

# The BRIDGE NEWS

Newsletter  
of the **SCALIAN Group**

Number 1 - **Spring 2017**



**PARIS AIR  
SHOW\_2017  
SPECIAL ISSUE**

## EDITORIAL Feel the Future!

### Contents

Industry 4.0	2
Advanced Aerospace Systems	5
Upscale your future	6

(1) The Internet of Factories: convergence of the digital transformation of industrial companies that have merged their IoT initiatives, Data Analytics projects and cloud-based Integration Platform as a Service (IPaaS) activities into their industrial ecosystem (with both their supply chains and customers) to respond to the challenges of customising their products by enhancing the flexibility of the means of production.

(2) Chatbot: Virtual agent capable of conversing with a user or acting as a real personal or specialised assistant in specific fields, by reproducing scenarios of questions/answers recorded in a knowledge base.

(3) Sambot: Neologism created in 2017, a chatbot system capable of using Artificial Intelligence to learn how to manage situations and adapt to the people it assists. An advanced version of the Dogbot, which refers to digital «seeing-eye» dogs for the blind.

(4) Blockchain: Distributed, transparent and secure database, operating without any central controlling body. This system, much-hyped and experimental in 2017, has now become a reality in every sector that has completed its digital transformation and applied the «as a Service» (aaS) concept to its business model.

**Who would ever have thought that the promises of innovation and digital transformation, gambles taken in 2017 and well before that, would be presented today, for the most part, as «success stories».**

Factories are working flat out, offering greater flexibility and more options for customisation—the effects of the 4th industrial revolution are well and truly here.

The **extended Supply Chain** constitutes a real community, where **secure data sharing** and **predictive algorithms** optimise the cycles of supply and thus of production. The network of interconnected manufacturing plants, whether for special articles or mass production, forms a real **Internet of factories**<sup>(1)</sup> with infinite possibilities.

**Human beings**, the key link in any organisation, are now **digitally augmented**, with **cobots**, **chatbots**<sup>(2)</sup> and **sambots**<sup>(3)</sup>, to help with decision-making and enhance operations with greater flexibility, mobility and efficiency. Digital technologies and natural or «smart» interactions have simplified activities that were previously complex and onerous. Protective systems that have been digitised and connected, which were previously seen as a threat, have simplified tasks and made them more secure.

Warehouses are organised and their inventories kept up to date in real time by a fleet of **collaborative drones**, sensitive sites are monitored by independent **autonomous devices** that have reduced the risk of intrusion, and **driverless vehicles operating** in designated areas shared with humans have increased efficiency in the transport of goods and people while improving road safety. Upcoming developments in the way

machines teach themselves will enable them to assimilate new situations and environments in real time.

**Big data** has enabled unprecedented opportunities for analysis to emerge, and new uses for the results, not to mention new offers based on **new business models**.

The multiplication of **blockchains**<sup>(4)</sup> has thoroughly shaken up an order of things that had been established for decades, by placing the role of trusted third parties, which was previously highly centralised, in the hands of groups of players who collaborate on the basis of **workflows of data and automated and secure decisions**.

All this was made possible by the **disruptive initiatives of our teams** who, aware of the limitations of the methods and technologies of the time, decided to be proactive: they tried **Test & Learn** and analysed the results, letting everyone have their say, not minding if there were failures, and unleashing the teams' collective creativity.

**In 2017, SCALIAN's teams are using their know-how concerning digital technologies and operations performance to imagine and invent the future industries of our customers, these smart, ultra-connected future environments that will have become realities by 2019, 2021, 2023, who knows when? Largely thanks to innovative and complementary input from the Gen X and Gen Y members of our teams.**



Yvan Chabanne  
President

# INDUSTRY 4.0

## Human enhancement: promising possibilities

The prospect of a digital bubble for human operators.

Industrial manufacturing processes are rapidly developing in complexity, but are lacking a mobile solution tailored to humans working on the ground. Humans, however, are at the heart of the manufacturing process and their levels of skill and requirements rise in tandem with the increasing complexity of their tasks (production, assembly, maintenance, training, etc.). The human environment is being digitized and humans must also learn to work with digital solutions that are tailored to their trades.

**Adopting a “baby steps” approach, beginning by prototyping usage, enables development towards industrialised solutions that are viable for Augmented Operators, where end users remain at the heart of the decision-making process regarding technologies that they can accept.**

Scalian has launched mature solutions for specific uses:

- Guidance and navigation in a complex or unknown environment,
- Security control and hands-free documentation access,
- Remote expert support,
- Reinforced security with connected PPEs.

With an ecosystem of smart wearable objects and NFC devices, we are experiencing the growth of a “digital bubble” for human operators. This “bubble” focuses primarily on security and skills enhancement of the operator who is connected to an information system, ultimately enhancing industrial performance.

### « IOW BUBBLE » OF THE



<sup>1</sup>IOW – Internet Of Wearable.

## Agile Manufacturing, the transfer of Agile software production methods to the manufacturing industry

«Leagile» - a contraction of Lean and Agile - is a combination of two industrial approaches in the collaborative production field.

When an industrial sector is faced with changes that are impossible to foresee, tools and techniques can be used to enhance its agility.

Scalian implements «agile» methods - originally used in software development - by transferring them to the production of material goods: a genuine experiment in co-creation.

Agile Manufacturing falls within the field of collaborative production. It incorporates these tools in response to the rapid changes in technology, customer demand and more generally dynamic market fluctuations. Agile production is sometimes seen as the next step after Lean Manufacturing. The term “leagile” production has even been used in reference to the combination of two industrial approaches. Project management is essentially conducted on a huge wall of post-its, known as Kanban. The Kanban board shows all of the tasks required for a project to run smoothly, from marketing to design and including production and financial management.

This approach facilitates the sharing of the product vision, taking a user-centred approach for a rapid response that is tailored to meet customer demand.



Kanban

# INDUSTRY 4.0

## Scalian eSMART: enhance your industrial performance!

Personal Assistant for Operational & Managers to bring Reactivity, Data Centralization & Anticipation for Strategic Decision Making

Scalian noticed from past projects and experiences a significant lack of Supply Chain visibility, standardization of reporting indicators and tools for Industrial Performance & Quality activities.

In this context, SCALIAN Equert has designed a web-based tool for Suppliers Performance, Production & Programme Managers up to Executive Management of large or small companies included in extended Supply Chain such as Airbus, ATR or Dassault ones.

Scalian eSMART is a solution that enhance your performance especially to choose, develop, monitor and survey your suppliers.

It helps you to improve your OTD/OQD during complex ramp-up or transfer of work. This tool permits to report from operational to top management main issues of your supply chain as a personal assistant. Base

“ is a solution that enhance your performance ”

on big data algorithms, it supports you on strategic decisions and actions plan management to anticipate and solve any failure before it becomes critical. It's a centralized web-based tool connected with your infor-

mation system and its components with a guaranty of information continuity and data reliability.

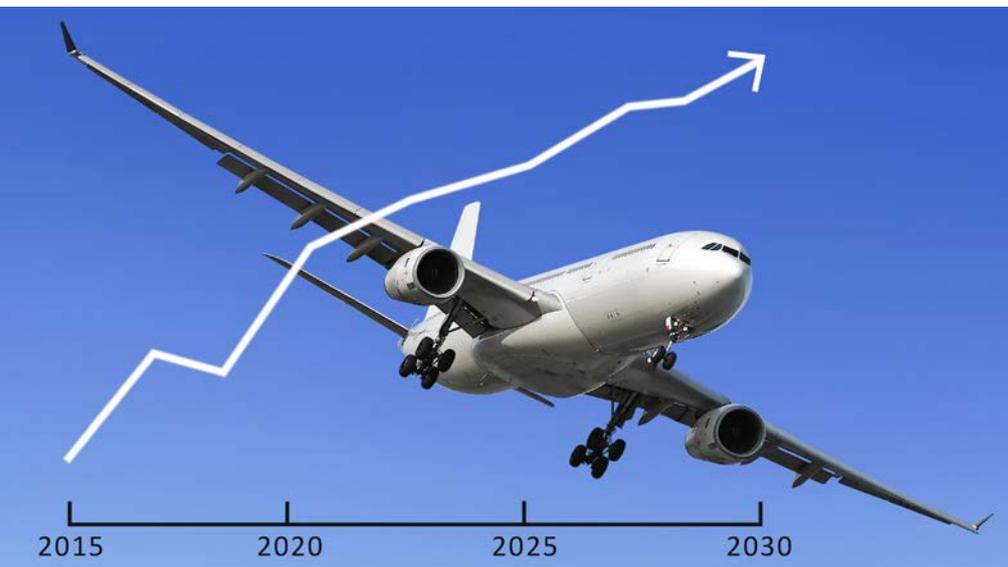
**Scalian eSMART main benefits are a direct efficiency on your activities through workload and lead time:**

- reduction by process optimization and digitalization,
- the ability to monitor more information through automatic real time dashboards
- and sensitization of the entire community within the company process.

With Scalian eSMART your time will be dedicated to actions management, anticipation and problem solving to ensure the best performance of your company.

## Ramp up and performance

How to secure your ramp-up phases.



One of the main challenges that the manufacturing industry faces is the ability to maintain and secure their level of performance and quality during ramp-up phases.

The major actors of the aeronautics industry require their suppliers to ramp up or ramp down within very short timeframes,

while ensuring performance levels are maintained.

One solution is to put in place a **structured methodology which, through a series of milestones, will secure the ramp-up phase and ultimately enable significant gains to be made in industrial perfor-**

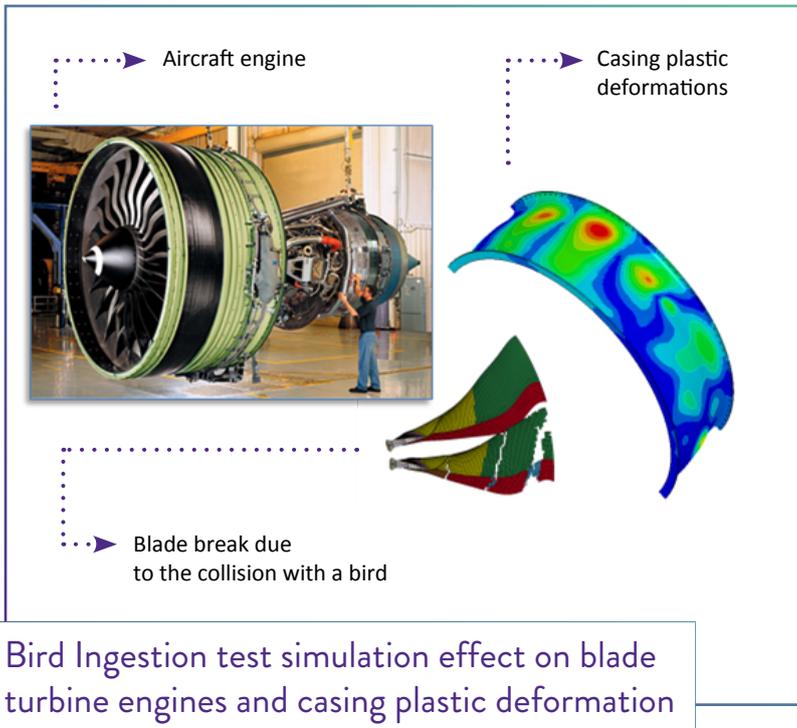
**mance.** This methodology can be applied to any type of structure, irrespective of size or sector.

If applied in combination with the supply chain management tools already in place, rolling out this work method imposes no constraints on manufacturers. Each milestone is associated with deliverables and key elements to be secured in the production process. This method, inspired by quality and supply chain standards such as APQP, Capacity Planning and Run@Rate, helps prevent the risks associated with the early stage of a project. The system can then undergo a “stress test” by gradually ramping up production in real conditions. These graduated tests precisely measure the stress induced on the system as a whole and the improvement in performance level.

**This methodology, developed by Scalian and supported by a computerized system, provides real-time access to the data necessary for ramp-up management.**

## Malicious acts and accidents: fast simulation of impact dynamics

Dynamic simulation to assist in structural design calculations and decision-making in acts of malice or accidents.



In an increasingly controlled regulatory context, and with the backdrop of a tense security situation, Scalian offers modelling and simulation solutions that can help manufacturers in the defence, aeronautics, energy and civil engineering industries by implementing proven methodologies to help them with industrial, infrastructure and civil engineering product design and maintenance.

**Scalian chose to specialise in creating 3D transient simulations and scenario studies for falling industrial objects, blast loads and impact analyses on the structure to help calculate the structural design of the industrial facilities or their environments.**

Scalian works with a team of experienced consultants who are fully competent in the fields of industrial standards and simulation tools, so clients are guaranteed state of the art products.

## Aerospace APQP: driving competitive advantage

The aeronautics industry is adapting automotive industry best practices to meet industry challenges.



The aeronautics industry is facing new manufacturing challenges due to constantly rising demand coming from clients with increasingly demanding expectations and extremely complex products from a supply chain undergoing a complete transformation.

At a time when competition and profitability drive the market, it is essential that aircraft manufacturers offer mature products for the market within short timeframes and that address customer needs as closely as possible.

To do this, in 2012 the aeronautics industry began using a tried and tested automotive industry standard, APQP (Advanced Product Quality Planning), drawing inspiration from its methodological framework and the tools necessary to help it reach maturity.

Aerospace APQP was thus created, and has since been standardised as EN 9145:2016.

In addition to the structuring of the development cycle that it offers, Aerospace APQP enables manufactures to take direct action to deal with product quality by reducing the process variability

and by anticipating risks and potential defects.

Since 2012, **Scalian has been assisting the aeronautics construction industry in the drafting and implementation of this new standard in a number of their programmes, thereby helping them reduce concessions by 30% and issues of non-compliance detected in production models by 40%.**



Directrice de la publication : Frédérique Mazars  
 Rédactrice en chef : Frédérique Mazars  
 Relations lecteurs : opinions, informations, abonnements : 05 61 00 79 79  
 thebridge@scalian.com  
 Scalian SAS : 417 l'occitane, BP 47506, 31670 Labège CEDEX  
 Tél. : 05 61 00 79 79 - scalian.com  
 Imprimerie : Alias Print

## How UAVs can avoid getting the S.A.C.!

Security, **A**utonomy and **C**ollaboration are three major challenges when seeking greater precision, more efficiency, higher frequency and improved profitability in operations using unmanned vehicles.

### Long-Eye, advanced automated UAV system

Cable providing both flying autonomy from 8 hours up to an infinite period (standard autonomy for drones is about 20 minutes) and a secure information link.



For years, market observers have been promising exponential growth in UAV performance, but something is still missing.

There is certainly no lack of ideas for their use, nor any shortage in the variety of machines available, from the most outrageous to those offering everyday, simple functions. There is also a plentiful supply of visionaries to produce them, each more impressive than the last. Once the 'wow' factor has worn off and innovation through experimentation has begun to wane, certain solutions lack the security, autonomy and collaboration needed for a positive ROI on operations.

■ **Security.** Like the Ancient Gauls and their fear of the sky falling on their heads, who today is happy to step outside and take

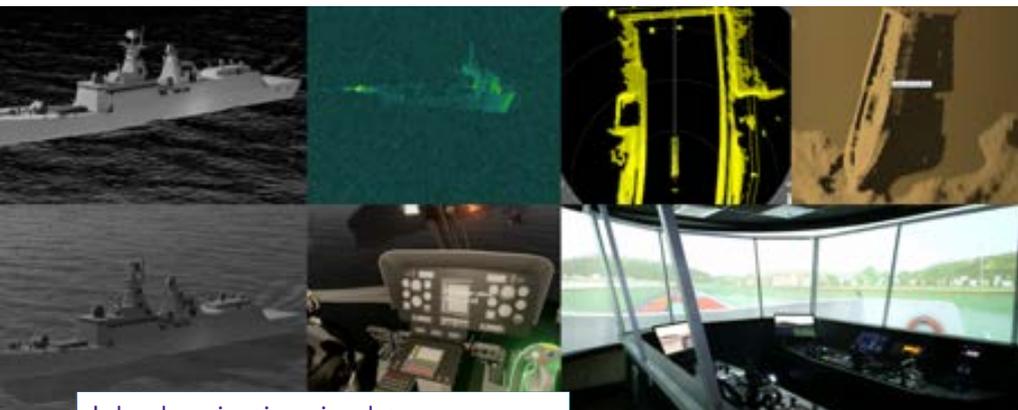
more risks than before, simply because drones are allowed to fly?

■ **Autonomy.** Why not let the drone decide in real time what it needs to do to handle its task, or avoid a problem? It is likely to have better information and be in a better position to take the right decision. **The future lies in smart, automated UAV systems.**

■ **Collaboration.** Everybody needs a helping hand from time to time. By uniting the strengths and competencies of different vehicles, specifically by cumulating unit operational capacities and combining detection capabilities, operators could offer more specialised, efficient and rapidly deployed operating functions than by building a custom-designed vehicle and system.

## Simulation: from system design to operator training

Simulation is now essential at every stage of a project: from project design to system development, system design support, communication training and practice.



Inland navigation simulator for pilot training and improvement

Simulation very quickly became a way to reduce the costs of actual tests. Physical representativeness of simulated synthetic data and the reduced calculation time

meant that digital simulation could be used as a method to produce additional data on top of the actual data used to evaluate system performance.

These two observations enabled Scalian to position itself as an essential stakeholder in the areas of rapid simulation of multispectral environments, notably using manycore processors.

The group now incorporates building blocks tailored to each professional sector in its comprehensive training simulators, thereby improving the representativeness of signals, images and indicators that the operator receives during an exercise.

Scalian helps its clients to develop, incorporate and operate simulation tools of physical to provide the best trade-off between calculation time and representativeness according to project requirements.

## The data team add a trophy to their mantle

The Big Data team recently took home an unexpected honour: the Predictive Analysis trophy at the Data Intelligence Awards. The DS Platform developed by Scalian allows users to gather, store and implement massive processing chains with just a few clicks of a mouse. This honour, awarded by industry peers, recognises Scalian's considerable data expertise and places it firmly among the few players able to offer competitive alternatives to existing big data solutions.

## Planestorming, a collective intelligence tool inspired by the power of metaphor

A fun and simple technique to facilitate the emergence of ideas and foster creativity.

To make efficiency and performance gains, it is always best to rely on the group.

**«Planestorming» is a form of brainstorming that is easy to implement and especially suited to groups of shy and even introverted people. The concept is to use paper planes, which adds a fun aspect to the workshop.**

The activity is centred on a daily theme, and teams «load up» their ideas and fly them to the participant of their choice. At each «layover», proposals are added or modified.

Participants have a «runway» which limits the number of ideas awaiting development.

The exercise is easier thanks to the cross-fertilization effect, where ideas merge and viewpoints converge.

More than simple group leaders, Scalian expert facilitators play an important role in the workshop preparation, in order to adjust the process by adding techniques that enable the ideas explored to be consolidated and prioritized, with group consensus.

## BIG DATA: AI and Blockchain, a winning duo to accelerate supply chain flow

The supply chain will benefit from the power of new generation applications built on the blockchain combined with artificial intelligence.

The blockchain and AI are both disruptive innovations that could potentially be key technologies for industry, particularly in terms of the supply chain. The following is an example of how they are used, illustrating their benefits in strengthening trust between suppliers and purchasers:

How do you guarantee a smooth trade flow while improving mutual trust between supply chain actors? The blockchain offers the possibility of permanently storing «smart contracts» that are automatically executed when specific conditions are in place. This possibility aligns the interests of the entire logistics chain and

accelerates transactions at critical product transition points in the flow (automatic customs declarations and receipts, for example), thereby stimulating mutual trust.

Today, AI is used to confirm to purchasers that procedures, norms and standards are respected, highlighting any irregularity almost instantly based on the available and irrefutable evidence recorded in the blockchain.

AI therefore helps identify irregularities in transactions stored in the blockchain, offering supply chain actors an unprecedented decision-support tool.

## Electronic Visual Management (eVM)

The indispensable digital dashboard for any Project Leader 3.



Project management requires performance monitoring and control together with optimized responsiveness in decision-making to reach targeted objectives. The project manager and project players must, at their respective levels, have access to project data that is clear, readable and simplified.

**A successfully-run project requires simple, fast and comprehensible access to data at all levels of participation, from operational actors to project manager.**

The digitization shift, in line with how we currently access information, enables the Visual Management project to change dimension and respond to new challenges in terms of project management, such as:

- Sharing information simultaneously at several geographic locations,
- Securing information access according to the project actor's profile,
- Adapting the level of communication to the project actor's profile (manager or operator),
- Grouping together information across various levels on a single graphic.

Scalian's Digital Visual Management using the eVM system allows for projects to be managed efficiently in terms of planning, cost and performance, to offer customers an innovative approach which can be tailor-made to suit each request.