

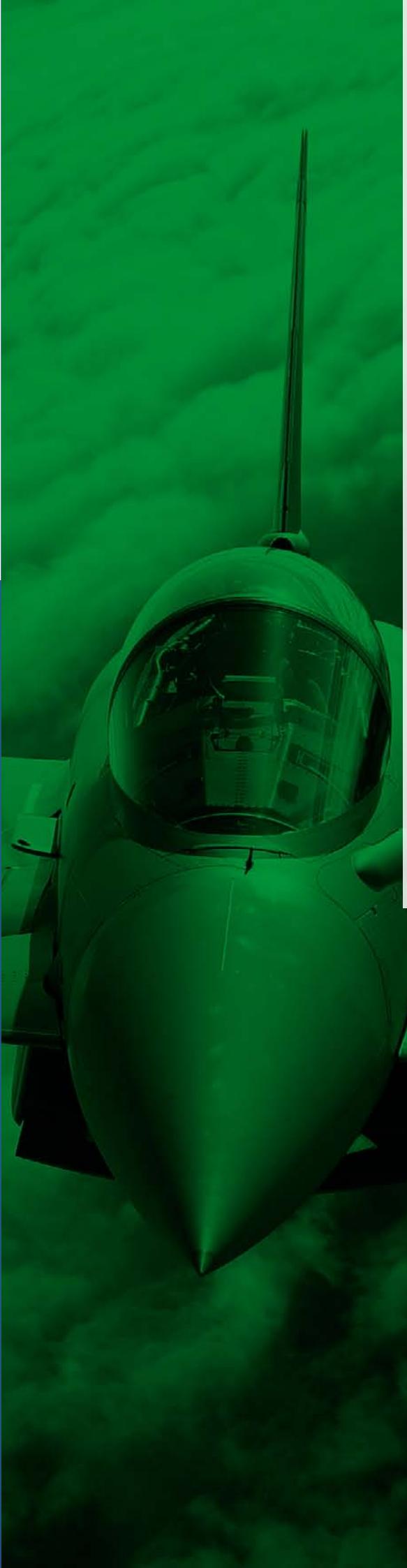
AIRBUS DEFENCE & SPACE

EPFL / LAA

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AIRBUS DEFENCE & SPACE

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Lean Product Development
DISCOVERY PROJECT
2015
BEST PRACTICES

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Executive Summary

Airbus Defence and Space is one of three companies within the Airbus Group. This case study aims to analyze the best lean management practices applied to product development within Military Aircraft, one of Airbus Defence and Space's four business lines.

In 2011, the company began to implement Lean Management with the support and involvement of senior management. To date, the company has focused on the implementation and use of the Hoshin Kanri, Value Stream Mapping and Visual Management tools so as to improve the engineering capability throughout the organization.

A lean approach unites all the functions that make up the Airbus Defence and Space structure and is based on three pillars, including leadership, environment and processes. In addition, from the beginning, the guidelines (road map), priorities and tools in use are defined in line with the lean strategy, especially the Value Stream Mapping, Practical Problem Solving and Go Look and See tools.

Lean practices are implemented wide along Airbus Defence & Space. In the Engineering branch of Military Aircraft business line, Visual Management is deployed in the whole structure, the teams are able to respond to and solve problems through the Practical Problem Solving tool, the Top Management establishes yearly objectives through Hoshin Kanri and more than 10 Breakthrough Improvement Projects are launched every year. In 2014, the implementation of Lean management in Military Aircraft Engineering achieved savings of more than €3 million.

The main challenges of the company are as follows:

- Taking advantage of the Senior Management commitment with Lean to engage the teams at every level and to empower cultural change.
- Achieving the Excellence in the team's performance by the daily application of complementary Quality & Lean methods and principles.
- Extending the Lean management to Airbus Defence & Space network, including all the stakeholder, suppliers and subcontractors.



1. Company Introduction

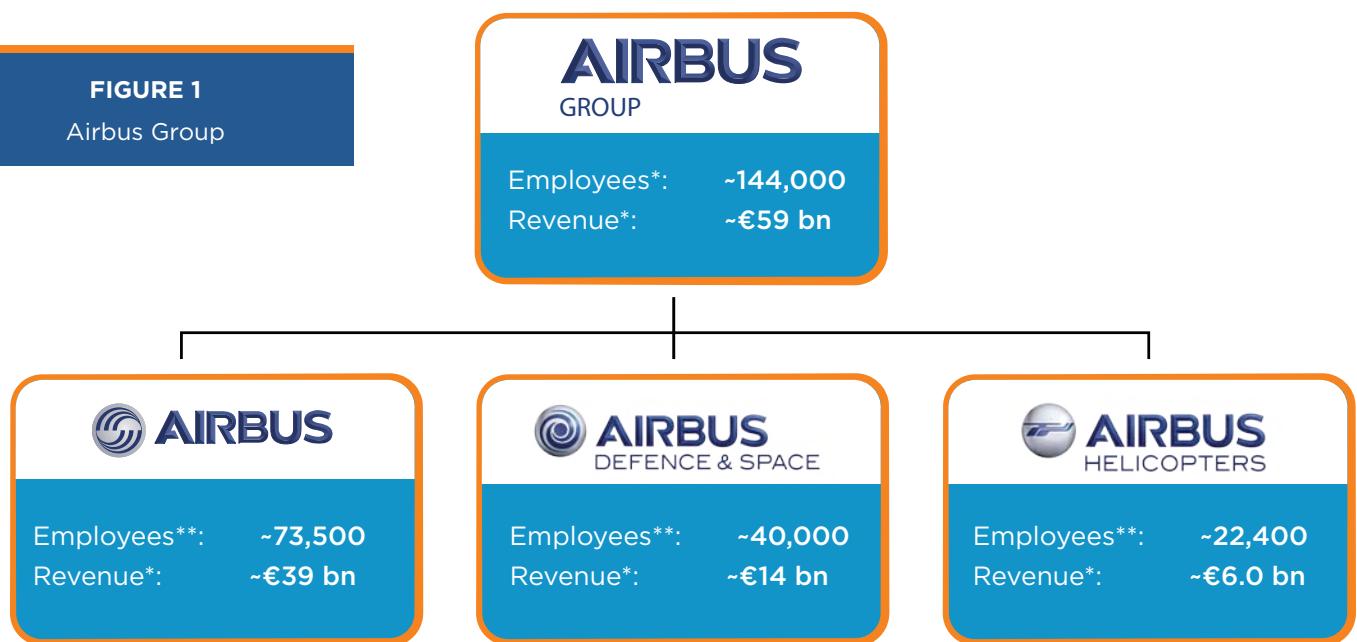
1.1. Airbus Group

Airbus Group creates cutting-edge technology and is a global pioneer in aeronautics, space and defense-related services. Combining a European past with global outreach, the diversity of the company's talent and technology drives innovation, integration and internationalization. These factors shape the company as it stands today, as well as its vision for the future, which includes helping the world confront the challenges it faces.

With a strong history of business in Europe, Airbus Group aims to lead the commercial aeronautics, defense and space markets. To do so, the company promotes innovation, globalization, services and value chain optimization, all of which aim toward improved profitability and performance.

The company contains three divisions: Airbus (for commercial products), Airbus Helicopters and Airbus Defence and Space.

FIGURE 1
Airbus Group



* In 2013

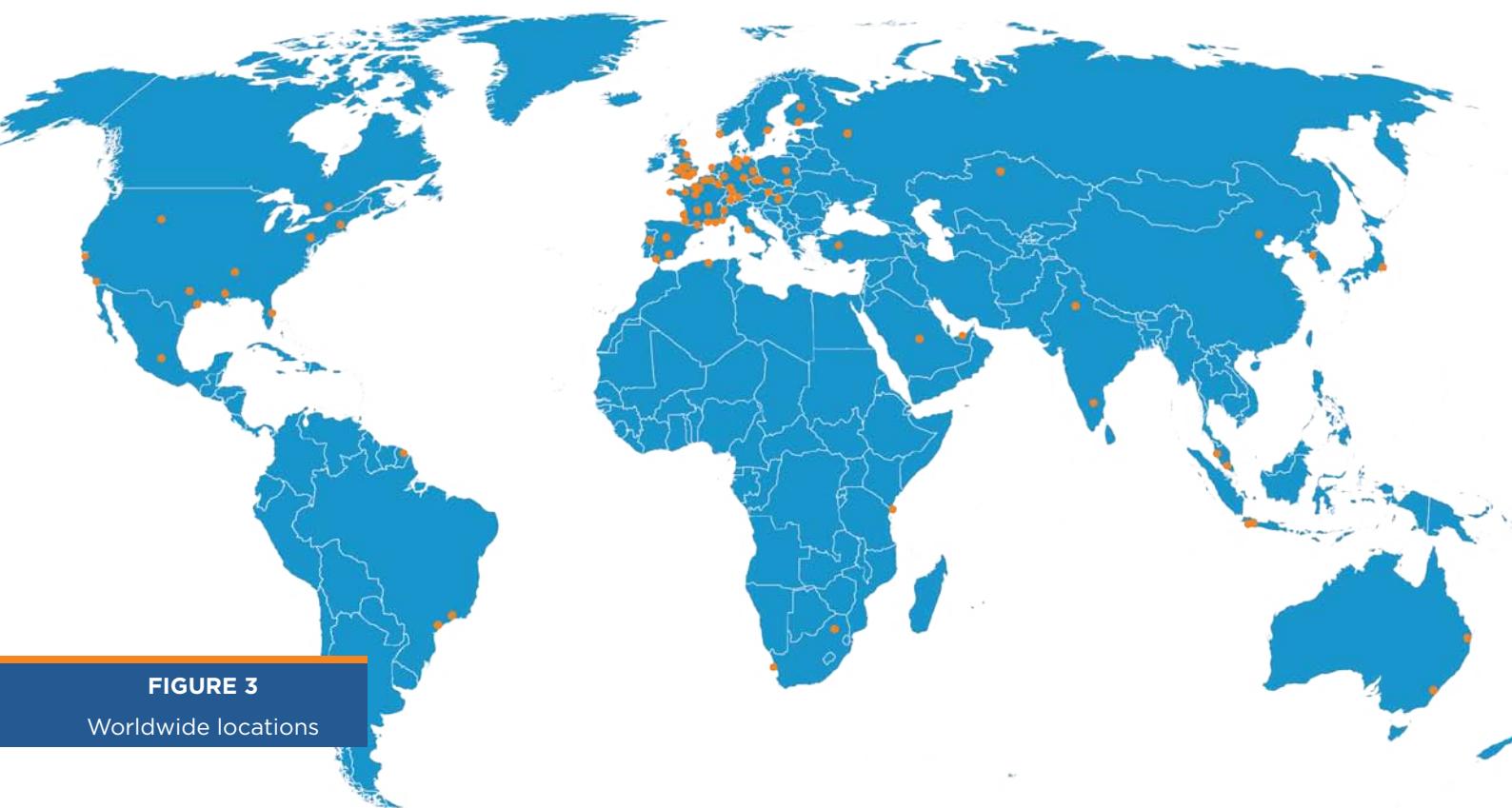
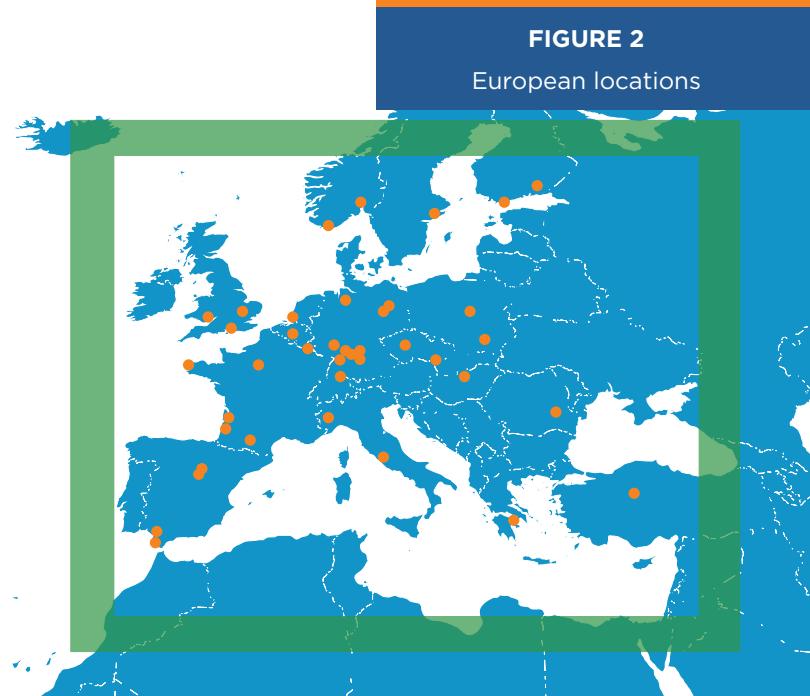
** Estimate for 2014

Following a ten-year period of substantial investment in the development of new aircraft, helicopters and other products, Airbus Group is currently focused on exploiting the potential these new product platforms represent for incremental innovation. At the same time, the company continues to invest in early-stage technologies -often working with research partners- to develop breakthroughs that will serve as building blocks for new products to be developed within the next decade. The Group invested €3.39 billion in self-financed research and development in 2014, a figure that equates to more than 5% of its revenue.

1.2. Airbus Defence & Space

Airbus Defence and Space was created in June 2014 as a result of the integration of Airbus Military, Cassidian and Astrium, all of which were previously part of the EADS group. This division has a presence in 18 European countries and in more than 30 countries worldwide.

Germany	Finland	Luxembourg	Slovakia
Backnang	Helsinki	Luxembourg	Bratislava
Bremen	Jyväskylä		
Friedrichshafen			
Lampoldshausen			
Manching			
Oberkochen			
Ottobrunn			
Potsdam			
Trauen			
Ulm			
Unterschleißheim			
Belgium	Greece	UK	Turkey
Brussels	Athens	Newport	Ankara
Spain	Hungary	Portsmouth	
Barajas	Budapest	Stevenage	
Cádiz			
Getafe			
Sevilla			
Tres Cantos			
Italy	Czech Republic		
Rome	Prague		
Turín			



In addition to maintaining its position as the most important European provider of space systems and related services, Airbus Defence and Space is a leader in the market for professional mobile radio communications and one of the world's leading manufacturers of military transport aircraft. Airbus Defence and Space is organized into four business lines, including Space Systems, CIS (Communications, Intelligence and Security), Electronics, and Military Aircraft.

FIGURE 4

Airbus Defence and Space
business lines

Within Airbus Defence and Space, this case study will focus on implementing lean strategies in the Military Aircraft business area.

MILITARY AIRCRAFT



A400M



Eurofighter



A330 MRTT

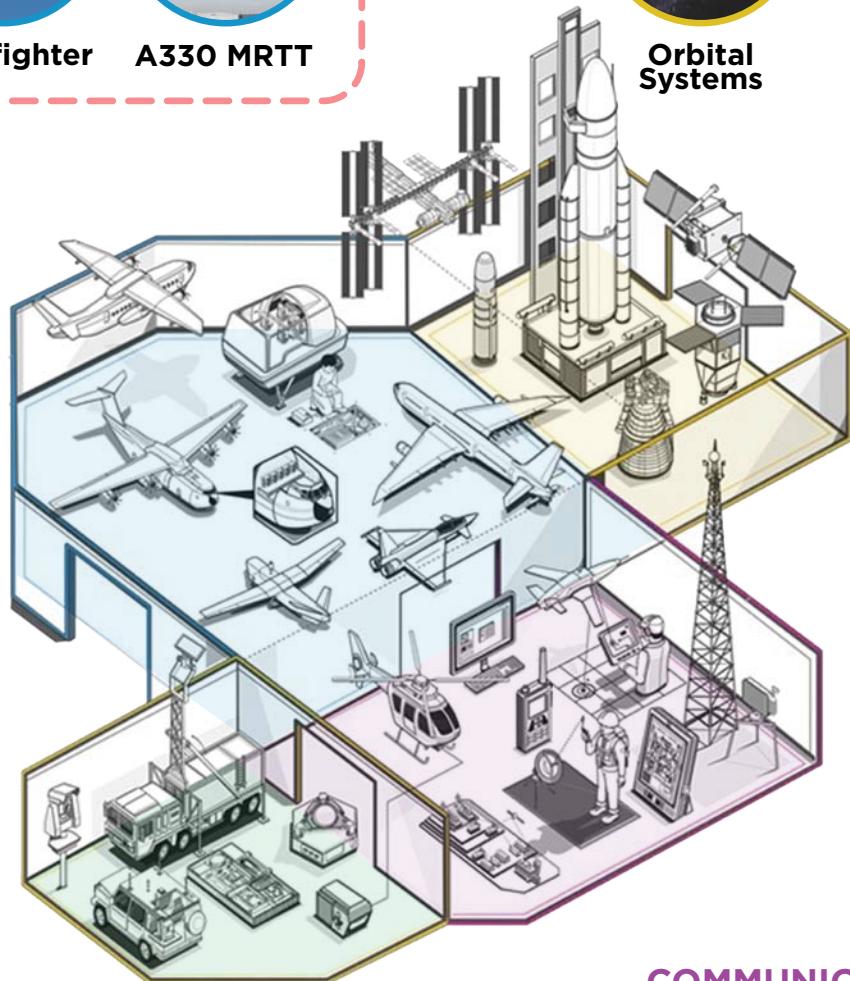
SPACE SYSTEMS



Orbital Systems



Ariane 5



ELECTRONICS



Radar



Optronics

COMMUNICATION, INTELLIGENCE & SECURITY



Tetra Network



Intelligence

1.3. Military Aircraft Business Line

Military Aircraft is a world leader in combat aircrafts, drones and next generation platforms operated by air forces to carry out tactical and strategic transport, intelligence, surveillance and reconnaissance (ISR), and aerial refueling missions.

Military Aircraft designs, develops, manufactures, delivers and maintains military manned and unmanned aircraft. With excellent products, Military Aircraft aims to meaningfully contribute to the maintenance of peace and security in the world.

Military Aircraft is the only manufacturer of military transport aircraft that develops, manufactures, markets and supports a complete group of freight aircraft able to transport between 3 and 45 tons of cargo.

These planes are also used in many civil and humanitarian missions for the benefit of society, such as maritime surveillance missions and humanitarian assistance when natural disasters occur.

FIGURE 5

Main products overview

A400M

- 3 aircraft in 1: strategic and tactical, transport and tanker
- Delivers what is needed, where it is needed
- Largest hold cross-section, with tactical short and soft field, capability



C295 / CN235

- Efficient workhorses
- Robust and affordable
- Easy to maintain and operate



Eurofighter

- Multi/Swing role flexibility
- Safe, reliable, sustainable
- Effective, proven, trusted



A330 MRTT

- Multi-role solution: Tanker/cargo/pax without reconfiguration
- Efficiency and effectiveness



UAS

- All in one: ground segment, training lease, operate and maintain
- Mini, Tactical, MALE and HALE UAS



Services

- Full In Services Support
- Logistics Support
- Training Services
- Fleet Management Services
- Network of service centers

CN235 MPA & C295 ISR

- Multi-role aircraft
- Ideal for Surveillance Missions
- ASW - Submarine hunter
- Multi-mission: AEW, Sigint, ...



The Military Aircraft division has more than 9,000 employees in nine plants: two in France, two in Germany and five in Spain. 62% of employees implement lean strategies into processes (6,030 employees).

1.4. Lean management in Airbus Defence & Space

The implementation of lean management has been developed across Airbus Defence and Space's four business lines, although level of implementation is different in each one of them depending on business and customer requirements.

The implementation of Lean Management in Military Aircraft was launched in 2011 and was based on the experience with Airbus commercial aircraft, both in implementing lean management and in quality assurance processes. In the case of Military Aircraft, senior management was on board from the start. From the CEO to the last employee in project development, the organization took on lean management as a way of working. Hence, the company has defined a strategy that integrates guidelines (a road map), vision and management model with the overall company objectives.

In 2012, a Lean Network of Experts and Change Agents was established, initiating with pilot projects using Visual Management and the Kaizen methodology.

Starting in 2013, the company began to incorporate Hoshin Kanri, defining it as the key tool for setting out the company's vision, implementing objectives at all levels, establishing improvement priorities during the current year and integrating the management and measurement of each project's results with the company objectives.

Since the implementation of Hoshin Kanri, Visual Management has become a central part of monitoring and managing company objectives.

Since 2014, Practical Problem Solving is used as an everyday tool, lean objectives are included in Visual Management, and Kaizen events are defined according to the objectives and priorities established in the Hoshin Kanri.

In 2015, the main challenges pertain to the pursuit of excellence through conducting Quality Excellence pilot projects and implementing other tools in order to fully instate Visual Management throughout the organization.

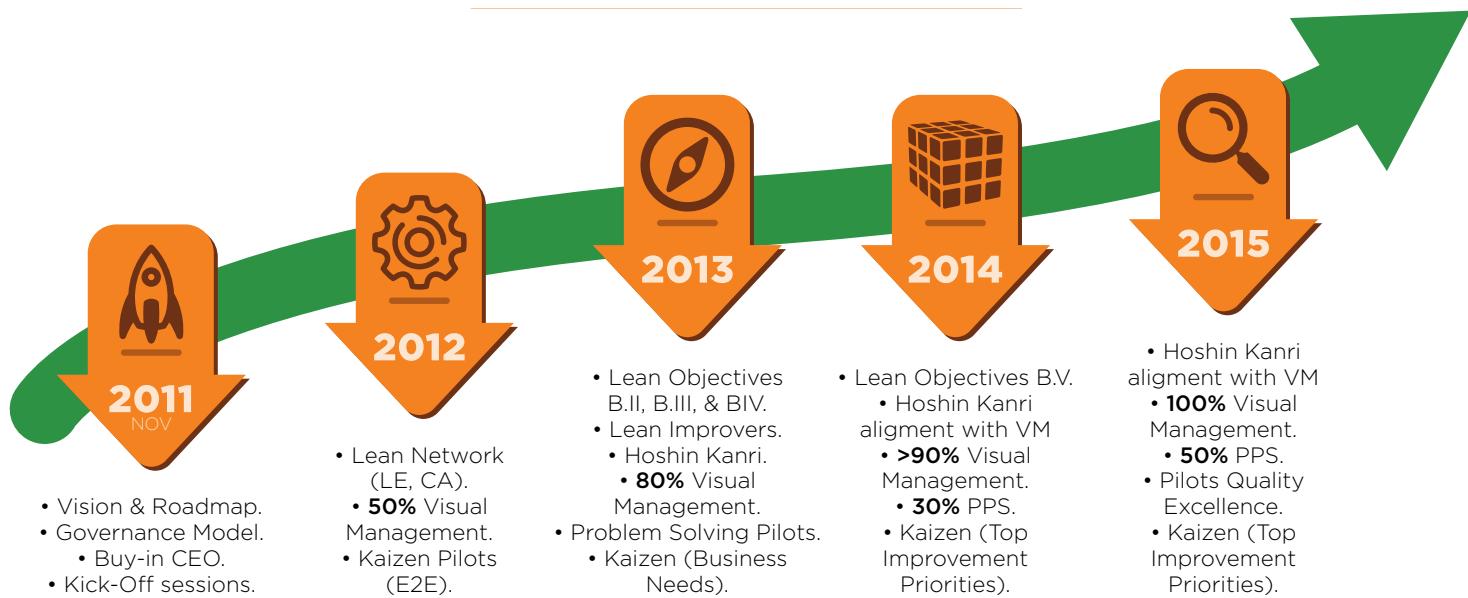


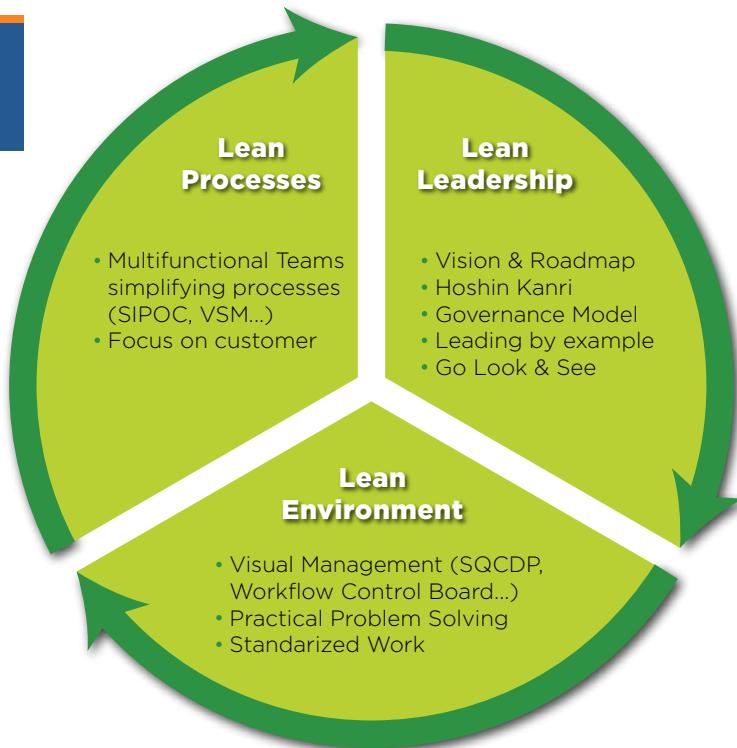
FIGURE 6. Timeline for the development of lean product in Airbus Defence and Space

1.5. Lean Strategy in Airbus Defence & Space

As reflected in Figure 7, the lean implementation strategy is structured around three pillars, including Leadership, Environment and Processes.

FIGURE 7

Airbus Defence and Space's
Lean Implementation Strategy



Source: Airbus Presentation Kit

Lean Leadership includes aspects of strategy—such as the company's vision and cultural change—both within management and the employees' mind-set. Management sketches an action plan through the Hoshin Kanri tool, which is then implemented from the top down in order to establish, starting with the company's vision, the most challenging objectives, as well as the main priorities and improvement initiatives for the current year within the entire business line. This governance model is applied to monitor how objectives and initiatives perform, as well as to ensure the company's commitment to these objectives. Key aspects of this governance model include Go Look and See, the Process Confirmation and lead by example.

This strategy's second pillar pertains to the implementation of a **Lean Environment**, which includes tools and activities that enable employees to work in a culture of continuous improvement. In recent years, Hoshin Kanri has been implemented, in association with the daily management of activities on progress and SQCDP boards; it also focuses on solving practical problems. The Visual Management tool is applied at all levels—from the CEO to working groups, to cross-sectional areas, such as integration and engineering leadership. Visual Management's performance within teams across the company is monitored. Other tools, such as Standardized Work or Standard Operating Instructions have been also implemented as part of Q6.

The third pillar is **Lean Processes**. Its main focus is on creating value for the customer and improving processes and optimizing time as well as resources during the long delivery times involved in developing a military plane. Many of the improvement opportunities undertaken within the organization are identified in the Hoshin Kanri and, subsequently, become projects that are developed using the Lifecycle for Business Improvement Projects (LBIP) methodology. The SIPOC (Supplier - Input - Process - Output - Customer) is applied in order to define the main steps and scope; the Value Stream Map complements this process by allowing the tracking and identification of activities that generate added value and of those that do not, by eliminating waste and, then, defining a new future lean process.

2. Practice for Lean Product Development

2.1. Strategy & Performance

2.1.1. Hoshin Kanri

In November 2013, the company began to implement the Hoshin Kanri tool to align the daily management of activities with senior management objectives.

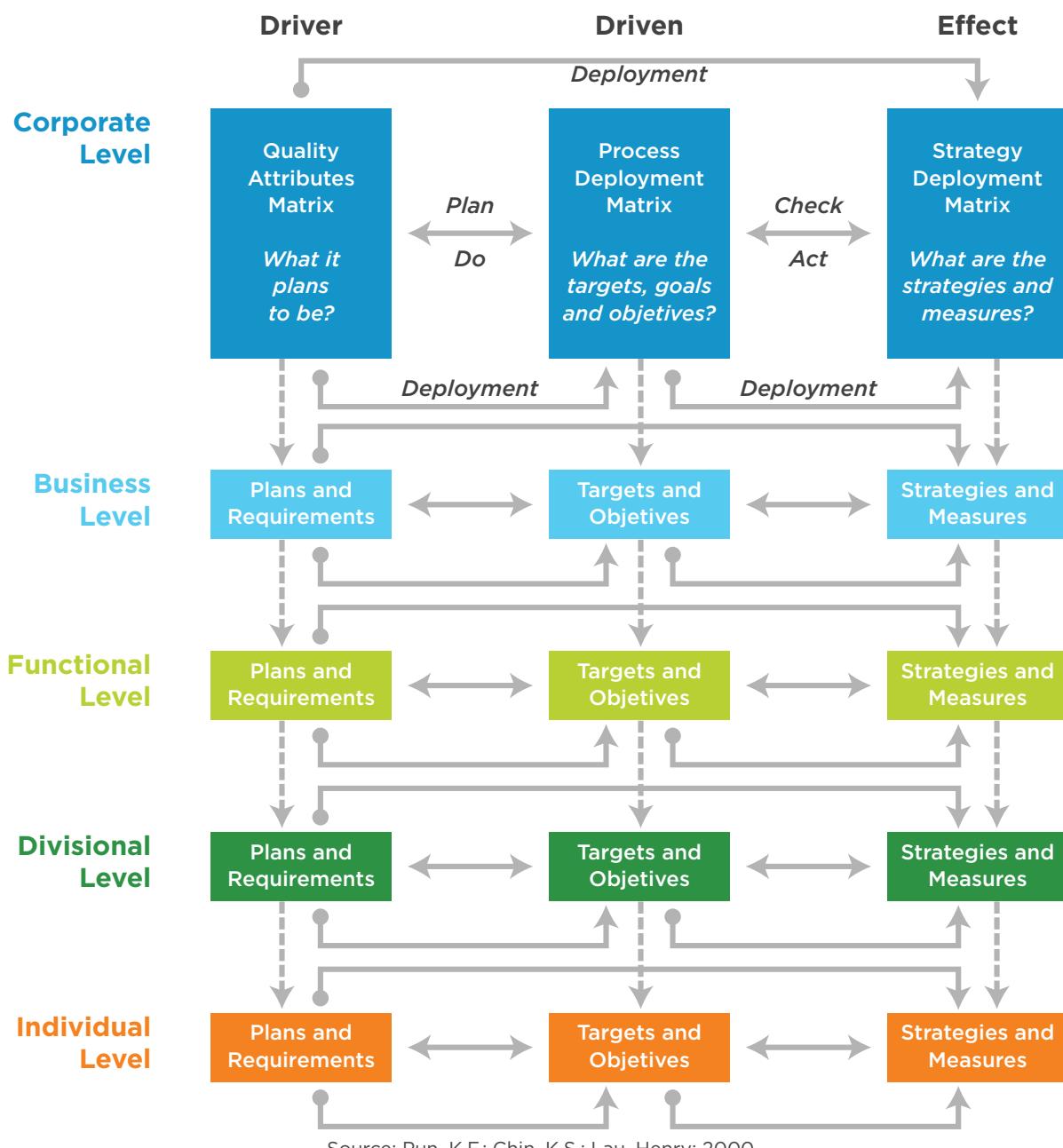
Hoshin Kanri, which is also known as Hoshin Planning, Objective Cascade or Policy Deployment, is a planning technique developed in Japan in the 1960s that enables the company vision to be translated into objectives and actions for all functions and at all levels.

Several companies, such as Bridgestone, Toyota, Nissan, Komatsu, Sega, HP and Bank of America, have used this methodology in different ways.

Authors such as KF Pun, KS Chin and Henry Lau (2000) provide an interesting framework, which is summarized in Figure 8 below.

FIGURE 8

Hoshin Kanri Framework

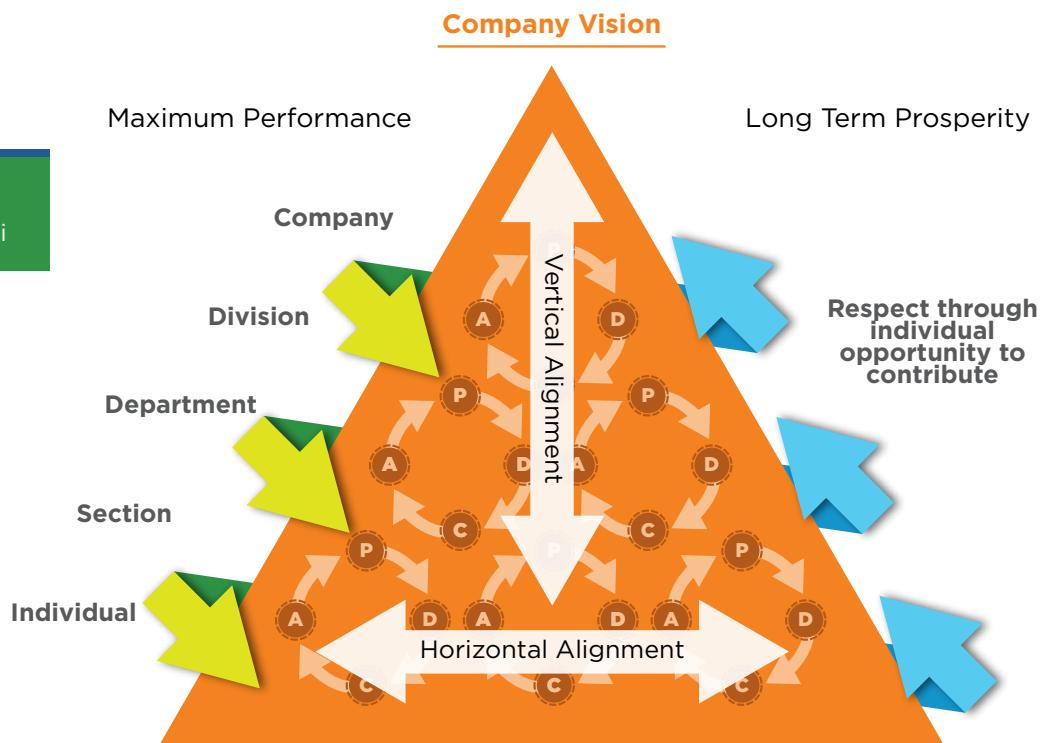


Source: Pun, K.F.; Chin, K.S.; Lau, Henry; 2000

Airbus Defence and Space aimed to train its managers, lean leaders and other employees involved in the definition of the company objectives, as well as those involved in a division, a function or department objectives, in the Hoshin Kanri (Policy Deployment) methodology and its implementation in Airbus.

The Hoshin Kanri system includes a process and some specific guidelines to ensure that employees at all levels are aware of the management's vision, that departments do not compete against one another, that projects run until their successful conclusion, and that the company learns as it carries out the process.

FIGURE 9
Hoshin Kanri

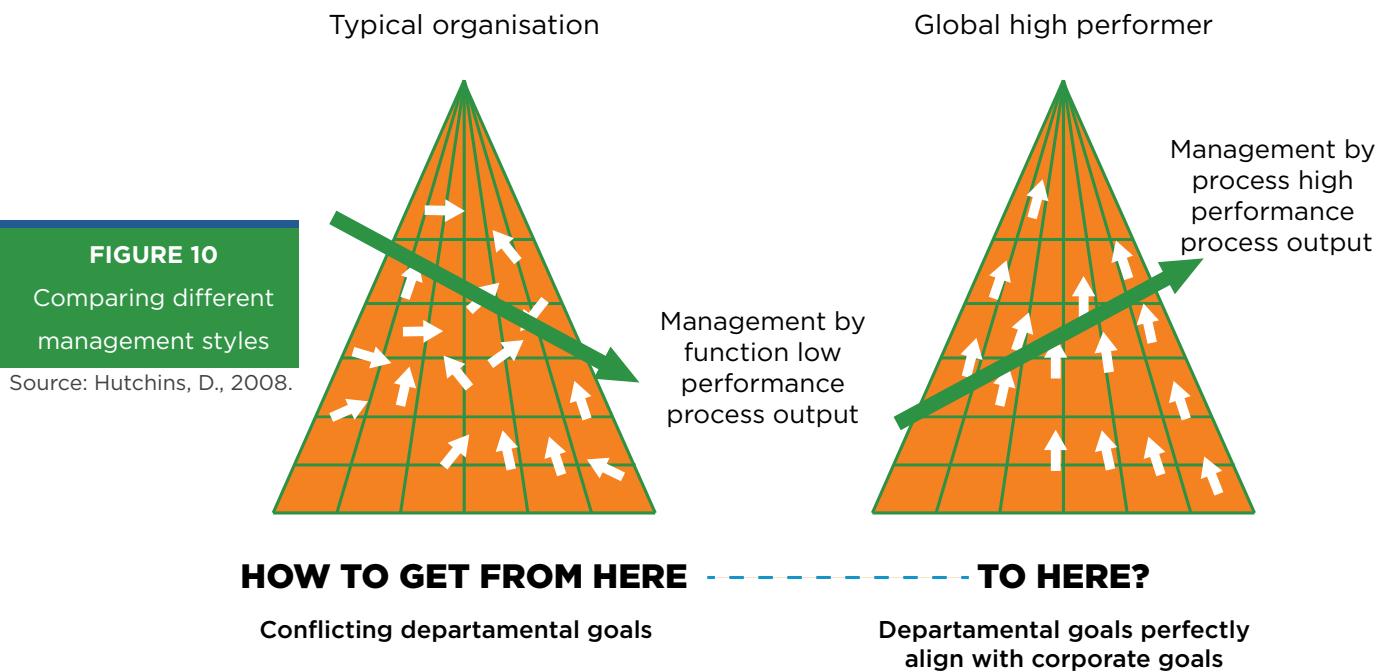


Hoshin Kanri is management through improvements; it entails facilitating and generating greater unity in the organization and better levels of work team performance since departments are aligned with the company's objectives. Hoshin Kanri is a vertically-aligned contribution process which constitutes a cascade process from top to bottom thanks to the

support process (bottom-up) from different functions. At the same time, there is also horizontal alignment, which generates Catch-Ball or support between areas. Below, Figure 10 reflects higher performance levels and reduced differences between departments based on interests and objectives when different department efforts are aligned.

FIGURE 10
Comparing different management styles

Source: Hutchins, D., 2008.



Why Hoshin Kanri in Airbus Defence and Space?

Hoshin Kanri (HK) brings long-range strategy implementation to the operational level by forming a two-way street, something that Management by Objectives (MBO) cannot achieve. HK thwarts destructive, arbitrary objectives with thorough examination and by asking the ultimate reality-check question –‘By what means?’. In contrast, MBO, as practiced, sets arbitrary objectives, avoids reality-check questions and focuses on short-term compliance, which often leads to long-term failure.

Hoshin Kanri produces results based on system-wide efforts. End-of-year audits are never used as a means for judging or blaming; instead, HK focuses on the future, not the past, as well as on system learning and improvement that achieves better results.

PURPOSE

Hoshin Kanri, also called Policy Deployment, aims **to identify just a few areas of strategic focus or breakthrough objectives** for a 3-5 year period. Therein, HK focuses on supporting the vision, defining Annual Objectives and deploying the same within the organization to **ensure full compliance** (illustrated below in figure 11).

The finest fruits are difficult to collect without a strong focus supported by robust Processes and an efficient Daily Management

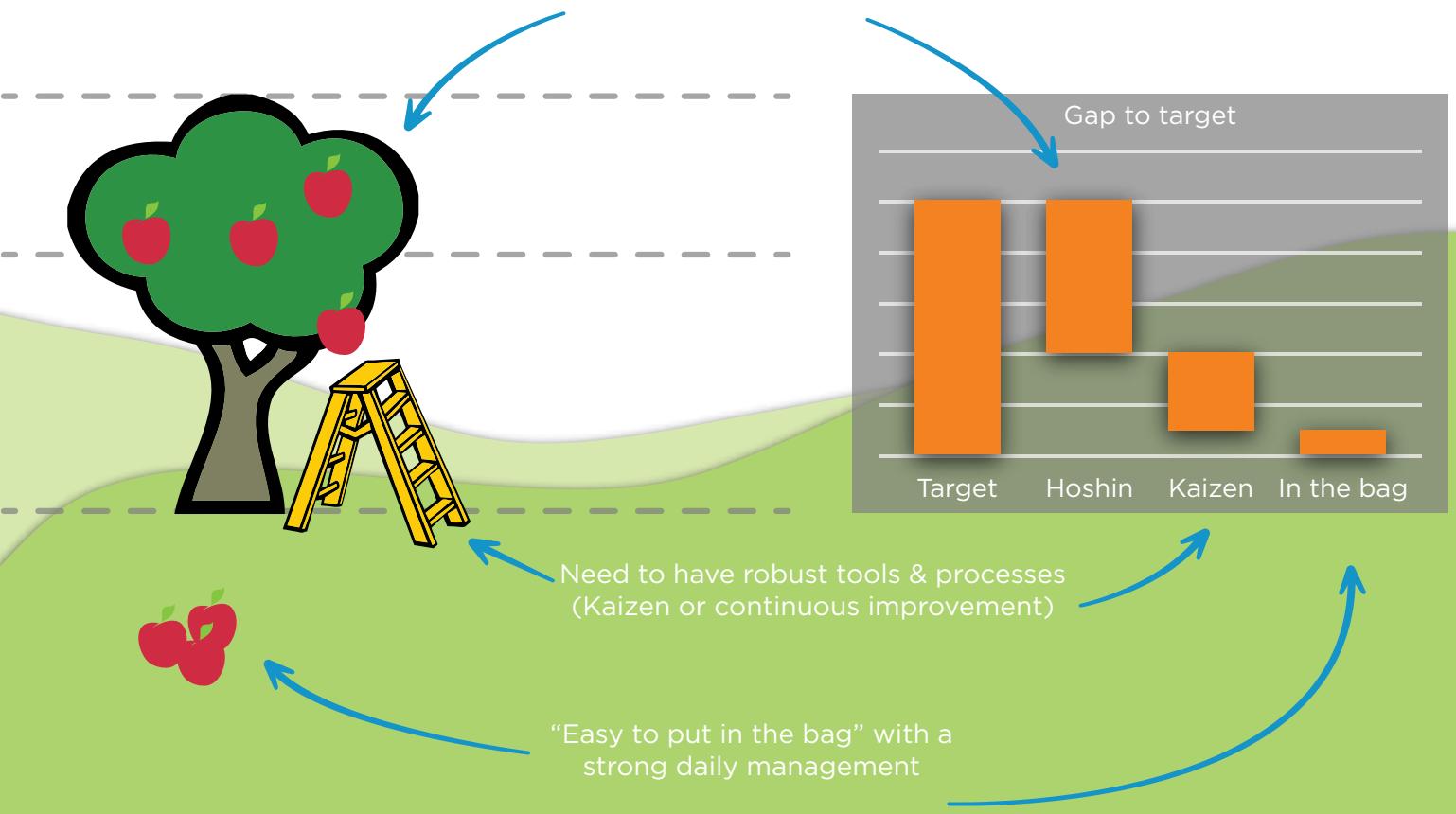


FIGURE 11. Hoshin Kanri focuses on breakthrough objectives

BENEFITS

The benefits of Hoshin Kanri are as follows:

- Having ‘Breakthrough Objectives’ or a Strategic Plan (designed for a 3-5 year period) aligned with the Company and Division Vision.
- Having Annual Objectives that are fully aligned with the 3 to 5-year Strategic Plan, as well as with the Company or Division Vision, in order to achieve long-term objectives.
- Having Company or Division Annual objectives cascaded within the organization, thus aligning all employees with Corporate or Division Annual Objectives.
- Having all employees and managers involved and encouraging them to bring their own ideas during the Hoshin Kanri cycle. They can help define Top Level Priorities that influence most of the Annual Objectives.

IMPLEMENTATION

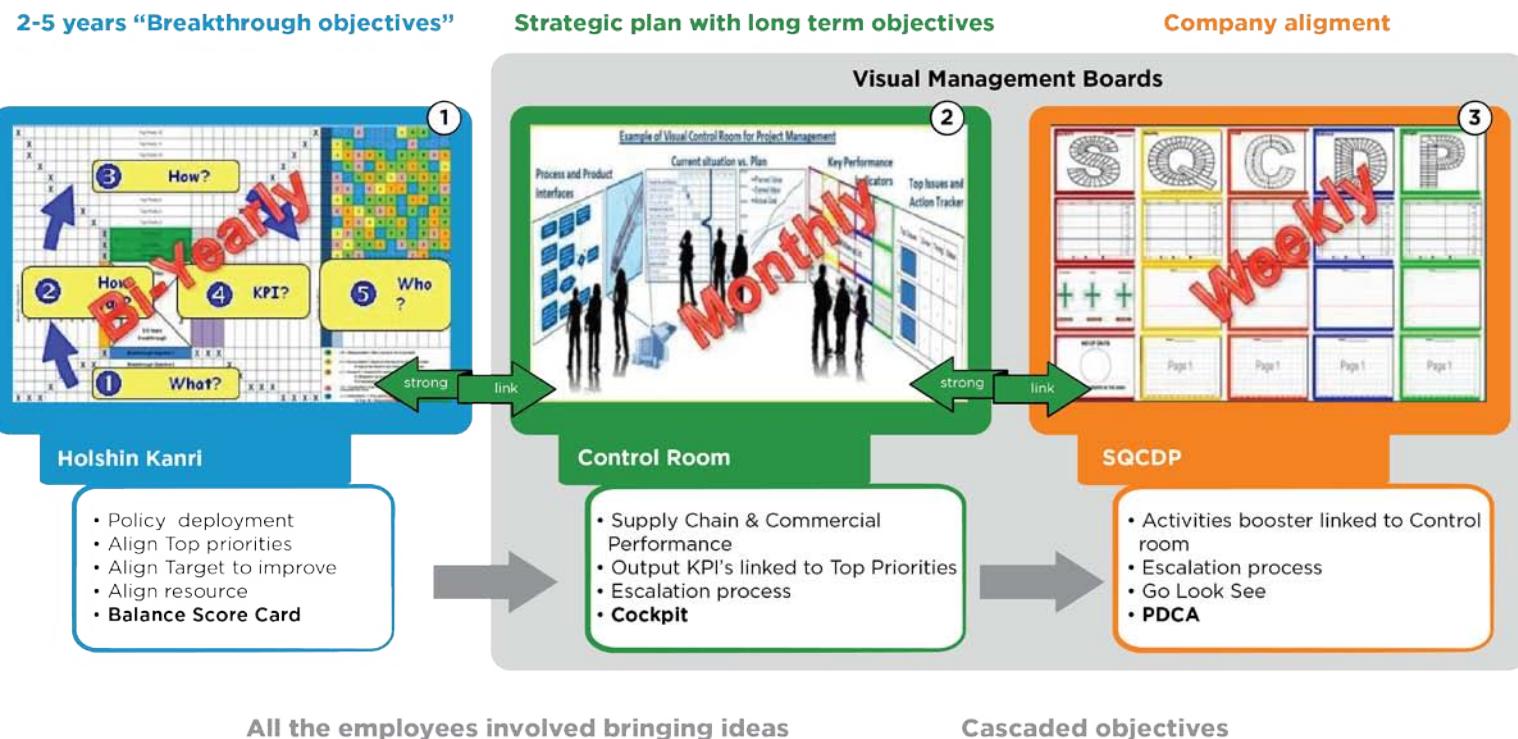
Lean strategy in Defence and Space starts with company objectives, which senior management defines and monitors, hence the CEO is ultimately and primarily responsible for it. Airbus started with the definition of the company's vision and work plan for the next 3-5 years.

Airbus Defence and Space maps out the implementation and monitoring of objectives according to the following methodology:

1. A 3 to 5-year vision that includes a plan with objectives, which the CEO and executive team define.
2. An Annual Plan that contains a selection of activities based on the feasibility and likelihood of achieving desired results. Senior management oversees this every 6 months.
3. Control Rooms within departments in which detailed project implementation unfolds. In these Control Rooms, committee members and other areas participate on a monthly basis.
4. Weekly meetings, lasting 30 to 45 minutes.
5. Work teams, daily meetings, lasting 15 minutes.

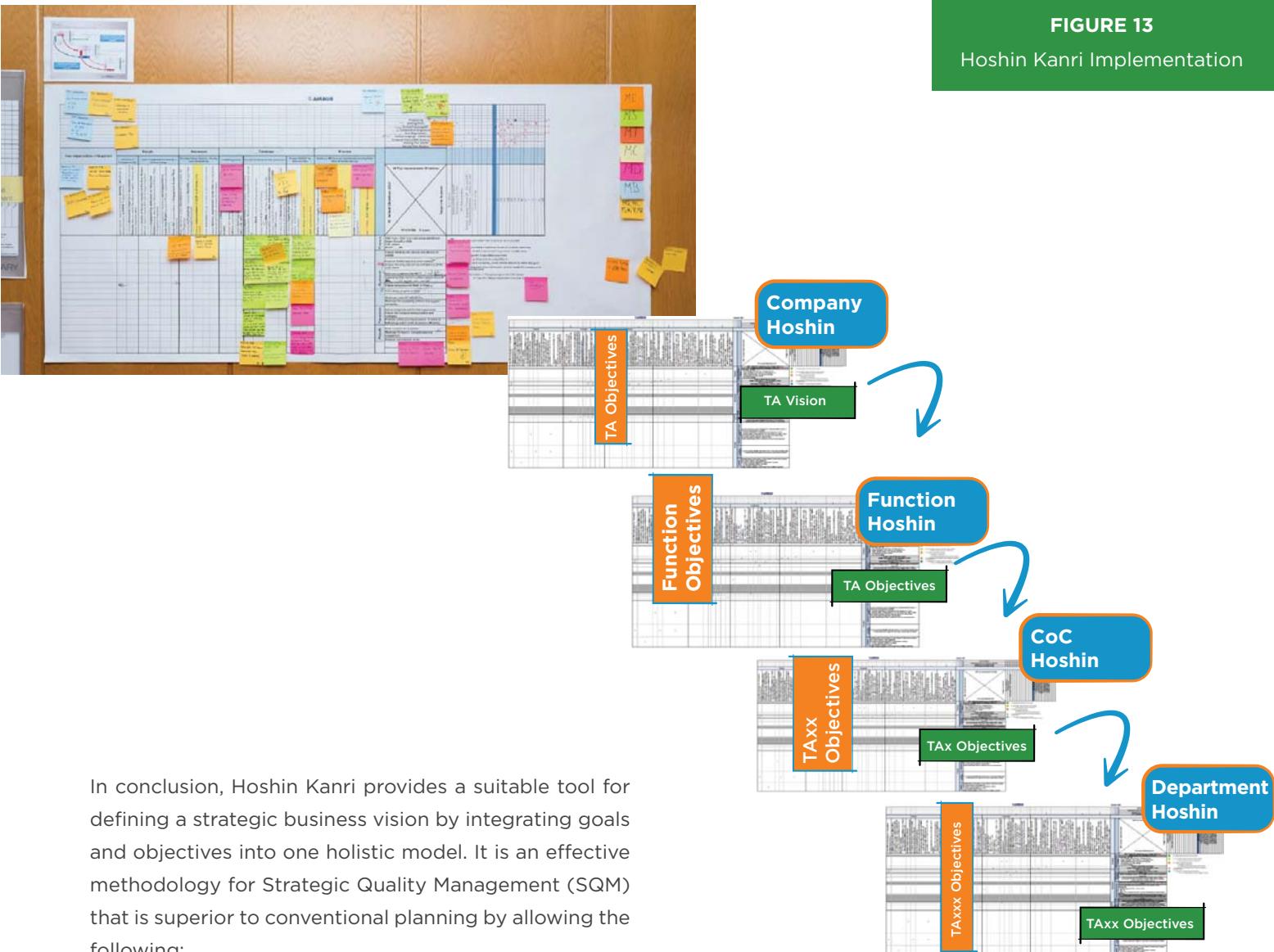
FIGURE 12

Joining Hoshin Kanri and Boards



Airbus DS regards the Hoshin Kanri as an 'improvement-leadership' tool, since it facilitates, as well as challenges, all members of the organization to go beyond and work in an integrated manner.

FIGURE 13
Hoshin Kanri Implementation



In conclusion, Hoshin Kanri provides a suitable tool for defining a strategic business vision by integrating goals and objectives into one holistic model. It is an effective methodology for Strategic Quality Management (SQM) that is superior to conventional planning by allowing the following:

- The integration of strategic objectives with daily management tactics
- The application of the plan-do-verify-act cycle in business process management
- A methodology that allows for planning and execution to happen in parallel
- A holistic approach throughout the company
- Improved communication and consensus levels among different stakeholders (internal and external)
- The integration of multi-functional work teams

2.1.2. Visual Management (SQCDP)

Lean strategy is especially known for involving all team members in order to unite execution and quality, which, joined together, allow for the quick, team-wide detection of problems when they occur in order to make adjustments or changes through consensus. One tool that has facilitated such management is the use of Visual Management, which is more than an on-going communication and management tool.

Visual Management is a work method that implies a certain way of managing activities and involving teams.

On the one hand, it is a management tool that facilitates work and performance for both workers and project leaders since it allows the identification of risk, and anticipates problems, sets priorities, takes action and bumps matters requiring intervention up to a higher level.

In addition, it facilitates the control of established objectives and standards, which are monitored by a series of indicators that allow the detection of deviations and a quick, agreed-upon response through correction or adjustment. This decreases the probability of errors and improves communication.

Airbus DS uses Visual Management at all levels— from the CEO first to the departmental level; other integrating disciplines, such as chief engineering, also use it. There are over 130 teams working with Visual Management within Airbus Defence and Space's Military Aircraft engineering area.

The information is permanently present through controls and visual devices (e.g. boards, signs, lights, colors, shapes, etc.). The picture below illustrates the CEO, along with senior executives, in a meeting using visual management boards. As shown, senior management is dedicated to leading by example.



FIGURE 14
Airbus Defence and Space's CEO and executive team using Visual Management

At Airbus DS, Visual Management is structured into two main parts:

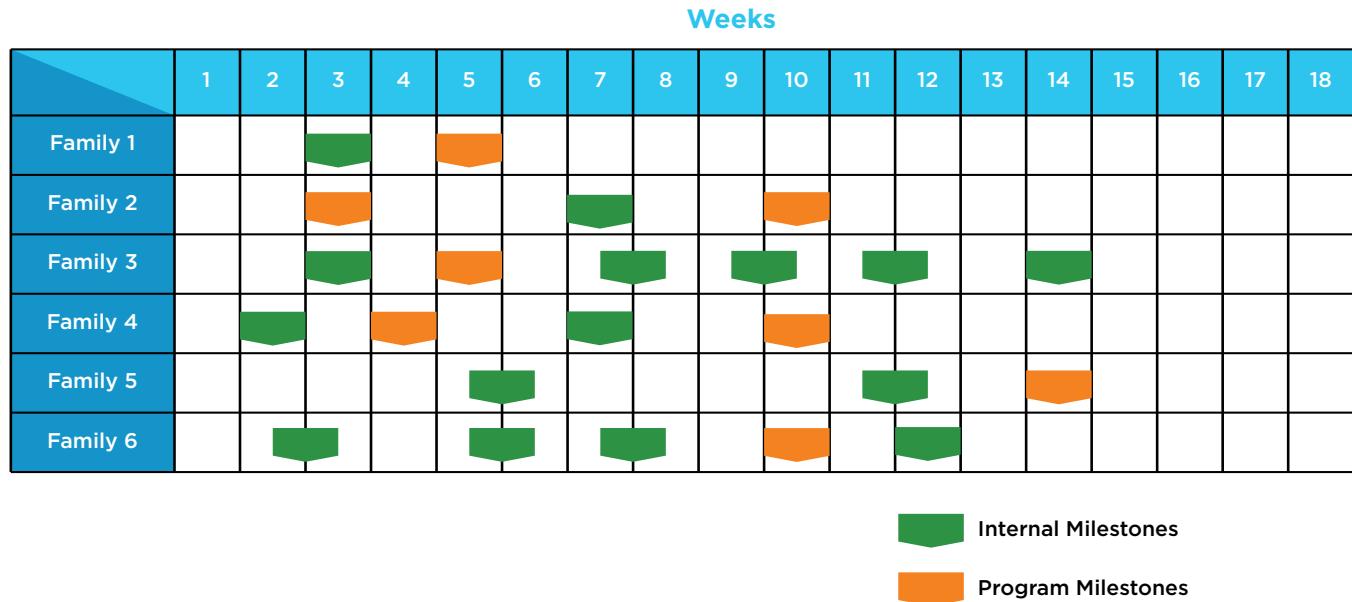
- Workflow control board (see Figure 15)
- SQCDP board (see Figure 16)

In addition, many other tools are integrated into Visual Management, such as Practical Problem Solving (PPS), Skill Matrix, Delivery Tracking, Task allocation, availability calendar, etc. (See Figure 17).

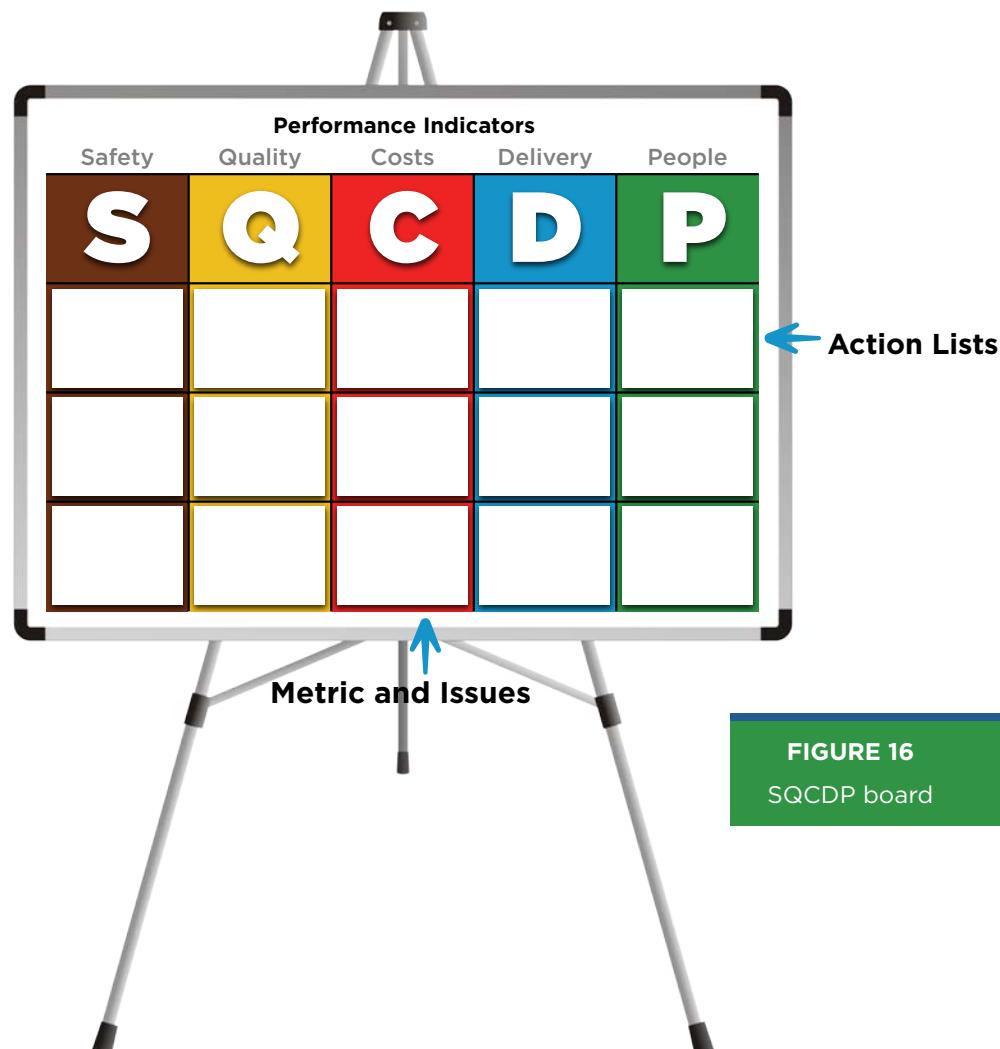
FIGURE 15

Example of Workflow control board

Products or projects



At Airbus, SQCDP is a communication device where the key processes of (**S**) Safety, (**Q**) Quality, (**C**) Costs, (**D**) Delivery, and (**P**) People are identified. This board allows for a visual and simple management of activities in periodic meetings. Visual Management opens up a way to manage objectives, monitor the entire process and detect emerging problems, as well as a way to manage meeting attendance (whether monthly, weekly or daily).



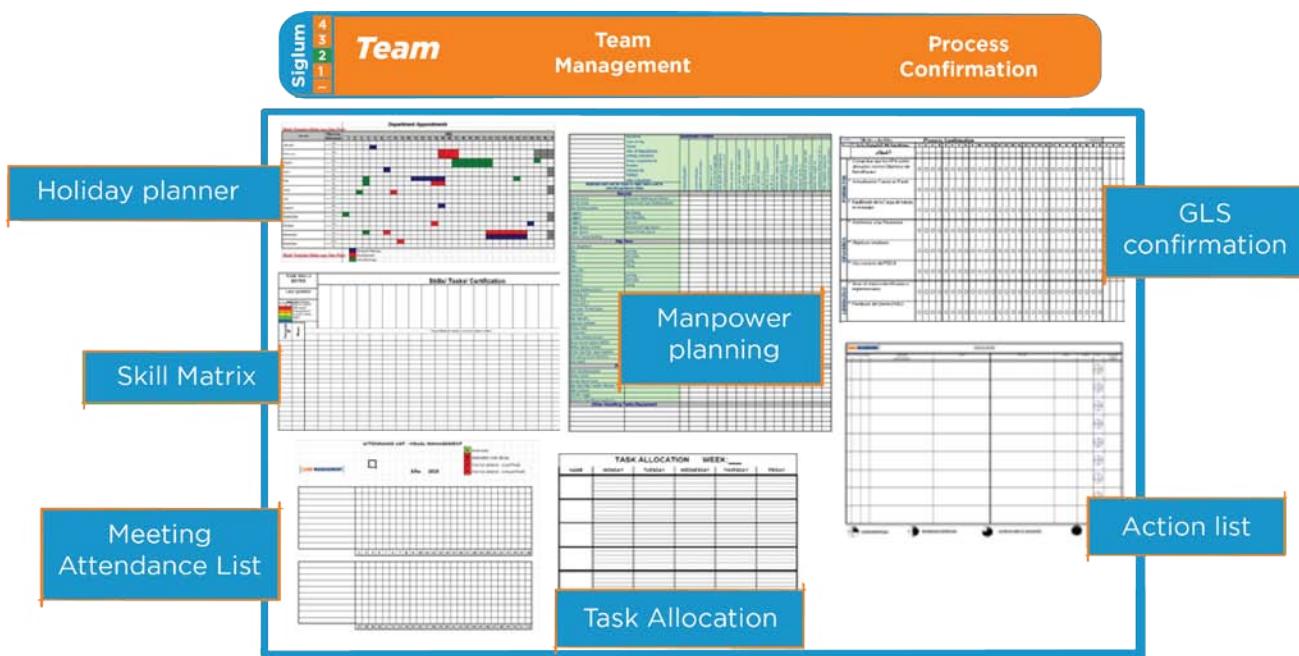


FIGURE 17. Other tools: PPS, Skill Matrix, Delivery Tracking, Task Allocation, Availability Calendar

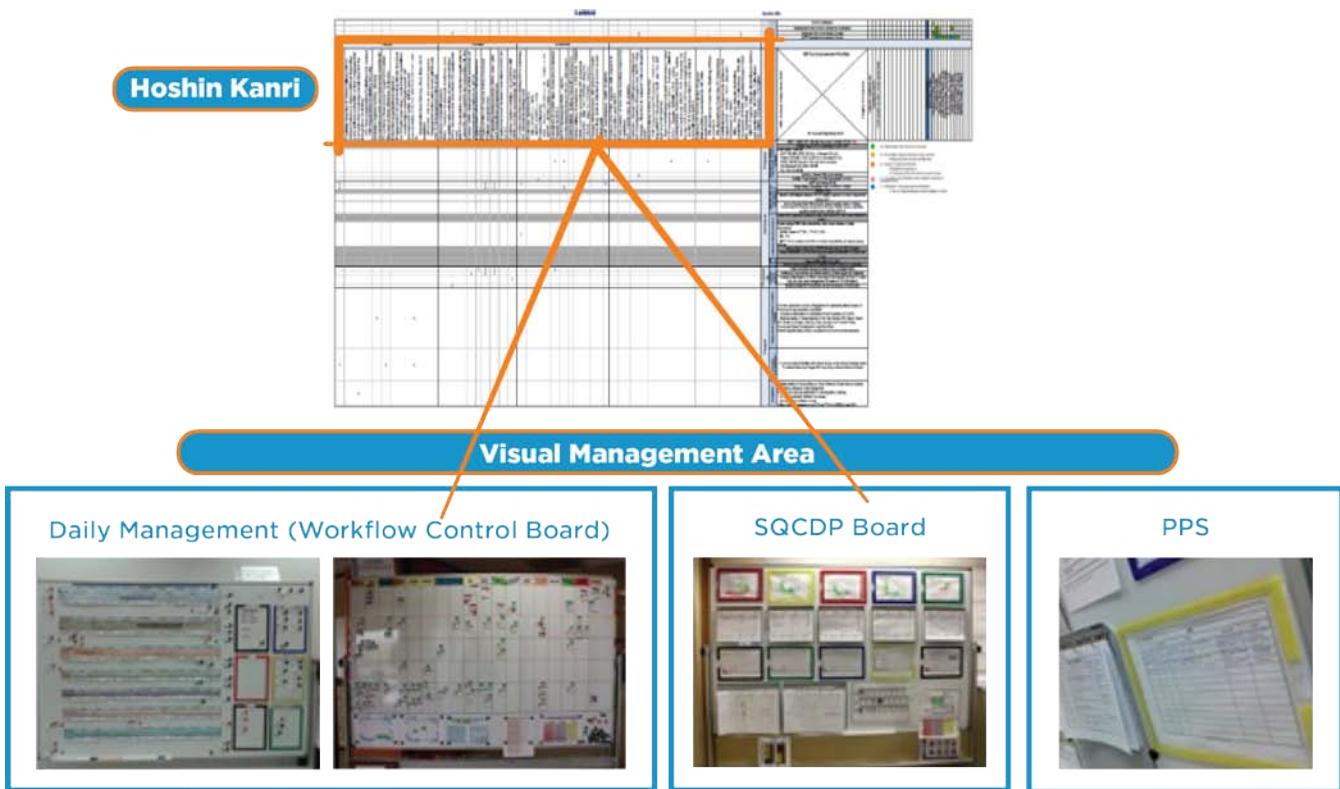


FIGURE 18. Visual Management boards at Airbus Defence and Space

In everyday use, Visual Management has proved to be very effective with respect to integrating staff in projects and activities. Using Visual Management demystifies the idea that the project leader is the project owner and, through Visual Management, employees not only see the whole process, they also see that each person has assigned responsibilities. Thus, each member responds

to their task and interacts with others. This tool requires commitment and that each member shows their work to management and the rest of the team. At Airbus, the implementation of Visual Management has helped improve communication between teams and give greater visibility to each team's work and between different areas and departments.

2.2. Skilled People & Collaboration

2.2.1. Skilled People

Within Military Aircraft, there is a core lean team consisting of one team lead and 10 experts that support the different functions that make up the business area (engineering, services, quality, procurement, programs, etc.).

In turn, each function is assigned a team of Change Agents who are then functionally linked with lean experts. Currently, in engineering (2,800 employees) there are two Lean Experts in the core team, 8 lean Change Agents and 18 Lean Improvers.

Change Agents devote 100% of their time to generating change activities while Lean Improvers engage 15% of their time to the same.

Lean knowledge is spread along the organization through the Lean Academy that offers a number of trainings on Lean Business Processes, Practical Problem Solving, Value Stream Mapping, etc.

Moreover, other activities organized by the Lean Network contribute to increasing all level employees' awareness and lean mindset:

- Awareness-raising sessions: focused on lean principles, Go Look and See Basis and tools such as Hoshin Kanri, Visual Management, Practical Problem solving, etc.
- Games, role play for lean processes training: to get an understanding of how the SQCDP routines work and of the link between SQCDP and Problem Solving/ Process Improvement, and also to get a first feeling of the Lean Leadership Behavior in front of the SQCDP.



FIGURE 19. Employees after a Visual Management Awareness Session

2.2.2. Collaboration

In addition, and in order to foster cultural change, some activities are empowered to break silos between different organizations by improving the communication and collaboration among them. Some examples are:

- Concurrent engineering: Plateaus are organized at the Conceptual Phase of a product development. In these plateaus, experienced employees from the required engineering disciplines (mainly systems, structural, flight physics, maintenance specialists) and also from other functions such as Manufacturing, Procurement and Quality, work together on the design to ensure that the solution considers all implications along the entire value chain of the product. The role of the Chief Engineer is key to this way of working since they are responsible to coordinate the team, enable their work, serve as a link between the stakeholders and, very often, make technical decisions.
- Cross-functional visual management: Since the projects are carried out under complex environments due to the considerable number of stakeholders, the pressure on the delivery dates and the focus on continuously increasing quality, Airbus Defence and Space has deployed a net of Cross-functional boards. They are led by Chief Engineers, Integrators and Program Managers and enable them to set priorities, identify risks, report problems and increase coordination and communication among all employees involved.
- Cross-functional Kaizen events: these events are mainly focused on improving processes that involve more than one function (Engineering, Services, Flight Operations, Manufacturing, Finance...). They are driven under the LBIP methodology and represent a successful way to develop more agile processes, reducing lead times and improving the Right First Time.



FIGURE 20. Example of employees working in a Cross-Functional Workshop

2.3. Efficient Processes & a Knowledge-Based Environment

2.3.1. Lean Business Improvement Projects Methodology

All Business Improvement Projects at Airbus DS are managed with the LBIP methodology, building upon Airbus DS's lean improvement mind-set and giving project teams what they need to improve the likelihood that their project is completed in accordance with time, cost and performance objectives.

The LBIP Lifecycle has been specifically designed to combine three dimensions (Process Improvement, Change Management and Project Management) into the best lifecycle for Business Improvement Projects at Airbus. The lifecycle sets out the framework for LBIP.

A project's lifecycle represents a series of generally sequential phases or stages through which a project passes, from creation to completion. Phases are usually connected by Milestone Gates that are used as control steps and represent the completion of the preceding phase, the launching of a subsequent phase, or both. The number and definition of phases and Milestone Gates are determined by the organization's level of and need for control over the project.





DEFINE

During the definition phase, the Business Opportunity Leader further defines an identified opportunity for improvement. This phase group allows for a first level of shared understanding on a potential project's benefits and objectives. The Benefits Model is established and the appropriate benefit assessment tools (e.g., Financial Business Case) are completed with a rough ordering of magnitude data to support the decision to launch the project. The Project Charter is developed to document the elements that will satisfy stakeholder needs.

MEASURE

The purpose of the Measure phase group is to get a picture of the existing situation (Performance Baseline) and of the 'As-Is' state as a basis for the following:

- The evolution of the Improvement Benefits Model
- Establishing the root cause of 'As-Is' phase problems and, subsequently, finding ideas for solutions

During this phase, the groups that the project will potentially impact are identified and, if applicable, dialogue is initiated. The Project Management Plan is also developed in this phase to document how the project will be managed. The project's baselines and governance model are also established, while the monitoring and control of the project begin.

ANALYSE

In the Analyze phase, data captured in previous phases is analyzed in detail to identify any gaps between the 'As-Is' Performance Baseline and the Target Performance, as well as to identify any problems and, in the process, rank their root causes. The ultimate purpose of this detailed 'As-Is' analysis is to understand the current situation and if and how it fails to meet the customer's needs in order to effectively and sustainably improve it. During the Analyze phase, 'Voice of the Customer/Business/Process' data is also analyzed to identify the customer's needs and expectations.

IMPROVE

The Improve phase includes all tasks required to choose and agree upon an improved 'To Be' state and solution. Herein, the team plans its development, testing and implementation and then executes the plan and globally implements solutions. This phase begins with a review of the 'As-Is' analysis, the identification of 'improvement levers' and the development of an 'ideal state', which enables creative thinking in the design of the 'To-Be' state. Once the 'To Be' state and solution is agreed upon, detailed solution requirements are established if required. Solution feasibility is then confirmed and a top-level design of the solution is completed.

CONTROL

During the Control phase, improvement is confirmed to be under control and to be achieving what the team set out to do. Initial post-implementation benefits are confirmed before seeking the customer's final approval of the solution. The Performance Monitoring plan and ongoing monitoring and confirmation of benefits is handed over to operational teams for final confirmation of the post-implementation benefits in the G10 post-project review.

FIGURE 21. LBIP Lifecycle

2.3.2. Knowledge-Based Environment

Airbus Defence and Space classifies the waste that can occur in the company under eight types. One of them, and according to the top management the most dangerous one, is “Not using the Human Potential available within the company”. Therefore, it is the responsibility of employees at all levels to promote a work environment, which ensures that:

- All competences and skills of the teams are utilized
- Team potential usage is optimized
- All teams are involved in continuous improvement
- Improvement ideas are supported and implemented
- All employees' knowledge and experience is shared

Handling this waste ensures the professional development and growth of employees, as well as a sustainable way to drive continuous improvement and knowledge management within the company.

For example, within knowledge dissemination activities, Airbus DS captures and uses the so-called “Lessons Learned” as a way to support the success of the company Programs and Projects, by drawing on the experience of the different Divisions and Business Lines, thereby sharing know-how and developing best practices in Program / Project Management matters across the Airbus Group.

Lessons learned are significant knowledge or understanding gained through past or current programs and projects, documented and captured to benefit current and future programs and projects. They may be based on the positive or negative experience on a topic or specific event. Lessons Learned are an essential input for continuous improvement and risk management within current and future programs and projects.



2.4. Change & Continuous Improvement

2.4.1. Change Management & Cultural Change

Lean Experts, Change Agents and Lean Improvers are part of the Lean Airbus DS Network, which was created in order to share best practices.

The so-called ‘Lean Days’ or other types of workshops are periodically organized (approximately every three months) and allow various business areas to share their projects. In addition, Lean Days include teams identifying organizational needs, analyzing challenges and defining action plans.



FIGURE 22

Lean Days (exchange of best practices)

Creating the Lean Network has facilitated the dissemination of lean knowledge. Along with lean events that are also organized in the different functions, the Lean Network has also helped promote cultural exchange and stimulate a philosophy of continuous improvement within the organization.

Moreover, Airbus Defence and Space provides an electronic platform (Sharepoint), which is available to employees and allows them to access Lean content such as information about tools, real achievements, strategy and communications.



FIGURE 23

Airbus DS Lean Network

3. Impact

Most improvements in efficiency are achieved through the simplification of processes. In 2014, the engineering area, which is part of the Military Aircraft business line, saved €3.3 million alone.

As shown below in Figure 24, lean practices are implemented in all of the company's business areas and departments, and is a common feature of the work culture at Airbus Defence and Space. Keeping in mind that the engineering area consists of more than 2,800 employees, its main lean management achievements

include implementing Visual Management in 132 teams and, with the application of Practical Problem Solving, solving more than 50 problems. During 2014, 13 Kaizen projects were launched, saving €3 million, and 20 Hoshin Kanri sessions were held in order to define objectives for the following year.

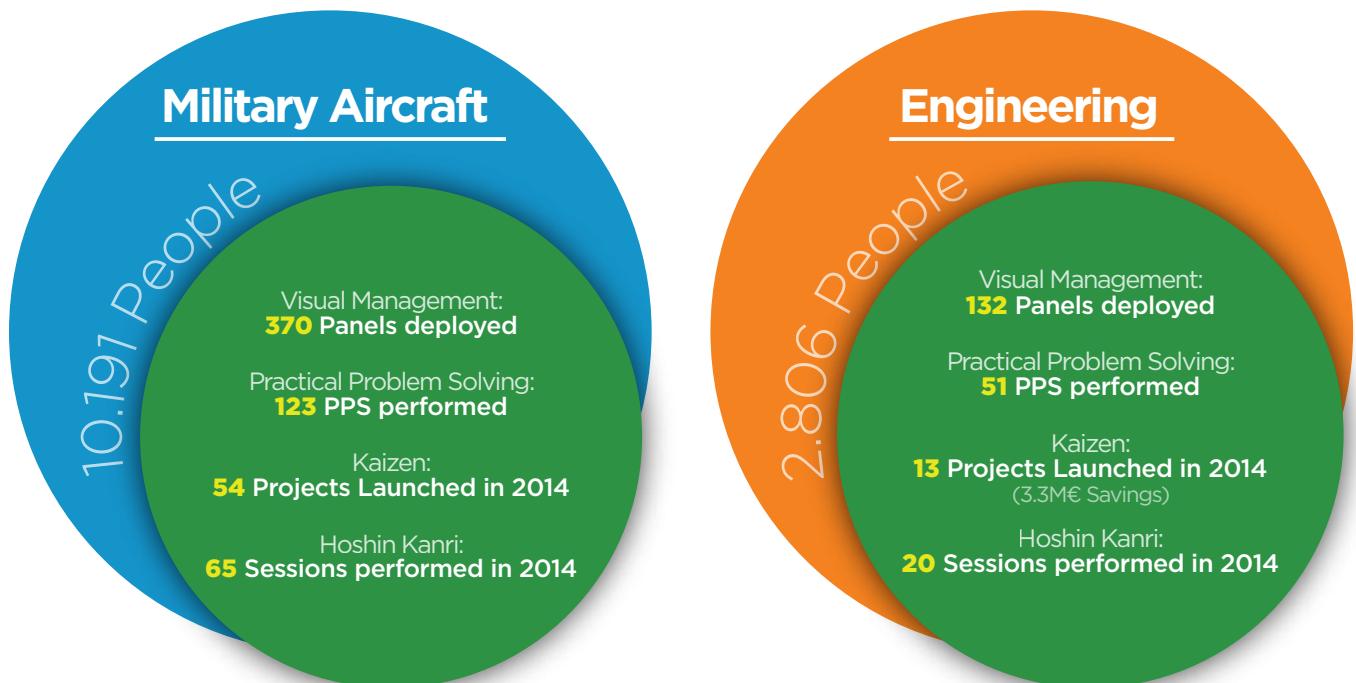


FIGURE 24. Lean Results at Airbus Defence and Space

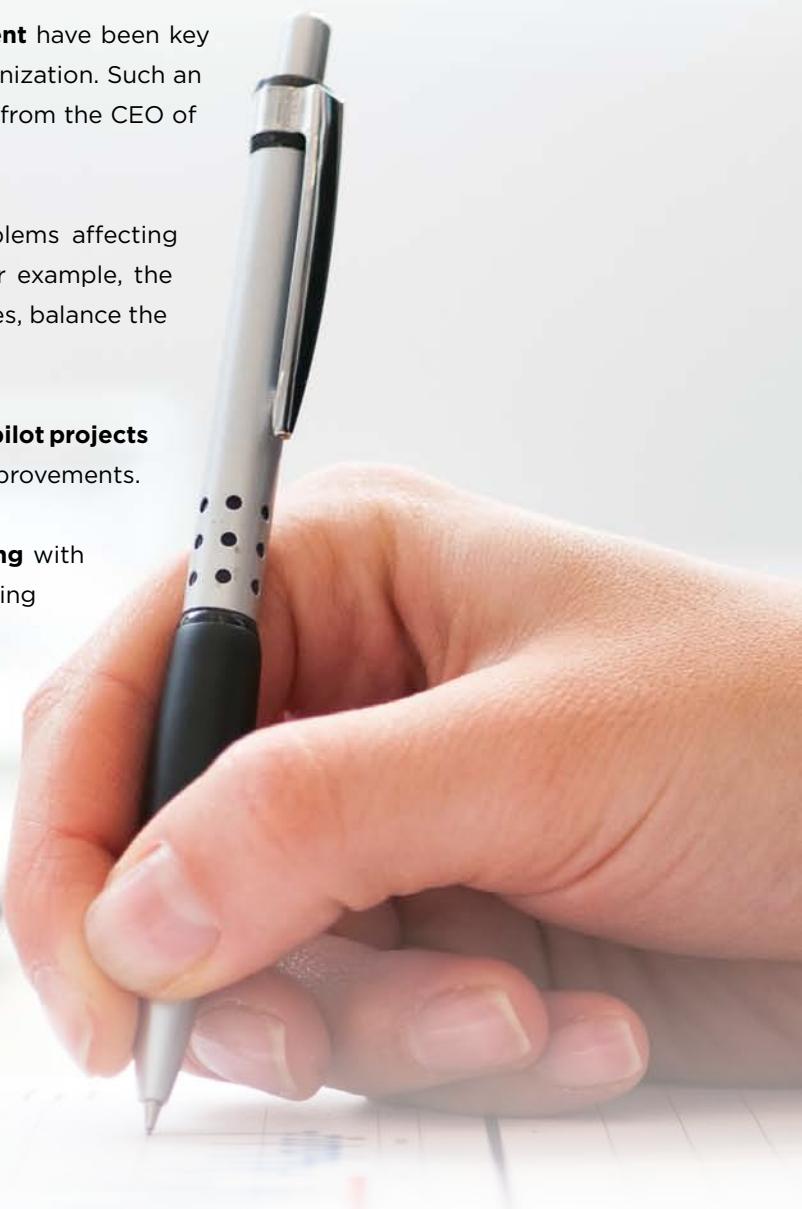
4. Lessons Learned & next steps

The **senior management's commitment and involvement** have been key to getting employees to commit at all levels of the organization. Such an example is the implementation of Hoshin Kanri starting from the CEO of the company and the Go Look and See activities.

Demonstrating **quick results** in the resolution of problems affecting daily work was essential for involving work teams. For example, the use of workflow control boards helped establish priorities, balance the workload and improve communication within the team.

Being able to **demonstrate benefits from implementing pilot projects** is key to get the go-ahead for deploying any tools or improvements.

In addition, the company is committed to **benchmarking** with other companies and organizations, and, thus exchanging best practices and implementing pilot projects with results that are then analyzed to improve overall confidence in lean methodology.



5. LAA Model Highlights

Airbus DS practices are reflected in Figure 25 under the LAA lean product development model scheme:

1. **Strategy and performance**
2. **Experts and collaboration**
3. **Efficient processes, tools and sustainable innovation**
4. **Change and constant improvement**

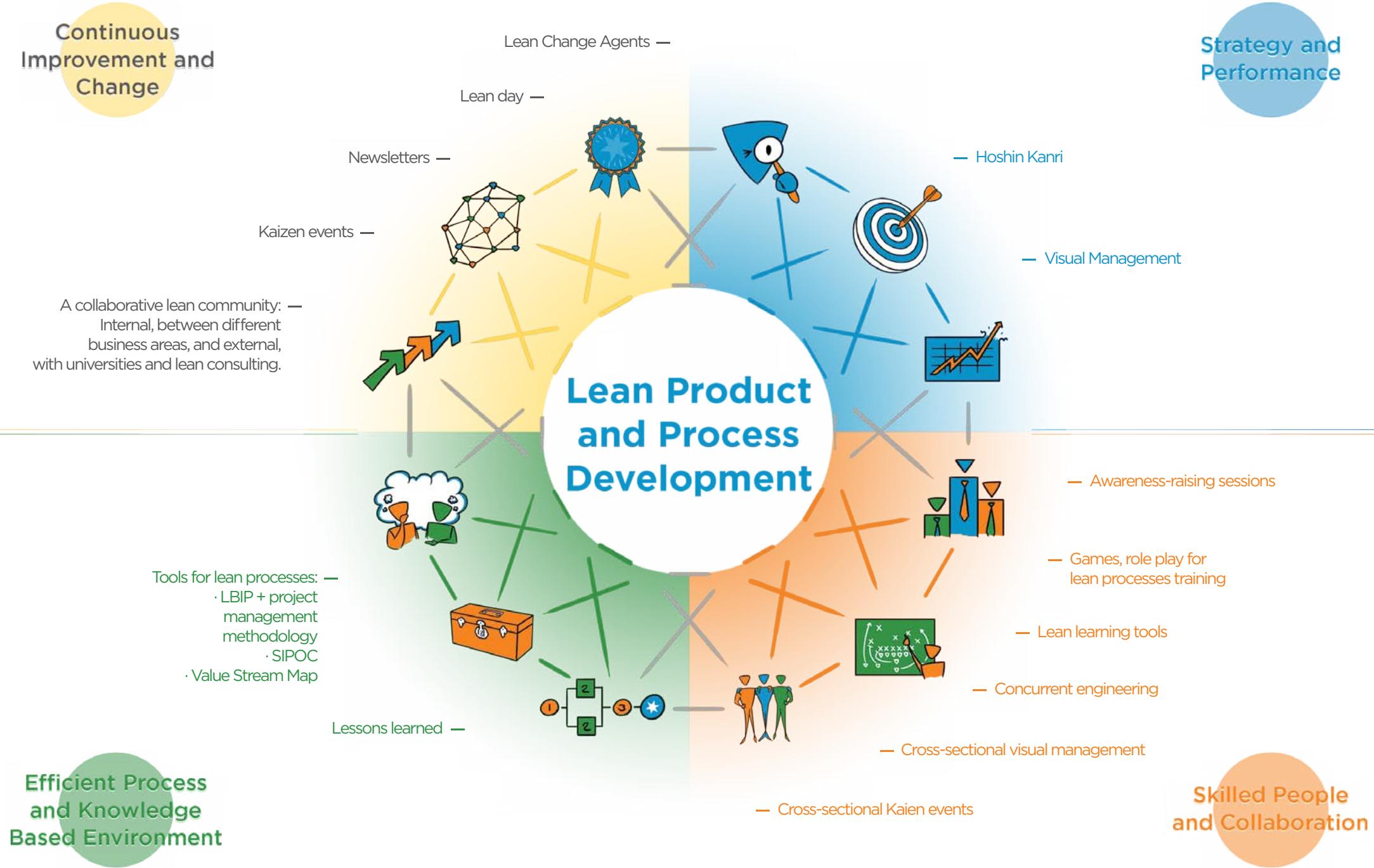


FIGURE 25. Airbus DS Lean Product Development practices within LAA's model

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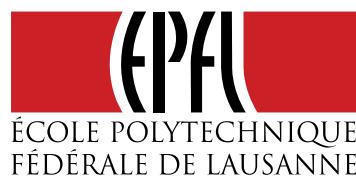
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