



AEROLINE



Delivering transformation programmes  
for major aerospace companies

Delivering Transformation. Together.

sopra  steria



**Sopra Steria, European leader in digital transformation**, provides one of the most comprehensive portfolios of end-to-end service offerings on the market: consulting, systems integration, software development, infrastructure management and business process services. Sopra Steria is trusted by leading private and public-sector organisations to deliver successful transformation programmes that address their most complex and critical business challenges. Combining high quality and performance services, added value and innovation, Sopra Steria enables its clients in the aerospace industry to make the best use of digital technology.

**+ 38 000** employees

**3,6 billion** turnover for 2015

**+ 20** countries in Europe and throughout the world

# New challenge in aerospace

## Ensure continuity of the digital chain

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**All systems go for the aerospace industries.** By 2034 the number of passengers and the world fleet are forecast to double, and governments are relaunching major Defence contracts.

Many new models are, or will be, entering into service in the coming years including Airbus A350 and A320neo, Boeing 787 and 737 MAX, Comac C919, to name but a few. And multiple projects are underway for new generations of helicopters, drones for professional purposes, stratospheric airships and satellite launchers.

### NEW TECHNOLOGIES

#### Improve and reinvent

All manufacturers, equipment suppliers, engine manufacturers, and airlines - in short, all actors in the sector - are accelerating their development relating to new digital tools including things like 3D printing, connected objects, augmented reality, Big Data, and artificial intelligence, with the aim of improving and reinventing themselves.

They have a common challenge in their sights: to produce more aircraft, carry more passengers, guarantee better security, consume less fuel, and offer more services.

### DIGITAL CONTINUITY

#### End-to-end business support

From design to manufacturing and including new services, digital continuity is the fundamental challenge of coming years. The continuity of the digital chain starts with a good design and continues through to the integration of digital tools at all stages and for all players in the sector.

### DIGITAL TRANSFORMATION

#### Being a key player in the 4.0 revolution

Digital transformation is essential for success in addressing these new challenges and in the face of a very demanding and competitive global environment. Past stakeholders in aerospace understood it well and the 4.0 revolution is well underway. We must be key players!

# Sopra Steria, the digital transformation partner of the key global players in aerospace

To ensure that we better meet the needs of the aerospace sector, Sopra Steria is implementing Aeroline, a dedicated organisational structure for its customers. This dedicated vertical has recently been enhanced with the Product Lifecycle Management (PLM) offering from CIMPA.

The aerospace market requires perfect mastery of implemented technologies and business processes. Digital continuity and the ability to manage the life cycle of the product, from its design to its manufacture through to its aftermarket, are some of the major challenges.

To meet these challenges, Sopra Steria's expertise can be found in critical areas such as industrial performance, supply chain, embedded systems and even air traffic management, with a continued focus on technological innovation and business know-how.

## CIMPA, with its PLM expertise, joins the Sopra Steria Group

New

CIMPA, a major player in PLM consulting and services, joined the Sopra Steria Group in October 2015, bringing its expertise and experience in both business and information systems (IS). CIMPA strengthens Sopra Steria's capacity to delve deeper into its clients' line of work and assist them in their digital transformation, offering innovative services in design, production, and maintenance of new products.

“*By combining our forces and our expertise with those of Sopra Steria, we are more capable than ever of ensuring the digital continuity of your products and of offering you innovative services throughout the value chain of the product, from its design, its manufacturing, its operation and its maintenance.*”

Pierre LOPEZ  
CEO OF CIMPA

### AEROLINE at a glance

- A transnational organisation
- 3,500 dedicated employees
- A comprehensive range of services
  - Business and technology consulting
  - Systems Integration
  - Infrastructure Management and Cybersecurity
  - Critical systems



## An “End to End” global offering

**Increase production capacities, strengthen the supply chain, reduce operating costs, design and propose high added-value services to stand out from competitors:** these are the major challenges faced by players in the aerospace industry. Now, more than ever, Sopra Steria is working alongside its clients to take up these challenges.

### BUSINESS AND TECHNOLOGY CONSULTING

#### A multi-dimensional approach

Sopra Steria consultants are involved in the formulation of strategies, as well as in the design and implementation of major transformation projects for clients in France and abroad. Their consulting approach is to simultaneously understand business, technological, financial and cultural issues while continuously seeking innovative solutions that take advantage of the digital revolution.

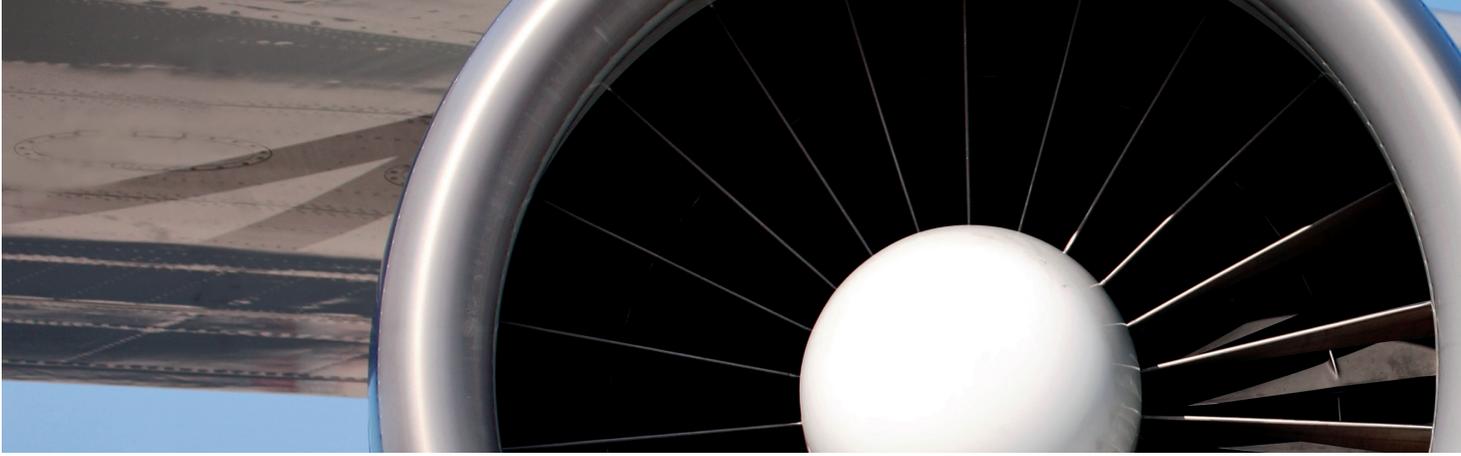


#### OPTIMISE PLANNING AND PERFORMANCE OF INDUSTRIAL INFORMATION SYSTEMS

Sopra Steria has helped a major player in aircraft on-board electrical power improve operating efficiency and optimise the planning of the activity and the performance of industrial IS (zero paper, quality, production).

#### MANAGE SYSTEM OBSOLESCENCE

In order to reduce the cost of IT operations and deal with systems obsolescence, a major industrial player specialising in the aerospace sector has launched a programme to upgrade its hosting operations: migrate a significant portion of its application assets and its infrastructures to a private cloud. Beamap, Sopra Steria's subsidiary for cloud consulting, assisted the client in this transformation by proposing assumptions, a trajectory, and industrial methodology.



## SYSTEMS INTEGRATION

### BUILD - Implementing information systems to meet business needs

Restructuring information systems addresses a need for radical transformation in response to extensive challenges faced by business lines: integrating a major acquisition, standardising processes and related processing cycles, completely overhauling core business processes, redefining PLM systems or modifying the added-value chain. Sopra Steria thus guides its clients in the definition and implementation of solutions for business lines, without any interruption in service.

#### ERP AND DIGITAL TRANSFORMATION

Sopra Steria will support Thales in its ERP digital conversion programme so that it can meet the operational needs of its business areas. This project, mobilising almost 150 employees, will affect 8,000 users across several sites in France across: finance, management control, manufacturing, sales administration, logistics, customer services, purchasing, export control, and business intelligence.

With this digital conversion programme, Thales wants to bring six of its entities, which until now have been operating independently, onto a shared solution that meets all of their business needs.

#### BUILDING THE FOUNDATIONS OF FUTURE IS

Snecma, which became Safran Aircraft Engines in April 2016, launched the Nouvelle Finance Snecma (NFS) project to enhance the competitive ability of its financial management model and to build the foundations of its future IS. The NFS project is considered to be the basis for which economic and financial performance will be controlled and measured over the next 15 years. It is based on the deployment of a standard SAP solution, a guarantee of stability, and a real-time decision-making system, guaranteeing performance.

“ *The choice of Sopra Steria was motivated by the proximity and adaptability of its teams, by its expertise in supporting major ERP integration projects, and by its understanding of our Group’s background and objectives, all of which is fully backed up by its senior management.* ”

**Denis PLANTIER**  
Senior Vice-President of Operations,  
Engineering and Industry, Thales

“ *We chose Sopra Steria to accompany us based on its ability to oversee major SAP transformation projects and for its understanding of the finance function. The sixteen months of the project confirmed our choice. The project has gone live since January 2015, as foreseen in the initial schedule.* ”

**Daniel LANNEAU**  
NFS PROJECT DIRECTOR - SAFRAN  
AIRCRAFT ENGINES FINANCIAL DIVISION

#### BIG DATA AND HIGH PERFORMANCE COMPUTING

To support the evolution of its business model and to meet a need for optimisation of its financial management, the CFO of one of the global leaders in aeronautical propulsion decided to entrust Sopra Steria with the

production of a new tool to link commercial offerings and the handling of business plans for civil engine service contracts. This system is based on a Big Data platform associated with high performance computing. Objectives: better financial management and a reduction by four in issuing commercial offerings.



## RUN - Optimising legacy applications and IT infrastructures

Continuous improvement in existing applications is measured against the progress in the applications services provided to the organisation and the often considerable cost reduction associated with these services. Sopra Steria responds to these challenges through the industrialisation and rationalisation of application assets to reduce maintenance costs. For the transformation of IT infrastructures, Sopra Steria offers technology integration services and the operation of Cloud and datacentre services, and new user working environments. Objective: offer customers efficient and agile infrastructures.

### MAINTAIN THE RANGE OF APPLICATIONS, INCLUDING PLM SOLUTIONS

The Dassault Aviation group, whose motto is “Higher, Together,” entrusted Sopra Steria with third-party maintenance (TMA) of its applications. Across a range of 330 applications, including more than 30 different technologies, the Consulting, Integration and PLM (CIMPA) teams will support Dassault Aviation in its transformation.

## GLOBAL DELIVERY NETWORK - Guaranteeing flexible production

In order to rationalise and industrialise its production, Sopra Steria has set up AEROLINE service centres in France, Germany, Spain, the United Kingdom and India. These service centres meet response and cost requirements, and, at the same time, satisfy safety obligations. This industrialisation allows for extensive flexibility in adapting to required changes in load plans, cost reduction and improving the quality of service to the satisfaction of business lines.

### HARMONISE BUSINESS PROCESSES

For Thales, Sopra Steria built an IS Core Model based on an EBS Oracle solution to harmonise business processes. To satisfy cost requirements whilst maintaining a high level of quality and supporting extensive deployment (7 countries, 5,000 users) Sopra Steria developed a multi-site delivery model. This highly innovative programme enabled the gradual transfer of the greater part of the technical and functional activities over to India within 5 years, at the same time retaining highly skilled local staff working in close proximity to clients in France and the United Kingdom.

### MANAGE A GROUP OF 300 PEOPLE ACROSS MULTIPLE SITES

For Airbus Group, Sopra Steria provides a fully managed service to develop and support a system to maintain all of the technical documentation relating to aircraft and spare parts. Sopra Steria continues to provide support to airlines as part of this service. Sopra Steria, Airbus’ sole point of contact, manages more than 300 people in France, Germany and India.

“ We have reached such a level of quality that whether the development is carried out in Toulouse or Noida, the difference is imperceptible. ”

Airbus Group



## PRODUCT LIFECYCLE MANAGEMENT

### Driving the industrial product throughout its entire lifecycle

With increased competition for products and services, and the growing complexity of industrial chains, driving the creation chain end-to-end (comprising design, engineering, manufacturing, maintenance, in-service support, withdrawal) becomes a competitive advantage and accelerates time-to-market. PLM forms part of a broader strategy for digitalised companies and aims to enhance operational efficiency to strengthen and facilitate interactions between all business lines, as well as ensure full data integrity throughout the product lifecycle.

The PLM solutions that support these new processes provide a powerful collaborative work environment, for internal purposes but also for the extended enterprise (partners, suppliers, etc). With this PLM offering, Sopra Steria guides and supports its customers to generate more growth, more profitability, more value.

#### UNIFY TECHNICAL SUPPORT

A global aerospace manufacturer wanted to group together the various levels of technical support for operations and maintenance users for their applications and their future developments: PLM, DEX, CAX and SAP. Sopra Steria and CIMPA were able to respond to the customer specifications, with CIMPA providing expertise in PLM and Sopra Steria in SAP, in a unique governance model.

#### MANAGE TECHNICAL DOCUMENTATION

An aircraft manufacturer called on CIMPA to integrate content creation and production tools for its technical documentation, in particular for production documentation tools as well as unscheduled maintenance manuals.

#### WIDEN ACCESS TO THE DIGITAL MODEL

The CIMPA teams launched with Airbus the "DMU As Portal" project on the BELUGA XL plane. Objective: using a digital model to widen immediate access to information concerning all 350,000 airplane parts. The digital model can be navigated fluidly on a standard PC. The software will refresh as the user navigates the data, gathering unit information on all parts and providing the right people, from the design office to the airlines, the right information for processing. A Virtual Reality room has been deployed by CIMPA to make support easier and to develop new ways of working.





## MANUFACTURING

### Streamline manufacturing through digital continuity

Today, for the most popular models, an ordering airline must wait between seven to eight years to receive a plane. This is an unacceptable time frame for companies that need to accelerate the pace of their fleet replacement. The aerospace sector therefore needs to increase its production!

The key lies in the need to streamline the manufacturing process through digital continuity. Robotics, IoT, mobility, the cloud, virtual reality, artificial intelligence are all now integrated in production lines on a daily basis. It's a matter of using digital tools to go more quickly. This is the prospect of the 4.0 factory.

Sopra Steria offers its expertise in manufacturing and supply chain through its extensive business and technological experience.

#### MANAGE MANUFACTURING ACTIVITY USING A "PAPERLESS" APPROACH

In 2015, Airbus Defence and Space (ADS) launched a 12-month homogenisation project for IS Manufacturing in its electronic maps and satellite components manufacturing business line. Objectives: improve the quality of data displayed and entered for traceability; reduce the workload in the methods and quality sectors; and strengthen management supervision with a "paperless" approach. Sopra Steria teams supported the ADS teams upstream from the framing phase through to integration, then in an MES (Manufacturing Execution System) solution, with the PLM environment and automated assembly machinery.

#### OPTIMISE THE SUPPLY CHAIN

Thales launched an ambitious programme of operational performance improvement in one of its subsidiaries. Sopra Steria Consulting is providing support by bringing expertise both in APICS supply chain good practices and standard solutions in ERP. This programme, which aims to achieve significant gains in the availability of products and the reduction of fixed assets, will go through factory business process modifications. It incorporates the immediate, concrete, implementation of new solutions through quick wins in selected areas, in order to combine in-depth work on the rise in team maturity and the immediate economic reality of operations.



## CUSTOMER SERVICES

### Diversifying sources of revenue

Customer Service combines all of the services offered by a constructor, OEM, company to its clients. Sopra Steria, a leader within this market (business & IT), contributes significantly to the deployment of MRO solutions (Maintenance, Repair and Overhaul) and the development of Health Monitoring products and exchange platforms (e.g. e-Service portal, e-Commerce portal, VIP Model) enabling leaders within the aerospace industry to set themselves apart from the competition through the optimisation of increasingly reliable Flight Hour Service (FHS) or Power-by-the-Hour (PBH) models. The issue at stake is two-fold: improve the availability and operability of aircraft and reduce maintenance costs.

#### OPTIMISE BUSINESS ACTIVITY

In order to support the sale of its upgrade services, Airbus Customer Service was looking to modernise its sales tools (SAP for the technical aspect and CRM Dynamics for the sales aspect). They entrusted Sopra Steria with the development and training of nearly 200 users in France, Germany and the United States. Objectives: reduce the time needed to issue an offer, optimise production schedules, and reinforce follow-up services for its clients, whether they are aircraft operators or leasers.

#### CENTRALISE SERVICES

For ATR, Sopra Steria is implementing an innovative SAP solution to transform the management of spare parts and MRO services, one of its key activities. The solution is designed to centrally manage customer ordering services, procurement, logistics and storage in order to reduce costs and optimise service and invoicing operations.

“ *This project was highly successful and was made possible owing to the high level of commitment and investment of the project team put together by the two partners, ATR and Sopra Steria.* ”

**Laurent BESOMBES**  
ATR Vice-President of spare parts support  
AEROLINE

## CRITICAL SYSTEMS

### Satisfying operational requirements

Scientific, Technical, Industrial and On-board Engineering involves complex, critical systems. The related development work is subject to stringent constraints on reliability, availability, safety and performance, calling not only for complete expertise in the technologies and processes implemented, but also in the client's core business. Thanks to its innovation capability, Sopra Steria's expertise comes into play from the upstream phases of projects until the products become operational.

#### TEST CAMPAIGNS

For nearly 10 years, Sopra Steria has conducted a series of very specific tests for a major European aircraft manufacturer. These tests are aimed at integrating new propulsion systems into aircraft in order to check the reliability, performance and overall integration of the systems. They consist in providing support over the entire duration of the programmes, from the preparation of these tests, participation in control room operations during the first flight, in direct contact with the pilots, up to certification of the aircraft for which Sopra Steria produces the crucial documentation

#### AN INNOVATIVE PROBE

As part of the certifications framework for natural icing conditions, planes must have probes to analyse the conditions encountered in flight: measuring the water content of the cloud, droplet size, number and nature of the crystals. Airbus launched a project for a new measurement system called nephelometer based on innovative technologies in the mechanical and optical fields and real-time analysis of data from laser measurements to comply with new constraints. Sopra Steria was chosen for its ability to process data from end to end, ensuring project management of the product and production of image processing and the probe control software

#### SOFTWARE FOR ELECTRIC FLIGHT CONTROL SYSTEMS

A major aerospace manufacturer entrusted Sopra Steria with the development of all its software for electric flight control systems, and automatic control of emergency modules. In certain cases, the confidence and reliability level demonstrated by Sopra Steria allows the client to conduct these operations with an entire delegation of international civil aviation certification authorities, such as the EASA or the FAA.





## CYBERSECURITY

### Protecting sensitive information to support digital growth

In view of the growing complexity and magnitude of cyber-attacks, the protection of data processing resources is an absolute priority for businesses and administrations. For digital transformation in complete confidence, Sopra Steria offers global capabilities covering the entire cybersecurity lifecycle: from prevention to detection and reaction, through the implementation of protection solutions. Sopra Steria's unique service model, adapted to the requirements and maturity of its clients, is based on an accurate production model combining the proximity and industrial capabilities of its cybersecurity centres operating 24/7 abroad.

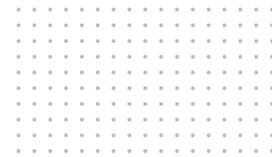
#### END-TO-END OUTSOURCING OF INFORMATION SYSTEMS (IS) SECURITY

Sopra Steria provides end-to-end outsourced management of IS security for a European aircraft manufacturer at a global level. These cybersecurity services are delivered from its global cybersecurity centre in Toulouse and its satellite centres. The client benefits from the flexibility of Sopra Steria's economic model, the predictability of the associated costs, and advanced innovation capabilities.

#### ALBATROS CYBERSECURITY PROGRAMME

Within the scope of the Albatros cybersecurity programme, launched under the Aerospace Valley Competitiveness Cluster, Sopra Steria brings together the players of the European aeronautics and space sector to cooperate in the fields of innovation, R&D and training. The objective of this programme is to accelerate synergies to protect digital assets and develop the sector's competitiveness.

# Innovating to improve performance and competitive edge



**Digital models for designing products and offering new services, augmented reality for maintenance support or training, operational and efficient mobility to be increase agility, Big Data associated with operational artificial intelligence and “self-learner» (monitoring services, data processing and flight test), a secure cloud, integrated social and collaborative networks...** all of these new uses of technology offer tremendous opportunities for companies to transform their operations.

The field of aerospace is a particularly fertile one in terms of innovation: safety, fuel consumption, new business models, industrial and service activity within one extended company. In order to devise and develop the solutions of the future, Sopra Steria strives to support its customers with these new challenges by always keeping successful integration into existing application portfolios uppermost in its mind.

## Connected objects: new opportunities

Miniaturised, communicating and smart, connected objects have multiple uses in the field of aeronautics: new agile ways to measure test data, monitor and anticipate equipment flows for manufacturing, check that installations are operating correctly and act by moving the interaction closer to the source. Sopra Steria offers its clients the ability to make use of these end-to-end data sources. For large manufacturers in the aerospace sector, for example, Sopra Steria has led work on the industrialisation and deployment of connected objects.

## Big Data: data analysis for Airbus flights

Test equipment is becoming more and more sophisticated and generates an increasing quantity of data during test flights. For example, the test flights of the Airbus A350 generate 2 Tb (terabytes) of data per day! In order to respect its delivery schedule, Airbus called upon Sopra Steria to implement a tool making it possible to access sensor data. Sopra Steria combined its expertise in big data analytics and its knowledge of the application to allow Airbus to reduce the number of test series by improving the reliability of the measurements and to optimise costs by assisting the engineers with their analyses.

## Digital Twin Factory

The «Digital Twin Factory» initiative consists of a miniature factory manufactured with a 3D printer, equipped with several sensors (temperature, humidity, motion, camera, RFID) and connected to its digital 3D model. The platform simulates a production process, collects data from sensors at both the plant level and that of the manufactured product, and then pushes it to its digital twin. Data is processed via an IoT platform that consolidates data from sensors and systems (ERP, PDM- product data management) at the same time.

Objective: to optimise manufacturing processes and rapid decision-making by collecting real-time data closest to the manufactured product. This initiative reflects the 4.0 Industry and «smart factories» and shows how to integrate new data captured from connected objects into the life cycle of the product (PLM).



## SOPRA STERIA'S ASSETS

- + **An AEROLINE business** - integrating CIMPA for PLM - dedicated to aeronautics and space transport professions that supports the largest players in Europe and worldwide.
- + **A global transformation approach:** our consulting and technological services business lines contribute to creating a continuous value-added chain. Their complementary nature gives rise to a global transformation approach, which enable us to respond both to business and technological requirements.
- + **DigiLabs:** within our innovation laboratory, we simulate the new uses of digital technology in real-life conditions. We can generate original, appropriate solutions that are co-designed with our customers in aerospace as well as other sectors.
- + **Specialised service centres of choice in France and throughout the world:** cybersecurity, internet of things, artificial intelligence, etc.
- + **An industrial partnership** driven in the long-term by a strong sense of engagement, the taking of controlled risks and an entrepreneurial spirit.

## Sopra Steria

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