for logistics)
- No paper, everything is digitized
- Simulate 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. Employees 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

**Added value**

**Supervision**

**Digital twin**

**Make or Buy**

**Digitalization**

**Simulation**

More information

Illustrative videos
**CONTEXT**

Magafor is recognized as one of the world’s leading manufacturers of centering drills and precision cutting tools, with more than 1,200 references. To this success, it has to associate its 160 employees who, for more than 80 years, put their know-how and their creativity every day at the service of the customers.

**LABELED PROJECT**

Magafor has been labeled for its investment in its production site of Bussy-Saint-Georges, a leading technological showcase, thanks to new production techniques, automation and robotization to allow the production of large series and the effects scale; all while relying on a network of national distributors and international to best meet the customer’s needs wherever they are. Linked to this investment and the construction of the new site of production, Magafor trains its teams and recruits new talent.

**EMBLEMATIC LESSON**

Family group, become world leader, thanks to its strategy of commercialization of niche cutting tools, manufactured in France and sold in 60 countries.

**MESSAGE FROM THE TRANSFORMATION LEADER**

« I am proud that Magafor is part of the French industrial fabric. This distinction is the reward of a whole team contributes to the revitalization of the image of the industry. Our ability to innovate helps to be world leader on our market. »

Daniel MATTHEY, General Manager
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**Results**

This brings the necessary effect of scale (tool sold 2.5 € manufactured by a machine costing 1 Million €)

Example: manufacturing in Paris for the Chinese market

This coverage gives access to multiple specific market demands, which are then covered by prototyping and specific responses

**Influence Diagram**

- Challenges
  - Competition of countries with low production costs
  - Cost competitiveness in large volumes
- Initiatives
  - Automation
  - Large economic volumes
  - By capturing the world markets through a network of 1,000 distributors
  - Upto 5 years in stock
  - In white mark (62%) to satisfy distributors
  - Extensive coverage of the catalog with 21,000 references, ex., in forefronted 1,200 references versus 100 for competitors
  - Process of technical consolidation of general demands
  - Permanent creation of new low cost niche products to avoid to be copied (98% of products)
  - Co-development of special machinery (10% of the turnover invested)
  - Up to 5 years in stock
  - In white mark (62%) to satisfy distributors
  - Extensive coverage of the catalog with 21,000 references, ex., in forefronted 1,200 references versus 100 for competitors
  - Creation of new materials between high speed steel and carbide to meet the specific needs of the market

**Ex. of Functions**

- White label
- Development of standards
- Global market
- Catalogue
- Scale effect

**Relocation of production**

Customer service

- White label

Specific demands

- Catalogue

More information
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.

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

**Message from the transformation leader**
« Thanks to new technology introduction, we now adapt operations to the Human and not the other way around. »

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

**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 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

**Influence diagram**
- Accompany
- Protection
- Agility
- Commitment
- Human
- Traceability
- Involve
- IOT

**Illustrative videos**
**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.

**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).

**MESSAGE FROM THE TRANSFORMATION LEADER**

« 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. »

Alexis LAMY, SAVRéso Engineer
alexis.lamy@sav-reso.com

Laurent COUILLARD, OptimData CEO
laurent.couillard@optimdata.eu

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**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 risk: tires & batteries wear

**Initiatives**

- Switch from time based payment to use-based 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

**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

**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

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**IOT**

- Connectivity
- Artificial intelligence

**Uses**

- Performance

**Distinction**

- Training

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More information

Illustrative video
**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.

**LABELLED 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 allow each station to adapt itself to the type of product manufactured. Thanks to this project Sunna Design has increased its production capacity tenfold.

**EMBLEMATIC LESSON**

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

**MESSAGE FROM THE TRANSFORMATION LEADER**

“Very innovative is the fact that 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.”

Raphaël BAÏLLOT, R.D.I. Director  
raphael@sunna-design.fr

**Simplicity**

**Virtual**

**Modularité**

**Compétences**

**Business Model**

**Flexibility**

**INFLUENCE DIAGRAM**

- **Challenges**
  - Producing close to where they deliver: make production line replicable overseas
  - Strong and fragmented demand (ramp-up and flexibility)
  - Temp workforce brought by seasonal offer

- **Initiatives**
  - Divide production line in reconfigurable modules (using carts)
  - twin of the line
  - Guide assembly with augmented reality

- **Ex. of Functions**
  - Plug & play modules (electricity, ethernet)
  - Each module can adapt itself to manufacture any reference
  - Virtually study production line’s ergonomics
  - Simulate production scenarios
  - Station filmed by a camera and displayed in real time on a screen in front of operator. Assembly instructions are added to images 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

**More information**

- Illustrative videos
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.

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

MESSAGE FROM THE TRANSFORMATION LEADER
“...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. ”

Anne VETTER-TIFRIT, CEO
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MORE INFORMATION
**CONTEXT**

Created in March 2016, XYT is a start-up of the new economy located in Bretegny-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.

**EMBLEMATIC LESSON**

Factory inside garages thanks to disruptive modularity.

**MESSAGE FROM THE TRANSFORMATION LEADER**

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

Simon MENCARELLI, CEO
s@xyt.fr

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

**Ex. of Functions**

- Interconnect customers, industrial providers and local service workshops
- Manually assembled « lego-like » vehicles. Repairs are done in small local workshops (free garage) (decentralized model)
- Mobility Development Kits (MDK) toolbox for manufacturing and maintenance, and trainings
- Mutualize 95% of the parts
- 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

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**More information**

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