Global Workforce Forecast

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It is not the strongest or the most intelligent who will survive but those who can best manage change.

Charles Darwin

INTRODUCTION

Are you interested in an integrated view from Airbus Transformation drivers including mega trends and demographic overview, to the main Human Resources (HR) current practices and current evolutions? If yes, this book is just for you! The book delves into the main assets of the company, its Human Capital and how to secure its continuous positive growth and its full engagement through the Airbus transition as a new worldwide Industry 4.0 and as a new technology company.

The ambition of the Global Workforce Forecast is to provide all employees with relevant data, information and analysis to better understand, anticipate and prepare the evolution of our company competencies. As employees worldwide, you are actors of this opportunity and you are encouraged to engage your own relevant development actions such as learning, mobility, knowledge management. As leaders, you could maximise usage of the HR levers (recruitment, employment marketing, learning, knowledge management...) presented here with the actors that could support your projects.

This book is structured into 5 main chapters: Megatrends, Demography, Competence Strategy, Resource Development levers and practices, and the evolution of Resource Development levers.

By reading these 5 chapters, this book will give you the means to understand:

- the main challenges our company is facing in a volatile, uncertain, complex and ambiguous world
- worldwide and internal demographic evolutions to better prepare our future workforce
- how Airbus competence strategy, in a five year timeframe, is supporting the business strategy by analysing how jobs and competencies are impacted by future evolutions and setting up all necessary actions
- how Airbus manages and enhances HR levers to contribute to company business objectives for today and tomorrow

As an employee, a manager, an HR leader or expert, please take a moment to read this Global Workforce Forecast to acquire rich information and analysis that will help you better anticipate, deliver, accompany our company transformation, and of course to bring out the best in you!

















80% of our staff will be generations Y, Z in 2027 Our world is facing an ever-increasing pace of global change and has been labelled as Volatile, Uncertain, Complex and Ambiguous (VUCA). This world brings a high number of challenges and opportunities to our company: a competitive environment in a globalised and financially driven economy, a permanent increase in customer expectations, reputational challenges, the need for Airbus to deal with innovation mostly because of digital transformation and the development of industry 4.0, generational gaps and demographic changes considering that 50 000 employees will leave the company in the next 10 years and 80% of our staff will be generations Y, Z in 2027.

These fast approaching transformations are conveying risks and challenges, but bring great opportunities if well anticipated and prepared with full engagement of the whole organisation and all employees. It is our company responsibility to put in place appropriate means and levers helping managers and employees to adapt our main asset, "human capital" and make the most of it for a successful future with a Growth Mind-Set.

GWF OVERVIEW AND OBJECTIVES

Global Workforce Forecast is a study launched in 2018 having the ambition to show and analyse the evolution of populations in the world and workforce within Airbus.

The purpose of this study is to give a robust and consistent frame of reference to every reader in order to:

- Access relevant data, information and analysis in a synthetic format
- Get a better understanding on the current and future workforce evolution
- Get a better understanding on the current and future HR levers supporting competence development from the organisation, team, and employees
- Enable him/her to integrate these elements in their own decision making process

MEGATRENDS

Megatrends are transformative, global forces that shape the future world with their far reaching influences on business, societies, economies, cultures and personal lives. Megatrends impact all regions in the world and all actors and organisations on a large time scale.

We have selected 6 Megatrends:

- Economic Globalisation
- Resource Scarcity and Climate Change
- Global Governance
- Demographics and Social Evolution
- Innovation and Technologies
- New consumption patterns

The identification and understanding of Megatrends are essential for our company to get a clearer visibility of future business risks and opportunities and as a result to better adapt the "human capital" of Airbus. As such, Airbus has already started to take into account Megatrends impacts in a high number of projects.

GWF references specific examples in these areas:

- In the frame of the sustainable development goals launched by the United Nations, Airbus has taken responsibility on 8 chapters such as: climate action, stronger institutions, innovation or infrastructure...
- To face climate change, an international objective seeks to limit the rise in average global surface temperature to 2°C requiring the world to cut carbon intensity by 6,5% every year. Airbus has integrated this objective within its strategy by developing eco-friendly aircraft. For example, the RACER aircraft combines increased speed and better cost-efficiency with dramatic reductions of carbon emissions. This aircraft will be launched in 2019.
- In a more and more digitalised world, with 90% of the world's data created in the last 2 years, Airbus is fully engaged in digitalisation by constantly developing highly connected products and services. In 2017, our company launched Skywise, a new digital, hyperconnected and highly secure core system to gather data at the scale of the whole aviation industry in order to improve major aviation players' operational performance and business results.

90% of the world data created in the last 2 years

DEMOGRAPHY

Demography describes, analyses and explains the population structures. The composition of the population consists of groupings which differ from each other by certain characteristics

Demography development in the company includes: Age structure, Generation/age groups, Gender, Leavers per job, Retirement, Nationality

The demographic development and its impact, on companies, mainly involve the following:

- The baby boomers are about to retire
- Digitalisation and new technologies must be introduced
- Employee hiring becomes more difficult in certain fast growing domains (war for talents)
- Employee hiring for suppliers becomes even more difficult
- Keeping the employee in the company requires new roles and models

The way forward for demography is:

- Building of awareness with data, facts, forecasts, graphs and explanations
- Building with demographic data, development is created for the next 5 to 10 years.
- Based on this, a conclusion for the reoccupation of jobs, e.g. from retired employees can be reached.
- Knowledge transfer and training planning can be created based on the demographics development.
- In conjunction with the workforce and workload planning, a clear picture of employee recruiting can be built.
- A better overview of the functions for long-term personnel planning and recruitment

Demographic development should not be seen as a problem; but rather an opportunity to take our future on a new path. New technologies, different ways of working, different processes, new ways of thinking, new working time models, new employees, and all this combined with the demographics in which different generations work together.

We must be on the right track!

COMPETENCE STRATEGY

The Airbus competence strategy is a company approach which aims to support the business strategy implementation in a 5 years time frame and to accompany the 5 Airbus business drivers:

- Boost our existing core business
- Be a digital aerospace champion
- Be a responsible company
- Be the global company of choice
- Shape the future of flight

These business and competence strategies and drivers integrate internal company evolutions, worldwide external trends, also called Megatrends, and the risks and opportunities derived from them

The competence strategy objectives are consequently to:

- Assess external and internal evolutions and their impacts on jobs and competences
- Set-up recommendations and actions to accompany these jobs and competence evolutions and reshaping
- Deploy all Resource & Develop actions to be taken by HR, Academies, managers, employees to systematically serve our future needs
- Provide visibility to all employees on what will be the competencies needed in the next years for our business

The 2018-2023 competence strategy is structured into 18 cross-divisional and cross-functional strategic axes, such as Digitalisation, Agile methodology framework, Health & safety and environment, Quality excellence, new products & services & Go to market...

Each of these axis are delivering:

- main objectives in term of competencies
- recommendation of actions; these recommendations being a strong input for the HR Resource and Develop action plan
- identification of emerging jobs & competencies

The competence strategy is a fundamental product for all HR processes and specifically to prepare and guide the Resource Review process, in order to secure that the future competence needs are addressed with concrete actions.

COMPETENCE STRATEGY RESOURCE DEVELOPMENT LEVERS

The main HR levers are:

- competencies referential and mapping
- demographic analysis
- recruitment, mobility
- early careers
- learning
- knowledge management
- employment marketing

These levers address all dimensions of competence evolutions: Emerging, evolving, declining competencies and jobs.

The Competence Strategy and the Resource Review are the 2 main enablers to give perspective and consistency on the implementations of HR levers:

- A well structured and shared Competence Strategy is essential to act by using the most appropriate combination of HR levers to answer business evolution needs.
- The Resource Review, which is a quantitative and qualitative overview about the competencies and resources needed to build concrete action plans for each HR lever, is a way to engage key decision makers on this topic via regular analysis and reviews: organisation leaders, HR Business Partners and HR expert representatives. It is important for these people to understand well all potential behind each of the HR levers and behind their appropriated combination.

Obviously, HR levers must also be properly anticipated and used by team leaders and by employees to maximise the potential of adaptation and growth for the benefit of the organisation.

The potential and flexibility of these HR levers are increasingly significant thanks to digital models, new consumption patterns and continuously evolving technical features. We are convinced that once all decision makers are familiar with HR potential levers, our collective intelligence will generate very high capabilities in addressing future transformation challenges.

In this study, we will not address the make or buy decisions models as it is a strategic element of decisions in the hand of business leaders. We will focus on the way to address the Make aspect.

THE EVOLUTION OF HR RESOURCE DEVELOPMENT LEVERS

HR capabilities are evolving, as in many other disciplines thanks to new technologies and associated social evolutions. They are becoming much more flexible, user centric, accessible worldwide and for all. For two years, Airbus PULSE HR programme has boosted these transformations. In this study, we will concentrate on the elements supporting HR levers evolutions.

Some PULSE foundations are crucial, such as the strong willingness to empower and to encourage all employees in getting the best of HR levers by drastically limiting administrative and manager validations. For example, most of Digital Learnings are accessible by all employees anywhere, any time, without manager's validation. Another example is the willingness to encourage leaders in adapting levers usage to their business pace and environment. There is no longer an annual review of all competencies and learning needs since, today, leaders and employees should do it for their own benefit at their own rythm.

The learning models are the ones progressing faster worldwide considering Digital accessibility, short rich media, MOOCs, and in the near future Augmented Reality/ Virtual Reality and Artificial Intelligence potential. Obviously, these are the most advanced and visible transformations with a promising future for Airbus worldwide. Airbus takes into account these evolutions and has reached 350,000 e-Learnings in 2018.



Airbus has recruited 6 3 0 0 newcomers worldwide in 2018

The recruitment models are also evolving rapidly with the ever increasing importance of Business Social networks, data analytics and advances in artificial intelligence, not to mention the expectations of the new generation entering the workforce. Having a more candidate focused and flexible selection process for both internal moves and external recruitments are key expectations that our recruitment models have to take into account. These considerations are especially true since Airbus has recruited 6,300 newcomers worldwide in 2018. 5,750 are planned in 2019.

HR data analysis is another interesting innovation. Indeed, it helped to identify all position moves over the last 8 years in the company and now, it enables to project these moves in a professional opportunities presentation accessible to all employees. Each employee can project from his current job the most relevant future jobs in his/her current organisation and his/her current domain of competence and in any given location. Employees get a description, the required competencies and the existing open positions on their potential future jobs they have identified.

Then, how do you ensure all actors and employees make the most of these means and evolutions? Let's try to get an overview via GWF.

TO GO FURTHER

In a VUCA world, GWF provides elements of understanding to arise awareness on rapid and important workforce changes in perspective of business context. All the following chapters will guide every reader to better learn, acquire, adapt, and put in place relevant actions for himself/herself and his/her organisation by using efficiently all levers and processes related to Resource & Develop. It should help globally to understand how Airbus is preparing its evolution with innovative HR levers and with engagement of all employees based on our company values.



We encourage each reader to actively consider information captured in GWF. One simple way could be to formalise for you only or for sharing the actions you would engage to progress on the subject, by writing on a simple table "What I will do in next 3 days? then in next 3 weeks, in next 3 months and perhaps in next 3 years"



MEGATRENDS, GLOBAL FORCES IMPACTING AIRBUS STRATEGIES

The term "megatrend" was created by John Naisbitt, a U.S. trend researcher, in his book of the same name published in 1982. He defines Megatrends

as transformative, global forces that shape the future world with their far reaching influences on business, societies, economies, cultures and personal lives.

Megatrends are characterised by their large and powerful impacts:

- On all regions in the world and all societal subsystems (politics, society, economy)
- On all actors (individuals, governments, corporations)
- On a large time scale (over decades)

6 Megatrends can be identified:

- Economic Globalisation
- Resource Scarcity and Climate Change
- Global Governance
- Demographics and Social Evolutions
- Innovation and Technologies
- New consumption patterns

How do these Megatrends impact Airbus strategies and how can Airbus take advantage of these Megatrends to better prepare the future?

The objective of this chapter is to give for each Megatrend:

- A deep understanding of the Megatrend concerned by proposing each time a definition, illustrations and key figures
- An Airbus case to highlight how these Megatrends concretely impact Airbus strategies.

ECONOMIC GLOBALISATION

DEFINITION

Economic globalisation is the intensification and acceleration of the mobility of goods, services, capital and people at the world scale. It impacts all countries and involves a strong increase in international trade and a growing interdependence between national economies.

ILLUSTRATIONS

What are the visible effects of Economic Globalisation in the world?

- Economic interconnectedness
- Globalisation of services
- A more vulnerable process of globalisation led by an 'economic G3'
- BRIC the new powerhouse, MINT and beyond
- Changing balance and shift of economic power to the East and South
- Selective de-industrialisation
- Industry redefined automation, smart and green
- Right shoring
- Balkanisation of finance: a fragmented banking system evolving in a systematic risks environment
- Rise of protectionist and nationalist policies

KEY FIGURES

Percentage of global trade in the worldwide GDP rate

Global trade as a share of GDP increased from 40% to 63% between 1990 and 2011 and global growth in trade is projected to continue at approximatively 5% annually through to 2030.



5% global growth annually through to 2030



Right shoring is a process aiming at achieving high level of efficiencies and productivity **by outsourcing simple activities while retaining complex processes and core business at core countries level**.



To do so, right-shoring is the optimised combination of:

- Off shoring: the moving of various operations of a company to another country
- Near shoring: similar to Off shoring, however, to a nearby country (often sharing a border)
- On shoring: the moving of activities which have been moved to another country back to the country where it was originally located

AN AIRBUS SPECIFIC CASE

Airbus Helicopters example: right-shoring as a part of Airbus strategy.



International FALs (Final Assembly Lines) Right shoring is part of the Airbus Helicopters industrial strategy transformation.

RESOURCE SCARCITY AND CLIMATE CHANGE

DEFINITION

Humanity is facing two main environmental issues: climate change and resource scarcity.

- Climate change refers to the rise of average temperatures on Earth and its negative impacts on our ecosystem as a whole mostly due to human activities.
- Resource scarcity highlights the lack of natural resources needed for human activities, due to climate change and also to the increase of human activities requiring more and more resources. This gap between the resources needed and the resources available creates hard pressure when humans want to have access to natural resources.

ILLUSTRATIONS

What are the visible effects of Resource Scarcity and Climate Change in the world?

- Increase of raw material cost
- Strain on natural resources
- Water, food, arable land and energy pressure
- Energy shift
- Alternative energies
- US energy independence
- Global warming
- Sustainable development & standards
- Ecosystem at risk
- Increasing CO2 emissions
- Right to operate, regulations
- Efficient utilisation of resources and social responsibility
- Growing nexus of climate change and competition
 for resources



Temperature rise

To stay within 2° C, the world needs to cut its carbon intensity by 6,5% every year to 2100.

In 2017, an equivalent of 1.7 Earth is needed to satisfy human needs.



3-**4°C 200 million people** could become permanently displaced due to rising sea levels, flooding and droughts.

AN AIRBUS SPECIFIC CASE

Airbus Helicopters example: taking into account environmental issues

Racer Cleansky2 (Rapid And Cost-Effective Rotorcraft): A high speed demonstrator developed as part of the Clean Sky 2 European research program. It will aim at achieving the best trade-off between increased speed and better cost-efficiency, and dramatic reductions of emissions and acoustic footprints for intercity (Start date : 2019).



Airbus Defence and Space Innovation concrete example: environmental issues and companies collaboration



Zephyr

Zephyr is a High Altitude Pseudo-Satellite which fills a capability gap between satellites and unmanned aerial vehicles (UAVs): it endures like a satellite, focuses like an aircraft, but is cheaper than both of them.

Zephyr, with its unique communication and surveillance capabilities, can be used for a range of military, security and civil applications:

- Maritime and border surveillance
- Navigation
- Missile detection
- Ad-hoc communication bandwidth...

Zephyr runs exclusively on solar power, both day and night, under all weather conditions. Replacing one conventional UAV with just one Zephyr would save 2,000 tons of fuel each year. Zephyr holds the world record for an uninterrupted solar electric flight.

What's next with Zephyr? A chance for Airbus to develop collaborative and innovative programmes:

Airbus and Williams Advanced Engineering are currently exploring potential areas of technological collaboration. The two companies will examine applications that may combine Williams' innovation culture, as solar battery supplier to the FIA (Federation International Automobile) Formula E championship since its inception and with its world-leading expertise in electrification, with Airbus' Zephyr programme.

GLOBAL GOVERNANCE

DEFINITION

Global governance means that, even if there is not one single worldwide government, international relations are shaped by several big and global actors: states, corporations, national and regional organisations. The actions and decisions of these actors strongly affect national and international businesses.

ILLUSTRATIONS

Elements of global governance

- Changing power, interdependencies and fragile multilateralism
- Public debt and deleveraging issue
- Increasing importance of supra-national institutions
- Increase of transnational coalitions and networks
- Growing power of NGOs
- Diffusion of power
- The state is becoming bigger everywhere but less capable and powerful
- Growing terrorism threats, asymmetric conflicts, cyber warfare
- Increasing security threats, security privatisation

KEY FIGURES

Elements of power of leading countries in 2030



- Internet/Communication
 Technologies
 Research & development
- Government Revenue
 Human Capital
 International Assistance
- Foreign Direct
- Trade
- Nuclear WeaponsGDP (purchasing power)
- ___parity)
- Military Spending
- Energy

69 of top 100 economic entities are corporations not countries



	01	United States
	02	China
	03	Germany
	04	Japan
	05	France
	06	United Kingdom
	07	Italy
	08	Brazil
	09	Canada
88	10	Walmart
	11	Spain
	12	Australia
	13	Netherlands
88	14	State Grid
88	15	Sinopec Group
		China National Petroleum
	17	South Korea
88	18	Royal Dutch Shell
	19	Mexico
	00	

20 Sweden

Index of debt growth relative to GPD



Airbus concrete cases

Airbus concrete example: Airbus Future Air Power



Considering the challenges of the future battle space and the impact of the high pace of technology and innovation development, Airbus has launched a new integrated family of systems, Future Air Power.

Airbus' Future Air Power provides a highly efficient connection between different platforms and technologies from across Airbus Defence and Space's current and future product portfolio. The range of platforms participating in Future Air Power goes from fighter, transport and mission aircraft, to Space, Cyber and intelligence solutions as well as unmanned vehicles of different size and performance classes.

Future Air Power: a connected, smart, and integrated system valuable for military, governments and industries.

Airbus' Responsibility & Sustainability Charter and United Nations Sustainable Development Goals





Airbus' Responsibility & Sustainability Charter:

In 2016, Airbus adopted the United Nations Sustainable Development Goals (SDGs) as a framework to align its responsible and sustainable strategy. Following this commitment, in March 2018, our top management has signed and published Airbus' Responsibility & Sustainability Charter, a Charter which encapsulates Airbus engagement to the United Nations SDGs.

Airbus has decided to engage in 8 of the 17 UN SDGs

- Quality education
- Gender equality
- Decent work and economic growth
- Industry, innovation and infrastructure
- Responsible consumption and production:
- Climate action
- Peace, justice and strong institutions
- Partnership for the goals

Airbus business practices highlight our company commitment: product safety and health and safety policies, strong ethics and compliance processes, strong labour relations, diversity promotion in our organisation and culture, responsible practices supported throughout our supply chain... More actions to come include defining operational Key Performance Indicators within Functions to measure Airbus' progress towards these 8 SDGs and also to initiate projects linked to the Charter. As CEO Guillaume Faury said "We aim for a world which is more prosperous, safer and better-connected. Like everything we do at Airbus, integrity plays a key role in this effort. We apply strong principles in our approach to how we conduct our business because we believe we can, and should, raise the bar on what's possible in responsibility and sustainability in our industry. Diversity is fundamental to who we are, but we want to go beyond nurturing an inclusive environment for our unique people. We want to enhance the workplace and create a space that truly embraces and allows our employees to feel a sense of safety and inclusion - a workplace where our employees can bring their best selves."

Airbus commitment within the 8 UN SDGs:

Quality education



The Airbus Foundation, together with its partners – The Little Engineer and The Travelling Telescope – has launched the Airbus Little Engineer programme in Kenya. The goal of the initiative is to encourage students between the age of 10 and 16 to understand and embrace technology, and ignite passion that could grow into an exciting career in the fields of Science, Technology, Engineering and Mathematics.

Gender quality

23% of employees promoted to senior manager positions **or above** were women



"At Airbus, between 2016 and 2017, 23% of employees promoted to senior manager positions or above were women against 16% in 2016 and, in non-production, external hires of women rose from 22% to 27%", says Yoann Lacan, head of Inclusion and Diversity at Airbus.

To further close that gap, Airbus promotes manufacturing functions through its PROW (Production Opportunities for Women) initiative.

Decent work and economic growth

As a signatory to the UN Global Compact, we maintain the highest standards on human rights and labour in our business practices around the world.

Modern slavery, including servitude, forced labour and human trafficking is a global issue and affects every country, sector and industry. Airbus has a zero tolerance approach to modern slavery within its business, its operations and within its supply chain.

In line with the requirements of the of S54 of the UK Modern Slavery Act 2015 ('MSA'), our Airbus in the UK Modern Slavery Statement sets out the steps we have taken during the financial year ending 31 December 2016 to prevent modern slavery and human trafficking in our business and supply chains and the proposed actions to support this going forward, including training campaigns in our extended supply chain.

Industry, innovation and infrastructure



In 2017, Airbus BizLab – the company's global business accelerator – launched the #africa4future challenge to explore the innovation potential in Africa. Airbus BizLab searches for amazing African start-ups that shape the future of a growing society, support sustainable development and empower mobility through aerospace technologies.

For example, the Illuminium greenhouses, a limited company based in Kenya formed for the sole purpose of Greenhouse farming and technology of horticultural crops, is developing a limitless integrated solar powered farm automation system with sensors controlled via SMS from the farmer's mobile phone enabling the internet of things to penetrate and reach the base of pyramid.

Responsible consumption and production



In the last 50 years, the aviation industry has cut fuel burn and CO2 emissions per seat / kilometre by more than 80%, NOx emissions by 90% and noise by 75%. While this improvement is extremely impressive, societal expectations and the predicted high traffic growth rate are placing increasing demands on all aviation stakeholders to continually reduce its impact on health and climate change.

For example, we have made rapid progress on electric propulsion with the E-Fan, a fully electric aircraft, and Airbus will build on its findings to further unlock the potential of hybrid-electric propulsion by developing the E-Fan X near-term flight demonstrator through a partnership with Rolls-Royce and Siemens.

Our research and development also focuses on lowcarbon fuels, noise reduction, innovative ways of operating aircraft and sustainable ways to offset emissions.

Climate action



Airbus, a non-profit organisation The Forest Trust and Netherlands-based company StarVision have jointly developed Starling, to support the "No Deforestation" commitment, focusing especially on oil palm plantation.

Starling develops products derived from detailed, 1.5m-resolution images captured by Airbus' SPOT 6 and 7 satellites, and creates high-resolution depictions of the landscape. Users can quickly compare images taken on different dates to easily spot changes in the landscape such as forest clearances that could indicate a new palm oil plantation.

Peace, justice and strong institutions



Airbus works together with international organisations (permanent member states of the UN Security Council, EU and NATO governments), states and customers to create better defence solutions for a safer and more prosperous world.

Secure Communications is the Airbus Defence and Space lead business for global secure communications build, operations and services. By using satellite communications technologies, solutions are increasingly focused on the integration of all critical communications to deliver unparalleled protection and security.

As more and more assets become connected whether in the air, on land or at sea - Airbus Defence and Space Secure Communication mission is to guarantee connectivity anytime, anywhere, with the highest level of security for the most demanding customers: military, governments, critical national infrastructures and international agencies.

Partnership for the goals



Alongside the Airbus Foundation, our vehicle for corporate philanthropy, we collaborate with the International Federation of the Red Cross, United Nations, Aviation Sans Frontières and a host of local communities to make a difference, including organising supply transport for disaster relief and supporting youth programmes in the communities we serve.

DEMOGRAPHICS AND SOCIAL EVOLUTION

DEFINITION

Demographics and Social evolutions **transform social** and economic structures of our societies: worldwide population, age & gender people proportion, urban and rural populations, rise of the middle class... These new trends are key challenges today and they **require** our societies to quickly adapt to these evolutions.

ILLUSTRATIONS

key phenonema illustrating demographics and social evolutions

- Growing world population
- Hyper and rapid urbanisation, megacities and densification
- Pressure on infrastructure
- Solvency of social welfare systems, including pensions and health care
- Integrating large youth populations into saturated labour markets
- Greater inequalities but extreme Poverty is declining
- Rise of Asian and Africans middle class
- Talent migration and talent war
- Human mobility and immigration
- Ethnic and religious tensions
- Women on the rise

KEY FIGURES

The part of **people aged 60 years and more** will represent an increasing part of the world population in the next few decades.

The number of megacities (population 10+ million) will increase from:



AIRBUS CONCRETE CASE

Airbus Helicopters concrete example: taking into account the rise of urban population and megacities into Airbus Helicopters strategy.



Vahana: a single-passenger, self-piloted electric vertical take-off and landing (VTOL) aircraft being developed by A3 to open up urban airways. Vahana aims to be used by everyday commuters as a intracity and cost-comparable replacement for short-range urban transportation like cars or trains



INNOVATIONS AND TECHNOLOGIES

DEFINITION

Innovation & Technologies Megatrend refers to the disruptive and enduring innovations which impact our everyday life and work. Innovation and technologies are a key challenge for companies. Indeed, innovation **opens** many opportunities if companies are able to capture the full potential of it, but, at the same time, innovation puts at risk companies since it requires continuous efforts to be able to compete in a more and more competitive labour market.

ILLUSTRATIONS

- Digital and data revolution
- Information age
- Robotics
- Augmented reality, human augmentation
- Additive manufacturing
- Spread of artificial intelligence
- Transformative industrial revolution 4.0
- Smart city infrastructure
- Cloud computing
- Internet of things
- Drones
- Acceleration of R&D cycles
- Bioengineering and bionics renaissance
- Transgenic technology
- · Biology/life sciences become the leading sciences
- · Convergence of technologies and research fields

KEY FIGURES

Number of Smart Cities Worldwide



Between 2015 and 2019, worldwide annual supply of industrial robots will face an average growth of 13% per year:

- 120 000 robots in 2005
- 254 000 robots in 2015
- 414 000 robots in 2019

Global Data - In Zettabytes

1 Zettabytes = 10²¹ bytes



90% of the words data was created in the last 2 years

0 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

AN AIRBUS SPECIFIC CASE

Airbus Commercial Innovation concrete example: Airbus takes advantage of the digitalisation of the world.



Skywise:

From the unmatched **OAM expertise of Airbus** and the **data skills of Palantir**, a new open digital platform for aviation has been created: Skywise.

It is a **digital, hyperconnected, high security core system which gathers data at the scale of the whole aviation industry** by centralising datasets from all major aviation players. Skywise empowers aviation end users by giving them the opportunity to have new insights from their own data to share, optimise and predict seamlessly. From engineering and maintenance to flights operations, Skywise allows every aviation stakeholder to make the most accurate decisions and to disclose the best opportunities for growth.



DDMS (Digital Design, Manufacturing and Services) is the digital transformation of the entire product life cycle. We want to ensure digital continuity in the way we design the product, we industrialize it, the companies operate it and the services offered in response to customers' expectations. One of the key targets is to go from a sequential development approach mainly focused on "product performance" to a co-development delivering the best in class product/ industrial system/way to operate the product with a strong focus on Services business.

The DDMS programme covers Commercial Aircraft. Helicopters (to develop within the group Support & Services digitalisation and leverage safety first) and Defence & Space where there's also for instance a challenging production rate on telecommunications satellites. As an example, Airbus has made major steps in digitalisation over the past 3 years, enabling an industrial ramp-up of its commercial aircraft deliveries from 378 in 2005 to 800 in 2018. With more than 7,000 aircraft in our backlog. Airbus continues its digital transformation in order to secure long term operational efficiency and competitiveness throughout the entire design, manufacture and in-service processes. In fact it's not just about digitalisation, we're rethinking the way aircraft products are designed and operated, streamlining and accelerating our processes. Modelling & simulation will be instrumental to enable concurrent optimization.

DDMS will:

- Allow a faster industrial ramp-up,
- · Flexibility for late customization,
- Reduce product development lead time / costs,
- Ensure industrial maturity from the start of ramp-up,
- Secure operational performance and maturity at EIS,
- Implement digital twin concepts in the industrial and service environments.

Main figures behind these benefits for Airbus Commercial:

- Double digit improvement in production lead time and cost.
- Up-to 50% reduction in lead-time (for late customization; Customer Design Freeze to Entry-Into-Service).
- Zero AOG.

DDMS approach is complementary to the Skywise platform that Airbus set up in 2017 to optimize aircraft products' operations and maintenance. Skywise feeds data from operations back to the world of design (modelling and simulation), which will be used by DDMS to optimize Airbus's products, industrial system and services

NEW CONSUMPTION PATTERNS

DEFINITION

With important societal, economic and technological evolutions at the national and global levels, more and more new consumption patterns are developing. Companies have to take into account these consumption patterns in their strategy to be able to adapt their products and services to these new ways of consumption.

ILLUSTRATIONS

What are the current phenomena which explain the development of new consumption patterns?

Thriving Health Sector, and rising health Costs Health and wellness Hassle free, simplified and streamline of goods and services Low cost vs premium polarisation, hybrid consumer Empowered customer Usage and sharing economy Increase prosperity in the third world Sustainable consumption in the west From mass market to micro market Generation Y prevalence...

KEY FIGURES

Massive acceleration of usage & sharing driven by digital

Value of transaction facilitated by sharing economy platforms in UK.



Hybrid consumption: value migrates away from the middle.

In 2025, Low Cost carriers will represent 40% of traffic in the United States while luxury hotels account for 55% of the sales.



Millennial's* affinity for technology is reshaping the retail space:

In **2030**, Millennial will account for more than **50%** of retail expenditures.



* = people born between the early 1980s and the early 2000s.

AN AIRBUS SPECIFIC CASE

Airbus Defence and Space example: new services for hyperconnected customers.



ICANEO:

ICANEO is a **new satellite imagery mobile application** putting latest Airbus images directly into customers' hands. With thousands of square kilometers of continuously updated satellite imagery, Airbus Defence and Space has a wealth of space-based data that few other companies can rival.

ICANEO enables customers to pick any location in the world, to have their own satellite atlas on any device, and to watch it evolve: they can take satellite pictures of the Qatar World Cup facilities, the polar ice caps, and the expansion of their own home town...

Smart Cities



MEGATRENDS OVERVIEW

6 Megatrends that will shape the world



- Economic interconnectedness
- Globalisation of services
- A more vulnerable process of globalisation led by an 'economic G3'
- • BRIC the new powerhouse, MINT and beyond
- Changing balance and shift of economic power to the East and South
- Selective de-industrialisation
- Industry redefined automation, smart and green
- Right shoring
- Balkanisation of finance
- Rise of protectionist and nationalist policies...
- Increase of raw material cost
- Strain on natural resources
- Water, food, arable land and energy pressure
- Energy shift
- Alternative energies
- US energy independence
- Global warming
- Sustainable development & standards
- Ecosystem at risk
- Increasing CO2 emissions
- Right to operate, regulations
- Efficient utilisation of resources and social responsibility
- Growing nexus of climate change and competition for resources...
- Global Governance
- Changing power, interdependencies and fragile
 multilateralism
- Public debt and deleveraging issue
- Increasing importance of supra-national institutions
- Increase of transnational coalitions and networks
 - Growing power of NGO
 - Diffusion of power
 - The state is becoming bigger everywhere but less capable and powerful
 - Growing terrorism threats, asymmetric conflicts, cyber warfare
 - Increasing security threats, security privatisation...

- Growing world population
- Hyper and rapid urbanisation, megacities and densification
- Pressure on infrastructure
- Solvency of social welfare systems, including pensions and health care
- Integrating large youth populations into saturated labor markets
- Greater inequalities but extreme poverty is declining
- Rise of Asian and Africans middle class
- Talent migration and talent war
- Human mobility and immigration
- Ethnic and religious tensions
- Women on the rise...
- Digital and data revolution
- Information age
- Robotics
- Augmented reality, human augmentation
- Additive manufacturing
- Spread of artificial intelligence
- Transformative industrial revolution 4.0
- Smart city infrastructure
- Cloud computing
- Internet of things
- Drones
- Acceleration of R&D cycles
- Bioengineering and bionics renaissance
- Transgenic technology
- Biology/life sciences become the leading sciences
- Convergence of technologies and research fields...
- Thriving Health Sector, and rising health Costs
- Health and wellness
- Hassle free, simplified and streamline of goods and services
- Low cost vs premium polarisation, hybrid consumer
- Empowered customer
- Usage and sharing economy
- Increase prosperity in the third world
- Sustainable consumption in the west
- From mass market to micro market
- Generation Y prevalence...







Megatrends are global forces which shape all sides of our future world (economics, politics, technology evolutions and innovations, social trends, future worldwide risks and opportunities...) at the international, regional, national and company levels.

This chapter should help all employees to better understand the world in which Airbus is evolving and, as a consequence, Airbus orientations regarding these global trends. Having a deep look and a good understanding of these trends is necessary to get a clear visibility on Airbus main objectives, strategies, and related current and new projects/plans.

You should have a look at the next chapter, Demography, to have a more precise look on the Demographic Megatrend. Indeed, this Demographic chapter includes and analyses worldwide and Airbus demographic data in order to give a better understanding on current and future Airbus workforce evolutions, workforce evolutions being a key and sensitive part of Airbus strategies.

You should also have a look at the Competence Strategy chapter to have a particular look at the 18 competence strategic axis deployed by Airbus to be more and more competitive in this VUCA world. These axis clearly show Airbus ambitions to get the best of Megatrends opportunities and to face current and future risks they bring.

MEGATRENDS REFERENCES

INTRODUCTION

• John Naisbitt, Megatrends, 1982

ECONOMIC GLOBALISATION

- KPMG International, Future State 2030:
- The global megatrends shaping governments
- Asian Development Outlook, Hess (2008)

RESOURCE SCARCITY AND CLIMATE CHANGE

- National Intelligence Council, Global Trends Paradox of Progress, 01/2017
- KPMG International, Future State 2030: The global megatrends shaping governments

- Global Footprint Network
- Airbus Hub Airbus Helicopters reveals Racer high-speed demonstrator: https://news-hub.intra.corp/ common/en/Pages/Racer_062017.aspx
- Airbus Hub Airbus and Williams Advanced Engineering team to explore technology collaboration: http://www.airbus.com/newsroom/press-releases/ en/2017/12/airbus-and-williams.html

GLOBAL GOVERNANCE

- International Futures Model
- Global Justice, Corporations vs governments revenues
- Oliver Wyman, Megatrends, Marsh & McLennan Companies
- Youtube Airbus Secure Communications: Leading The Future Of Connectivity: https://www.youtube.com/watch?v=M4VLZ0GLHRs
- Airbus Hub Sense of Purpose: https://news-hub.intra.corp/common/en/Pages/ Responsibility-and-Sustainability.aspx
- Airbus Hub Sustainable Development Goals: https://hub.intra.corp/common/ResponsibleCompany/ en/Pages/Sustainable-Development-Goals.aspx

DEMOGRAPHICS AND SOCIAL EVOLUTIONS

- World Bank Database
- Pwc, Five megatrends and possible implication, 11/2013
- Airbus Hub Rethinking Urban Mobility: https://news-hub.intra.corp/common/en/Pages/ Rethinking-urban-mobility.aspx

INNOVATION AND TECHNOLOGY

- UNECE
- Robot Industries Association, PWC
- Services by Airbus Skywise: https://services.airbus.com/ maintenance/expertise-and-other-services/skywise/skywise

NEW CONSUMPTION PATTERNS

- Oliver Wyman, Megatrends, Marsh & McLennan Companies
- PWC, The sharing economy grows up How the UK has embraced the sharing economy
- AMPCapital, Generation evolution impact on shopping centres and retailers
- Airbus Hub PicMeApp ICANEO: https://communities. intra.corp/sites/PicMeApp-ICANEO/default.aspx



DEMOGRAPHIC ASPECTS OF WORKFORCE FORECAST

Demography describes, analyses and explains population structures. The composition of the population consists of groupings which differ from each other by certain characteristics.

In the scope of Workforce Forecast, it helps to understand external trends per country (potential of recruitment, Educational level, and generations) and internal evolution in term of gender/ national diversities, age curve and generations balance (adaptations required, mobility, learning, knowledge management).

Anticipated demographic effects help to turn risks into opportunities to take our future on a new path.

Our objective in this chapter is to provide a clear view on:

- External demographic factors and effects
- Internal demographic main indicators
- From demographic analysis to workforce adaptation

PEOPLE WORLD WIDE DEVELOPMENT

Have you considered that the population is increasing, but the people are getting older and thus the number of workers is falling?

Demography analysis is a key element of personnel planning. We distinguish in two levels on the one hand, the employees in the company and on the other the development of the world population. As part of GWF, we show the evolution of the world's population, age trends per country, gender, nationality and competencies. With regard to the development of the world population, we try to estimate where, which and how long the markets for recruiting still offers potential for us and what opportunities and risks can arise. With the internal demography analysis we look at the entries and departures, the age, the competencies, the training and the corresponding job.

We encourage all senior executives of organisations with their senior HRBPs and staff representatives to take the opportunity of demographic analysis seriously before making personnel decisions. In complex situations, HRBPs could use HR experts to reflect on the situation.

The following information is designed for team leaders and interested parties to see the approaches that would be included in Resource Review files.

The global population is characterised by demographic trends. Even if significantly more children are born, the population is getting older and older. Especially in developed countries, the population is shrinking, with an increase in age.

We have to observe this change in demographic development, on the one hand our new customers are coming from growing countries and also our future talents are growing there.

Demographic change

Population growth and decline in different countries, combined with an ageing population around the world, will create a different consumer market by 2050.

In many developed countries, the working population will decline significantly and this gap will need to be filled by immigration, later retirements and productivity gains, which could be accelerated by the growth of the digital 'machine-to-machine' economy.

The world's population in all countries will age... and population in Europe will decline... 2013-2050

The shifts in population and economic growth will be accentuated by talent migration as successful economies draw people from weaker counterparts.



World Median Ages

While much has been made of the impact of ageing in the Western world, the most dramatic changes will be seen in emerging markets as birth rates and life expectancy around the world begin to converge.

Airbus is currently forecasting 10% to 15% growth outsides Europe considering different factors:

- Business development in Asia creating need for extension of FAL and deliveries in China
- Business opportunities in North America thanks to agreement with Bombardier on CSeries and FAL Mobile capabilities
- Talent opportunities in India considering Information Systems and Management potential growth

Nevertheless, Some Global Governance orientations could limit opportunities and will require some specific adaptations. If we consider for example Brexit negotiations between the UK and the European Union which could limit talents moves and opportunities in the UK and in Europe. This subject could be very sensitive for many individuals and for our organisations. This currently requires particular attention.



Population change

The world's population is steadily increasing and aging. By 2050, around 2.1 billion people will be 60 or older, thus posing complex challenges, but also offering opportunities.

These elements are interesting for Worldwide Workforce Forecast considering future young workers and talents sources evolution. It will require also consideration and analysis of Educational level per countries.

United Nations Development Programs



0.659 - 0.780

Education index is an average of mean years of schooling (of adults) and expected years of schooling (of children), both expressed as an index obtained by scaling with the corresponding maxima¹ ¹ Source: HDRO calculations based on expected years of schooling and mean years of schooling from UNESCO Institute for Statistics (2016) and other sources, accessed on 10 June 2016. (http://hdr.undp.org/en/indicators/103706)



Development of Education index per country

Managing the talent mismatch

The talent mismatch between where talents are most needed and where they are most available will be even more aggravating in the future.

Recruiting suitable talent in emerging markets becomes a critical task. It is expected that bottlenecks in management and technical areas will continue. Businesses will be forced to be more specific about the trade-offs between Outsourcing work, personnel transfer and retraining of employees. Likewise, decisions about where to find new centres of innovation, product design or progress. Engineering can focus on regions that have not previously been considered, the C-Suite. Enterprises also need to be more active in partnerships, educational institutions for the development and training of workers will work with new technologies and be transnational.

The mismatch between supply and demand for talent in 2021

- The table ranks countries according to how their talent gaps are expected to evolve over the next decade.
- Talent deficit are shown as red (negative numbers), talent surpluses as green (positive numbers), and broad balance as yellow.
- 3. Numbers report the average annual % change of the deficit/surplus.



Strongest trend talent for surplus

Demand and supply for talent in balance

Strongest trend talent deficit

Do we have to ensure that more women from different nationalities are supported for technical tasks and for management tasks?

Due to the demographic development, many employees will leave the companies in the next years, for the occupation of the vacancies, we should try to exploit the entire potential of the job market. The junior labour market shrinks from vear to vear and always demands greater efforts from us.

Studies show that more women than men graduate from higher education, but then go significantly less into technical professions and few of them make it to a senior role. Here, clear signs must be set for the future to find the right person for the right job.

Gender statistics Women in the EU

Gender statistics constitute an area that cuts across traditional fields of statistics to identify, produce and disseminate data reflecting the realities of the lives of women and men, and policy issues relating to gender equality.

2015

Males

Females



0 Germany Spain France UK China I ISA

2016 Males Females



Share of women and men aged 30-34 having completed tertiary education.

Life expectancy and Education

In regards to the population as a whole, life expectancy at birth varied between 74.6 and 83.0 years across Member States. Among the countries with the largest gender gap in absolute terms (9 p.p. or higher). life expectancy for the total population was 74.6 years in Lithuania, 74.8 in Latvia and 78.0 in Estonia, much lower than the EU-28 average of 80.6 years in 2015.

From the 'tertiary education attainment' indicator, we derive a gender gap defined as the proportion of men aged 30-34 that have attained tertiary education minus that of women. In 2016, this gender gap was -9.5 percentage points (p.p.) in the EU-28, meaning that the proportion of women aged 30-34 that had attained tertiary education exceeded that for men by 9.5 p.p.

Unfortunately, the sad truth is that women still have a significantly higher proportion of higher education qualifications, but they are far less represented in management positions. One of the main reasons for this is certainly the break for the birth of the child.

The attractiveness of industrial and new technologies for airls and females is addressed by different HR levers like Employment marketing and by Airbus Social Responsibilities and communication. A key aspect is also the pay or reward gap which will become a criteria for ladies and on which Airbus is committed to United Nations Sustainable Development Goals (SDGs).

WORKING FACTOR RETIREMENT

Almost all developed countries will face large waves of retirement in the next 10 years, some more, some less, It is said lightly, if we do not find the new talent in our own country, then we search on the other continents. But what about the others? When will other countries retire?

In the Global Workforce forecast we want to show what is happening in other countries and that the problem of aging is not so easy to solve. The other countries are also looking for young talents.

In Airbus we forecast

leavers



Retirement Age

In the next few years, Baby boomers will be increasingly leaving companies. Europe and more specifically Germany are badly affected. This concerns all other countries with legal retirement but not in such a large volume as in Germany.

While most countries hover around the 62-65 age range, there are a handful of countries that plan for workers to leave the workforce even earlier. The United Arab Emirates (UAE) boasts the lowest official retirement age at 49 years old, though the age is 60 for expats (non-UAE nationals). The retirement age has increased steadily in the past decade from age 40 in 2007 and is expected to climb to 50 this year for UAE nationals. While there is little data on UAE nationals who are retired, there's evidence that UAE expats try to stay in the UAE after retirement, even though certain policies prohibit it. Many expat retired find loopholes to avoid having to leave.

Life expectancy at birth compares the average number of years to be lived by a group of people born in the same year, if mortality at each age remains constant in the future. Life expectancy at birth is also a measure of overall quality of life in a country and summarises the mortality at all ages.

Now that we have determined that the baby boomers are leaving the company bit by bit, the question arises. we need to change something or can we go ahead and believe we have a great product and that's why the new employees will stay with us.

The Millennial, and certainly the generation Z, differ in culture and in the working methods of previous generations. Research has shown that the Millennial and Generation Z work well with the baby boomers. There is more of a parent child relationship in which a relationship of trust is built up without much competition. This looks different with Generation X.

For the future, we need to consider whether we have the right tools on board that apply to time models, pay models, career models, working arrangements, contracts, etc.



Some Tips to use The Keys to ATTRACTING & **RETAINING Millennial's Talent**



CREATE A CULTURE OF COLLABORATION

INVEST IN A MODERN WORKPLACE



BUILD A STRONG MISSION AND VALUES SYSTEM

The No.1 attribute Millennial demand millennial value adequate technology in the workplace

And also the generation Z and Alpha will have different attitudes and surprise us with new ideas. We will have to be open minded in the next workforce planning

In the scope of Workforce Forecast, a key element to consider in terms of diversity, is the need to adapt our ways of working, to ensure multi-generations positive integration (reverse tutoring boosting digital). Our PULSE programme pays particular attention to this aspect.

65% preferred

face-to-face meetings

with their managers.

in person meetings

when collaborating

with others on projects.

with new roles and time models.

51%

49% say they «never» work from home.

preferred

was important to them when choosing an employer.

81%

said they consider security when developing communicating and sharing sensitive information at work.

to do their iobs 93%

said the latest technology

Members of this generation are looking to align their professional career with a higher

80%

agreed they are creating their own career path.

88%

of millennial sav a defined values and mission statement draw them to a company.

FACTS AND FIGURES INSIDE AIRBUS

It is very important for all companies to have information and numbers about the workforce for financial control. The data must include gender, age, arrivals and departures, skills and competencies for example. And for companies, it must of course be clear where it sees itself in the future.

Gender diversity

With an average of 17%, Airbus is on par with other manufacturing companies. While the quotas are still very far apart in the production area, the conditions in the business management as well as in the personnel areas are very close or almost reversed.



Headcount per age average Airbus Total (2017 vs. 2030)

Looking at the Airbus workforce in total, the age curve looks overall well balanced, only when you go deeper for example into the countries, you can find unbalanced situations for the average age.

Some situations are historical and will progressively evolve thanks to company orientations. Some others are linked to the countries' evolution. For example, industry in general does not attract new generations in Europe.

A lot of employees will leave the company in the coming years and we have to organise knowledge management and recruiting. This will be a very important point for the future.

There's some questions we have to ask ourselves:

- What are the major technologies?
- What are the main competencies?
- How can we find the talents on the market?
- How can we bind employees more to the company?

The average age and age distribution are major indicators for the future of work. It is important to have a more detailed look.

Airbus distribution of women per country



2017

Airbus distribution age per country



2030



2000

1000 0 1000 2000 3000 4000 5000

* Airbus Work Force

Airbus Average Age per Country



Job function

Age and gender vary greatly between countries and jobs. Considering that diversity is recognised as a strong factor of performance, considering the potential of employment market and considering the value of generational links continuity, the goal should be to move to higher uniformity.

Especially between the countries the age difference is very high as well as gender distribution between the jobs.

Appropriate measures, such as mobility and employment quotas, should help to strike a balance.



Especially between the individual countries there are big differences in the personnel structure at Airbus. While the baby boomers are already determining the age structure in Germany, many younger workers have already been hired in France in recent years. But that does not change the reality that many employees retire in both countries.








The four graphics below show the same age problem as in the countries, with manufacturing still doing comparably well. Another problem becomes visible; the proportion of women in the technical professions is too low.













Are you sure your company is aware about the relation of employee mixture? And the way of working in the future years?



FROM DEMOGRAPHIC ANALYSIS TO HR LEVERS PRACTICE

The demographics analysis provides a great deal of information and opportunities for the HRBP and management functions. For each individual, the demographic analysis, in terms of age, indicates a direction in which the area, function or company will move in the near future and whether there are obvious measures.

About age curves:

Age curves (typical cases: majority very young, high majority old and hole in the curve)

- View in the future doing nothing (what could happen in five or ten years)
- Comparison between function
- Staffing model (recruitment)
- Knowledge Management (move, leavers anticipation)
- · Learning to capitalise and share competences

The age structure analysis shows a lot of different age development options. Let's consider a few cases which frequently occur:

- Age curve centred on population lower than 30 years old It could be the result of high departure of older employees, mark the start of a new program or project, high turnover.
- It would also be possible to introduce a new technology that will be staffed by employees who have just come from education or from university.
- The leadership style should be adjusted so that the degree of freedom of employees are still adapted to that of the universities.
- It is important to note there is often a lack of experience here.
- Motivational problems often occur during boring work.

• The age curve centred on population > 45 is usually easier.

- In most cases, the baby boomers were hired and thereafter, there were no new hires.
- The main risk is on massive knowledge or experience loss. It could be considered also as an opportunity for disruptive competency renewal.
- For all age groups, health and physical activity should be considered, but especially in this age group.

- Changing tasks can be helpful and strengthen mental capabilities
- Training is just as much a part of this age group as it is of younger employees.
- It is key not to disregard the knowledge transfer.
- The age curve with a significant gap due to no recruitment during a long period of time.
- Such organisations could be at risk in terms of experience transfer and in terms of lack of diversity
- Particular attention should be taken in anticipating retirements
- Models such as mentors or buddies are useful.
- The age curve in the graph (see example) is a wellbalanced unit, each age can learn from the other.
 Reoccupation and departures can balance each other.
- The guidance points from all the other age curves are relevant in this case

Organisation leaders always integrate these elements in their Resource Review analysis and decisions with support of HR teams. Team leaders are also encouraged in staffing their team according to these principals. For all individuals, it is important to understand the importance of the subject considering their own development and mobility orientation and better understanding of their environment.

Generations analysis

The generations' bridges are important. Many experiences demonstrated the performance value of generation links.

It could drive different HR levers:

- Review of ways of learning, ways of recruiting and ways of marketing our jobs
- Encourage new ways of working with more collaboration and focus
- · Adapted on boarding programmes

Encourage mobility in the company Encourage powerful reverse tutoring

Gender diversity

It is an important topic in the scope of workforce adaption. Here also diversity is a strong factor of performance at all levels. Our situation could be historical and also linked to an environmental context which we can influence in certain cases.

It is driving different HR levers:

- · Push for diversity via recruitment targets
- Influences our environment and our attractiveness via employment marketing and company communication
- Promotes mobility opportunities looking for this diversity at all levels
- Continuously analyses and address' the root cause for lack of gender diversity creating specific community and learning programmes



Older age oriented curve Female Male

63 9 9 9 9 9 9 55 51 47 1 Male 43 39 35 31



Hole in the middle curve

Female Male



Age curve like a quarter

Female Male



Nationality Diversity

As we are a worldwide company, we have the chance to integrate talents worldwide and across many countries (145 nationalities). The worldwide demographic trends reinforce the willingness to move further in this direction for the purpose of Business opportunities and also for an increase in the value of human capital. It is obvious that attracting workers and talents worldwide drastically increases our potential and the company's assets.

It is driving different HR levers:

- By recruitment
 Promotes our open positions worldwide
- Analyses equally all candidates
 By employment Marketing and communication
 Enhances the visibility of Airbus and opportunities, worldwide

 Promotes internal leaders knowledge of Universities potential Worldwide

- By learning, provides all digital learnings available in the same conditions worldwide
- By culture

OVERALL DEMOGRAPHIC ANALYSIS ELEMENTS

Demography describes, analyses and explains population structures. The composition of the population consists of groupings which differ from each other by certain characteristics. The demographic development in the company includes: Age structure, Generation / age groups, Gender, Leavers and Retirement, Nationality.

Demography development should not be seen as a problem; rather it offers us an opportunity to take our future on a new path.

New technologies, different ways of working, different processes, new ways of thinking, new working time models, new employees, and all this combined with how the different generations work together.

This chapter should help leaders in adjusting their Workforce Forecast and associated action plans with better consideration of age balance risks and opportunities and all diversity opportunities.

For individuals, it is always good to better understand their environment, company orientation and their own opportunities of positive growth.

It could be then good for you to review the Mega trends to understand company context and orientation and then the competence strategy. You can inform yourself about HR levers practices to maximise the value they bring to you. HR levers evolution will highlight coming evolutions which are very promising in term of accessibility worldwide any time/anywhere, in term of individual's empowerment and in term of global efficiency and effectiveness.

DOCUMENTS REFERENCES

https://www.livepopulation.com/

https://www.siemens.com/innovation/en/home/picturesof-the-future/health-and-well-being/demographic-changefacts-and-forecasts.html

https://www.pwc.com/gx/en/industries/financial-services/ projectblue/demographic-change.html

https://aperioncare.com/blog/retirement-age-around-world/

https://www.lindseypollak.com/wp-content/ uploads/2015/12/Infographic-Millennial-Workforce-Research.jpg

http://ec.europa.eu/eurostat/statistics-explained/index. php/Gender_pay_gap_statistics

https://ec.europa.eu/info/strategy/justice-andfundamental-rights/discrimination/gender-equality/equalpay/gender-pay-gap-situation-eu_en

http://ec.europa.eu/eurostat/statistics-explained/index. php/Gender_statistics

http://theweek.com/articles/443122/8-maps-show-median-age-every-country-earth

http://hdr.undp.org/en/indicators/103706

COMPETENCE STRATEGY

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AIRBUS 18 COMPETENCE STRATEGIC AXIS HONEY COMB

The Airbus competence strategy is a company approach which aims to support the business strategy implementation in a 5 years' time frame.

The objectives of the competence strategy are to:

- Assess external and internal evolutions and their impacts on jobs and competencies
- Set-up recommendations and actions to accompany these jobs and competence evolutions and reshaping
- Give guidance to all Resource & Develop actions taken by HR, Academies, managers, employees to systematically serve our future needs
- Provide visibility to all employees on what will be the competencies needed in the next years for our business

In a nutshell:

The competence strategy is a fundamental product for all HR processes and specifically to prepare and guide the Resource Review process, in order to secure that the future competence needs are well anticipated and addressed with concrete actions.

The 18 competence strategic axes:

The 2018-2023 competence strategy is structured into 18 cross-divisional and cross-functional strategic axes. These axes are classified into 3 categories:

- Disruptive: this category represents the axes which are most concerned by new environment and new technology challenges and opportunities.
- Continuous performance: this category represents the axes gathering Airbus domains of expertise which require a constant investment in order to remain its state of the art.
- New ways of working: this category represents the axes which integrate new and alternative competencies, skills, mind-set, behaviours which offer new opportunities in our way of functioning in order to make the best of our human capital and deliver better performance.

AIRBUS COMPETENCE STRATEGIC AXIS OVERVIEW



Each competence strategic axis is structured in the same way with the following parts:

- a coherent group of challenges in its business context
- the objectives in terms of competencies/development/ acquisition to address these challenges
- the population impacted by these challenges and opportunities
- identification of emerging jobs & competencies
- recommendation of actions to reach the objectives

Relationship between Megatrends, axis and jobs/ competencies:

EMERGING JOBS & COMPETENCES



1 - Advanced analytics & Big Data

- 2 Agile methodology framework
- **3** Customer centricity
- 4 Digitalization
- 5 Cyber & Physical Security, Product Safety & Crisis Management
- 6 Ensure business continuity
- 7 Right- shoring & Globalisation
- 8 Innovation, disruptive & incremental
- 9 Quality excellence
- 10 Reputation Brand, Ethics & Compliance
- 11 Leadership behavior & empowered teams
- 12 Maximise Operational Performance
- 13 Design & deliver products & services
- 14 Technologie & Capabilities
- 15 Drive Financial Performance
- 16 Workforce polyvalence- polycompetence
- 17 Environment, Health and Safety
- 18 New products, services & go to market's

Economic Globalisation
Resource Scarcity & Climate Change
Global Governance
Innovation & Technologies
Demographics & Social Evolution
New Consumption Patterns

This RADAR makes the bridge between different dimensions:

- The 18 competence strategic axis
- The 6 Megatrends impacting competence strategic axis
- Emerging jobs and competencies attached to the axis

How to read the RADAR?

Have a look at the axis number 4 called Digitalisation. This axis is mainly impacted by the Innovation & Technologies Megatrend (in dark yellow). Several emerging competencies and jobs are attached to this axis: Cyber Security, 3D Programming, UX/UI Design...

CYBER AND PHYSICAL SECURITY, PRODUCT SAFETY AND CRISIS MANAGEMENT

This competence strategic axis aims at anticipating all competencies needed to protect Airbus from any attack (physical or cyber), reinforcing our Product Safety mechanisms and ensuring we are able to properly respond to any potentially upcoming crisis situation. Action plans target all levels from general awareness, intermediate up to master/ specialist level.

Context

Cyber & physical security is mainly linked to two megatrends :

- 'Global governance', with global threats and the rise protectionist and nationalist policies and
- 'Innovation and technologies', implying digital and data revolution and cloud computing.

In a globalised, hyperconnected world facing a growing number of cyber aggressions, security is an even more sensitive issue for Airbus today. It is key to protect solutions, platforms, infrastructures, which are multiplied through our Digital Transformation. Existing (cyber) security mechanisms need to be reinforced and updated with regards to new threats. This expertise can equally be used to develop and sell cyber security products. (Note: cyber security topic will be further developed in the next chapter 'R&D lever')

Then, we also need to take into account Safety Mind-Set evolution, Safety Mind-Set moving from strict compliance to risk management. Developing competences related to Safety Management System and Human factors will highly contribute to reinforce safety in flight and maintenance operations.

In the frame of a crisis management culture, an adapted response from our company to manage any type of exceptional situations is expected.

Impacted population

All employees are impacted at all levels: we need to raise a general awareness and build an intermediate up to master and specialist level.

Emerging jobs/competences

Emerging jobs and competences Product / Safetv Cyber Security Management Operations Svstem IT Security Crisis Specialist Response Information security Product / Cyber Security Detailed Design

Objectives in term of competencies Security

- All: Reinforce awareness of all employees on security behaviour to prevent cyber or physical attacks.
- Key enablers: Reinforce the reflex to anticipate and include security dimension in all products or processes development and implementation phases. Aim is to increase and build a pipeline of employees/ candidates with cyber security competences and a hacker mind-set
- Specialist: Foster expert competence development for Security jobs, especially on cyber security.
- Attract cyber security profiles or reconvert internal profiles into cybersecurity

Crisis management

 Develop a Crisis Management Culture involving all levels of the Company from Executives, Middle Management to each and every employee

Product safety

- Raise product safety awareness throughout the whole company and upskill the SMS network
- Upskill products safety network on risk management in the frame of Safety Beyond Compliance

DIGITALISATION

This competence strategic axis aims at:

- Covering the 9 digital capabilities as defined by the Digital Transformation Office and related competences:
- Internet of Things
- Mixed Reality & Smart Wearables
- Cloud
- Artificial Intelligence
- Connectivity
- Blockchain
- Robotics
- Big Data and Advanced Analytics
- Additive manufacturing / 3D printing
- Developing competencies for the digital transformation of our company.

Action plans target at all levels from general awareness, intermediate up to master/ specialist level.

Business context

(including transformation projects and megatrends) This strategic axis is mainly linked to the Megatrend 'Innovation and technologies'.

The digital revolution that happened in our personal lives is also highly impacting companies and the marketplace with a spectacular speed and magnitude of change.

Airbus' digital ambition is to be the leading aerospace company leveraging digital technologies to bring change on business values, market differentiation and employee engagement.

To support this ambition, Airbus' Digital Transformation does not only build on technology but also pushes for new ways of working and new methods to be followed. Objectives of these projects:

- Redesigning processes along the value chain to improve operational efficiency and profitability
- Improving products & platforms to deliver unmatched operational performance and value added services
- Boosting company transformation and mind-set change to increase agility, speed and imagining innovative or disruptive business models to keep our leading edge and drive the market
- Boosting company transformation and mind-set change to increase user agility, speed and customer centricity.

Impacted population

All employees are impacted at all levels in all functions and divisions.

Emerging jobs and competences

Emerging jobs and	competences	Declining competences
 IoT Technical Solution IoT Network IoT Hardware IoT Business Model Aircraft Connectivity 	 Agile Software Development 	To be defined
 Software Engineering 	 DevOps 	
• 3D Programming	 UX/UI Design (User experience / user interface) 	
 Cyber Security 	 Digital Manufacturing & Design 	
 Mobile/ Application Development 	 Work preparation jobs impacts in FALs/ Plants 	
Cloud	Diaital Marketing	

Cloud
 Digital Marketing
 Architecture

Emerging jobs and competences

Declining

- Artificial Intelligence Approaches
- Artificial Intelligence: Time Series
- Artificial Intelligence: Computer Vision
- Frame an Artificial Intelligence problem
- Artificial Intelligence: NLP
- Artificial Intelligence: Autonomy

Objectives in term of competences

FOR SPECIALISTS

- Ramp-up competences linked to IT Architecture Design and Integration (especially Cloud Architecture and Security). Network Engineering and IoT Programming
- Ramp-up competences for Software Engineering and DevOps
- Ramp-up 3D Programming competences
- Ramp-up competences linked to UX/UI Design, especially on user-centricity and design thinking method
- Ramp-up competences for Software Engineering
- Ramp-up competences for Mobile/Application Development

FOR KEY ENABLERS

- Establish profound understanding of 9 Digital Capabilities, potential application fields within Airbus, as well as opportunities and limitations
- Ramp-up on UX competences in all functions

FOR ALL AIRBUS

- · Create awareness on typical skills and profiles
- Create global awareness for each of the 9 digital capabilities, their maturity and the application fields at Airbus
- Create awareness on the impact of digital on ways of working and collaboration

DESIGN AND DELIVER PRODUCTS AND SERVICES

This competence strategic axis aims at developing transversal competencies related to design, deliver, and supply products and services.

It deals with the whole product life cycle from initial design to decommissioning, and the complete value chain including operation and maintenance.

Business context

(including transformation projects and megatrends)

This strategic axis is mainly linked to two Megatrends:

- Economic globalisation in particular with the globalisation of services
- Innovation and technologies.

To stay competitive in a more and more globalised and innovative environment, Airbus has to continuously design and deliver new products and new services to satisfy even more customers. By leveraging innovation and technologies, Airbus is aiming at delivering smarter products, offering new services and improving effectiveness of the design-deliver process.

To meet these needs, the main objectives are:

- Delivering smarter products, connected, secured (cyber protection) enabling big data and analytics; Deliver Unmanned Systems with drones and related services
- Develop services for all platforms (military aircraft, space systems, commercial aircraft), for example by developing and delivering Skywise services
- Performing the Systems Engineering of the entire value chain to support the development of connected products and services
- Enabling a leaner transition from design to new production techniques (incl. Full 3D, ALM, etc ...) addressed through Industry 4.0, Digital design manufacturing transformation projects

Impacted population

Mainly employees in Engineering, Manufacturing (especially Manufacturing engineering), Quality and Customer Services are impacted.

Emerging jobs and competences

Emerging jobs and	competences	Declining competences
 Industrial architect 	 Model based system engineering 	To Be Defined
Serial Process Engineer	Computing and communication detailed design, development engineering and development responsible	
 Tech Shop Floor Support 	 Software architect 	
 Process Performance Engineer 	 IT architecture design and IT product design 	
 Industrial system engineer 	 Performance based services 	
 Manufacturing line design principles 	 Service architect and designer 	
 Industrial flow simulation 		

Objectives in term of competences

FOR ALL:

- Develop Engineers into Design for X (Manufacturing, Assembly, Additive Layer Manufacturing, Lifecycle, Cost) ready to work in Multifunctional teams
- Develop Systems Engineering of the entire value chain (incl. E2E process capabilities, Integrated Logistic Support-ILS; In-Service Support-ISS)

FOR ENGINEERING:

- Develop «Style in design» job and competences
- Train systems engineers into Model Based System
 Engineering
- Reinforce the competences in System of systems.
- Develop test teams from unitary Verification and validation (V&V) to an end-to-end approach (AD Engineering)

FOR CUSTOMER SERVICES:

- Develop Performance based services competences
- Develop Training capabilities towards customers, Service operation capabilities and Consultancy capabilities (AD - CIS)
- Develop Integrated Logistic Support (ILS);In-Service Support (ISS) related competences and mind-set (AD -Military Aircraft)
- Develop competencies in Business case building and Business opportunities analysis (AD - Military Aircraft)
- Develop competencies related to use of digital technical documentation

FOR MANUFACTURING:

Manufacturing engineering upskilling transversal project:

- Industrial Architect (new role)
- Collaborative Engineering
- Develop Bill of Material change management and Fundamental shop floor support
- Develop end to end KC/Key Performance Parameter Systematice Capability
- Outstanding works management

CUSTOMER CENTRICITY

This competence strategic axis aims at building, securing and maintaining confidence with each and every customer at every level, at every moment of our relationship; and ultimately gain their loyalty; shifting from product centric to a more customer centric organisation.

Customer Definition: The Customer is the legal entity which purchases and/or operates Airbus' products, solutions or services

Business context

(including transformation projects and megatrends) Customer centricity is mainly linked to the 3 following mega trends:

- Economic Globalization
- New consumption patterns
- Innovation and Technologies

"Customers have evolved as their environment and behaviour have changed. It is not about products, it is not about solutions. It is about customer experience. We are all in the CEx Industry, we are all selling CEx, customer experience." Jack Welch.

The level of customer expectations has risen incredibly with simple and digital needs. It is important to understand that customer experience is at stake. We need to think Customer First, and be perceived as One Airbus. Each organisation is contributing to customer experience, not only in customer services or in sales and marketing.

Organisations that want to become customer-centric must shift their focus from tools towards people in the organisation in order to get employees thinking like their customers. Among all of those changes, a new culture of innovation is required to support generating a significant Company growth.

"Customer-centricity involves changing the strategic thinking and direction of the organisation at the highest level and goes down to the development of products and solutions at the ground level. The common thread through the whole organisational hierarchy, functions and departments is the intent to stay close to the customer as much as possible." Martin Roll, Business & Brand strategist.

Airbus major Customer Centricity projects and initiatives are the following:

- Time for growth (Airbus Defence & Space)
- Customer Satisfaction Transfo (Airbus Helicopters)
- Loving Customers (Airbus Commercial)

#LovingCustomers:

- THE AIRBUS CULTURE CHANGE PROJECT

CO-WORKING WITH CUSTOMERS	CUSTOMER Interface	SOLUTIONS Focus	ORGANIZATION	ADVICE Orientation
Work more collectivity with customers to define solutions, build customer understanding at each interaction	Ensure customer experience consciency through coordinated network of customer facing-teams same voice towards the customer	Consider a bundle combining products, services and knowledge to maximize customer revenus generation	Reinforce cross- organizational team working breaking-down	Create and solution an advitory relationship
:: :: ::		•	22	
			ORMATION	

Impacted population

All employees are impacted at all levels, not only the customer-facing employees.





Emerging competences

Emerging jobs and competences	Declining competences
 Leading consultative selling 	To Be Defined

- Global Account management role for sales related activities

Objectives in term of competences

Build one customer mind-set and culture for the entire company covering

- Competences
- Ways of working (processes)
- Information/knowledge sharing
- Attitude/business etiquette

Share 'Customer mind-set' at all levels of Airbus via:

- Awareness (HUB/Poster campaigns, Conferences, ...)
- Learning solutions (e-learning, serious games, ...)
- Engage our leaders in the Customer Journey through Team Talks, Leaders Programs...
- Customer Knowledge

AGILE METHODOLOGY FRAMEWORK

Develop competencies related to the usage of Agile methodology for project management or new development to support business challenges.

Business context

(including transformation projects and megatrends)

This strategic axis is linked to the megatrend 'Innovation and technologies', with the acceleration of R&D cycles and to « New Consumption patterns », with empowered customer.

The most competitive companies are required to be agile to adapt quickly to market trends. (decrease of Helicopter market, new competitors in Space and Air plane markets) The ability to be fast in proposing, adapting, changing solutions is becoming an industry standard, but this ability is not present enough in our ways of working. Transformation projects, like Customer Pulse (customer services AI), are integrating Agile methodology and agility mind-set.

The main objectives of this approach are :

- Reduce time to market
- Customer centricity / Customer Value creation
- Improve Quality
- Beduce Technical risks

Impacted population

- Engineering
- Customer Services
- Information Management
- Programmes

Any other function having Projects using Agile Framework.

Emerging roles and competences

Declining Emerging jobs and competences competer

- AGILE project and product management
- Scaled Agile Management

Objectives in term of competences

 For team members and specialist: Develop team members to work with the Agile methodology. Reinforce the target of Value creation and self-organized team

Understand through experience the **competencies**,

mind-set and behaviour needed when being part of an Multifunctional Team

• For key enablers:

Ensure the necessary understanding of the Agile components

• For all:

Create a global awareness on Agile Project Methodology. Understand Agile Framework, roles and values



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INNOVATION DISRUPTIVE & INCREMENTAL

In this axis, we focus in developing competences related to innovation methods to create an environment that fosters innovation. This competence strategic axis aims at "equipping" Airbus employees and managers with innovation methods that focus on value creation. Action plans target all levels from general awareness, intermediate up to master lever.

Business context

(including transformation projects and megatrends)

This competence strategic axis is mainly linked to the Megatrend "Innovation & Technologies". Indeed, in a tough competitive environment which requires technology and innovation development and implementation, Airbus' ambition is to be a European leader in innovation through its Innovation community and ecosystem.

Airbus objectives are:

- To speed up the implementation of quantum-leap value creation
- To boost Incremental and breakthrough innovation
- To support series & adapt to incremental developments

We have to demonstrate that we are the most innovative company in our industry by our products, services, processes and talents and communicate the culture of Innovation to develop, attract and retain top talent for Airbus.

Impacted population

- All employees
- All Managers
- Practitioners, Innovation Managers, AirNovators

Emerging jobs and competences



Definitions:

- Design thinking: Ability to apply Design Thinking and associated methods and techniques for: Discovery of customer needs and value opportunities, particularly in complex situations, and generation of insights for problem and idea framing; Establishing and prioritising credible points of view for use during problem and idea framing; Selection of the most appropriate approach for generating, and selecting from, rich sets of ideas; Structuring and enabling collaborative working and effective engagement of stakeholders and customers; Selecting and applying prototyping means, scoping and scaling of prototypes; Rapid evaluation of prototypes and exploitation of customer feedback.
- Business thinking: Ability to: Analyse, construct and evaluate As-Is and To-Be business models (identification of innovation opportunities, apportioning revenue and cost across the value chain for a potential innovation); Forecast potential market and Airbus value, and cost against time, scaling revenue versus cost for a potential innovation Introduce market drivers and economics, competitor positioning, and hype-cycle analysis throughout the innovation life cycle; Prepare a Business Case; Prepare a Business Plan; Protect Airbus and partner intellectual property, and position candidate innovations against intellectual property rights of 3rd parties; Enable and support venturing opportunities with 3rd parties, and open innovation.
- Systems thinking: Ability to apply Systems Thinking and associated methods and techniques for: Identifying, modelling and assessing interdependencies between technical, operations and business entities associated with a problem or value creation opportunity; Generation of insights for problem and idea framing; Classification of problems and opportunities (simple; complicated; complex), and scoping the System of Interest for input to problem and idea framing (value versus cost); Constructing, evaluating and governing value chains and value streams through conception, elaboration and implementation phases of Innovating; Building and organising coherent and reinforcing sets of innovation solutions for input to business modelling and business plans.

Objectives in term of competencies

FOR ALL:

 Establish a common culture of Innovation across the Business, create an awareness and interest for applicable innovation methods

FOR ALL MANAGERS

- Develop managers to create an innovation culture
- Equip them with competencies to lead innovation. Include innovation content in leadership trainings to raise awareness of top management of dos and don'ts of an innovation culture and to equip them with competencies to lead innovation, especially risk-taking and accepting failure
- Develop an Entrepreneurial mind-set!

FOR PRACTITIONERS

- Develop and strengthen competencies on Innovation methods (Business thinking, design thinking and system thinking) and build strong "Innovation Practitioner" community/"AirNovator" community
- Develop and reinforce a "Think out of the box" mind-set to propose innovative solutions to our customers

لي thinking!

QUALITY EXCELLENCE

This competence strategic axis ambition is to develop a Quality Excellence mindset, supporting competences in order to move away from reactive firefighting to proactive improvement and prevention.

Business Context

Quality Excellence axis is linked to several Megatrends: "Economic Globalisation", "Resource scarcity and climate change", "Global governance"...

It is fundamental for Airbus to ensure and to improve Quality Excellence within its products and services since:

- There is a large volume of recurring quality issues with many impacting end customers
- There is a high level of Cost of Non Quality
- There is a need to reinforce understanding by all of Airbus Business Management System (BMS), Company Excellence System Quality standards and processes and associated, Quality regulatory framework

Consequently, the objectives of this axis are:

- To ensure that new or modified products/services satisfy customer needs and expectations by applying sustainable "Advanced Product Quality Planning" methodology across Airbus
- To comply with regulatory, safety and certification/ qualification type requirements
- To spread Quality Mind-Set & Behaviour across the organisation

Impacted population

All employees are impacted in the company, and especially the following functions:

- Customer Services
- Quality
- Industry
- Procurement and Supply Chain
- Engineering
- Marketing & Sales
- Programmes

Emerging jobs and competences

Emerging jobs and competences Declining competences

- Practical Problem Solving
- Advanced inspection principles
- Advanced Product Quality Planning
- Data visualization and communication for Quality

Objectives in term of competences

FOR ALL

- Spread Quality Mind-set & Behaviour
- Reinforce Quality basics, Business Management System and regulatory framework understanding especially operating, applying and adhering to processes
- Ensure Aviation Safety

FOR INDUSTRY AND QUALITY

- Reinforce inspection competencies
- Ensure the relevant product/service quality knowledge across all functions

FOR QUALITY, PROCUREMENT, CUSTOMER SERVICES, INDUSTRY AND PROGRAMS

- Provide the abilities to apply End to End APQP by defining adequate learning paths and solutions, by developing APQP awareness amongst top management and key stakeholders, and by certifying APQP Champions/Masters
- Develop robust competencies on Practical Problem Solving (PPS), root cause eradication and NC handling
- Ensure that all employees have the core set of required Quality and Technical abilities

ADVANCED ANALYTICS & BIG DATA

This competence strategic axis aims at supporting Airbus to transform into a data-driven company and emphasise the data-driven decision-making in all areas of the company.

Business Context

(including transformation projects and megatrends)

This strategic axis is linked to the megatrend 'Innovation and technologies'.

- Airbus generates and gathers more and more data but too little is exploited to its full potential. We need to change our company into a data-driven company by identifying internal optimisation and optimisation we can offer to our customers.
- To gain insight from data and steer business decisions, we need to significantly ramp-up data analytics skills across all functions and divisions.
- We need to ensure that we have the needed data analyst/scientist jobs and competences to support the different business projects, e.g. in Data Management in Customer Services, Predictive Quality, etc.
- Main transformation projects considering these capabilities are: Skywise, Customer PULSE (Airbus), Strategy update AD, Digital Transformation

Impacted population

 All employees are impacted at all levels in all functions and divisions

Emerging jobs and competencesDeclining
competences• Data scientist
• Data analyst
• Data Modeller
• Data Visualization
• Data Architect
• Data Engineer
• Data Officer
• Data Extractor• To Be Defined
• To Be Defined<br/

Objectives in term of competencies

FOR DATA ANALYSTS AND DATA SCIENTISTS

- Ramp-up competences related to Advanced Analytics within all functions pairing with already existing business solutions
- Ramp-up on python programming skills and any other programming skills needed
- Ramp-up on data visualization skills
- Ramp-up competences on Machine Learning and Deep Learning

FOR KEY ENABLERS

- Ensure profound understanding on the main principles of analytics and potential application fields
- Create awareness on typical activities and skills of a data analyst (such as data wrangling, analytics and visualization)
- Establish data-driven decision-making as a leadership behaviour

FOR ALL

 Create global awareness on definition of data analytics, example application areas within Airbus and the organization of data analyst community (as well as remind of importance of data quality and accessibility)

NEW PRODUCTS, SERVICES & GO TO MARKET

This competence strategic axis aims at boosting our capability for new business models, marketing & sales in relation with new products and/or services

Business context

(including transformation projects and megatrends)

- The Mega Trends driving these axes are mainly «New consumption patterns» and «Innovation & Technologies»
- We need highly performing Multifunctional Teams (sales, marketing, contracts, innovation...) to increase revenue growth and market share in new products and services; help create new Solution and Service offerings; deliver growth.
- Indeed, significant growth is expected in: incremental revenue and profit coming from services, after-sales for Aircraft and Helicopters, and new solution offerings from single or multiple platforms.
- To address these key targets, we will need to innovate in designing new business models and go to market plans, managing partners/alliances, and defining related T&Cs (terms and conditions).
- The main transformation projects developing or requiring these competences: Digital Transformation, Strategy Update AD, T4T

Impacted population

The domains directly influenced by these competencies are: Marketing & sales, Customer Services, Innovation, Strategy, Engineering, Finance and Procurement

Emerging jobs and competencies

Emerging jobs and competences	Declining competences
Customer Centricity	 To Be Defined
 Strategic thinking 	
 Alliance/Partnership management 	
 Markating for convision 	

- Marketing for services
- New ways of selling, new contracts and pricing schemes

Objectives in term of competencies

SPECIALISTS:

Primary Target: people in charge of the new product/ service/GTM

- New ways of selling ability, for new and existing market segments
- Alliance / PartnershipManagementCapability
- Storytelling and Pitching capability

KEY ENABLERS:

Primary Target: heads of key marketing or Innovation initiatives

- Marketing/ Selling new customer centric Complete Solutions
- Selling through new contracts and pricing methods Awareness
- Performance Based Services business model and contracts

ALL AIRBUS:

Primary Target: contributors in Marketing & Sales, Strategy, Customer Services, Engineering, Finance, Procurement

- Airbus Digital Platforms and Digital Services Awareness
- Services Marketing Capability / Know-How

REPUTATION, BRAND, ETHICS AND COMPLIANCE

This competence strategic axis aims at developing competences related to Reputation Management and Legal & Compliance, at strengthening Airbus's brand and reputation by using communications and compliance levers, with a special focus on compliance with existing and upcoming regulations.

Context

This competence strategic axis is mainly linked to the Megatrend "Global Governance". Indeed, all companies have to ensure that their business practices conform to laws, regulations and ethical business principles at the national and international levels.

Companies which do not respect Ethics & Compliance (E&C) laws and regulations put their business in danger because these companies will:

- Encounter legal issues by facing large fines and other penalties.
- Damage their corporate brand. Since Ethics & Compliance gain importance for government prosecutors, customers, suppliers, investors and the public, a negative corporate image can have tremendous negative impacts on companies' overall health, reputation and profitability.

Airbus' goal is to be known as a company with "integrity inside": integrity in its people, partners and suppliers. Consequently, our company has worked several years around four key risk areas: Business Ethics/ Anti-corruption compliance, Export compliance, Data protection and Procurement compliance.

To fulfill these objectives, Airbus has to:

- Maintain the highest standards of E&C, In Situ Subcontracting, International Compliance, Data Privacy & Export Compliance
- Constantly update knowledge and competencies of Legal & Compliance with new legislation and regulations
- Ensure appropriate levels of knowledge and understanding of risks associated to noncompliance & ethics when doing business.

Impacted population

All functions are impacted by this axis since there is a need of E&C basic understanding for all employees. Some positions are more exposed: Marketing, Senior Management Experts, Human Resources, Sales and Customer Services, BCOs...

And more specifically, some specialists: Communications Professional, Compliance Officer, Data protection Officer, Export Control Specialist.

Emerging competencies

Emerging jobs and competences	Declining competences
 E&C Awareness Export control Corruption prevention Brand management Media Interaction Responsibility and Sustainability Data Protection 	 Not Applicable

Objectives in term of competencies FOR ALL

- Promote a culture of integrity and ethics
- Raise awareness on what Responsibility and Sustainability is and Airbus 'commitments in this context
- Establish a good understanding on brand management and media landscape/interaction
- FOR EXPOSED POSITIONS:
- Build awareness on Airbus policies related to corruption prevention
- Educate Airbus Functions to apprehend legal risks related to their business activities
- Specific focus on **Export Compliance**
- Ensure up to date knowledge on regulations and internal policies
- Build brand and communications competencies of employees representing Airbus in external context (Interaction with Media, Conference speeches...)
 FOR SPECIALISTS
- Develop expertise in key E&C risk areas (corruption prevention, data protection, anti-trust, export control...)
- Ensure competences level of specialists is **up to date** regarding new legislation and regulations
- Develop **expertise on Ethics and Values** to ensure a proper culture of change
- Equip communication professionals with adequate skill sets (brand management, story-telling, digital communications)

LEADERSHIP BEHAVIOURS AND EMPOWERED TEAMS

This competence strategic axis aims at developing behaviours related to new ways of working to support business challenges and demands. It includes cultural change, implementation of a more agile organisation and also the increased use of digital technologies in day to day.

Business context

(including transformation projects and megatrends)

This strategic axis is linked to two megatrends: 'Demographics & Social evolution' and 'Innovation & technologies'

The Airbus Leadership University is one of the answers to the challenges generated by the acceleration of our business context, its higher competitive landscape, its complexity, its volatility. Our ambition is to accelerate the transformation of Airbus, powered by people, equipping leaders "for what's next", through the University as a transformational platform, through an inspirational experience for the business where systemic change can be felt. lived and nurtured.

Our ambition

We equip leaders for what's next...

Connecting leaders with the world (inside & outside Airbus) and deeply impact their behaviours & performance Worldwide reference for leadership development



Transformational experience Accelerator

Inspirational platform Incubator

Experimental lab

Impacted population

All leaders and employees

Emerging behaviours

Our goal is to create an inclusive working environment that drives individual accountability at the service of the collective purpose. Our leaders are encouraged to act as coaches instead of managers in the traditional sense. We are a continuously learning company, constantly encouraging new ways of working.

Objectives in term of competencies

We expect our leaders to be connected, inspired, inspiring, open minded, curious, developing their teams as well as leading them to collective success. We require them to invest time and energy to develop themselves and contribute to the development of others, to drive the culture change that is needed in Airbus and act as role models inside and outside the company. We strongly believe that our leaders need to embed our values into everything they do to ensure that we all head towards a shared purpose.

FOR CUSTOMER SERVICES. ENGINEERING AND MANAGERS:

- Support employees in developing the mind-set and behaviours required to deliver in a VUCA world
- Foster collaboration and feedback culture
- Support the leadership Agility model and entrepreneurial mind-set
- Support our managers in moving away from command & control styles to more facilitation & coaching

FOR HR:

- Ability to understand requirements to conduct diagnoses and to adopt a consultant mind-set and posture
- Ability to coach employees and teams
- Develop a global HR solution portfolio understanding

FOR QUALITY:

- Develop:
 - Quality Operational Managers through Leadership development programmes and courses
- Quality Senior Managers and
- Executives on Quality Training Plan
- Coaching and facilitation abilities

FOR ALL:

- Support employees in becoming 'constant learners'
- Become Autonomous Accountable and Collaborative in their development
- Offer individual and collective learning opportunities on and off the iob

ENVIRONMENT, HEALTH, AND SAFETY

This competence strategic axis aims at reinforcing competencies related to Environment and Health & Safety (EHS) for all employees and will include action plans targeted at all levels from general awareness through to master/ specialist level.

Business context

(including transformation projects and megatrends)

This strategic axis is linked to the megatrends 'Resource Scarcity and Climate Change' and 'Global governance'

Eco-efficiency at Airbus aims at maximizing the benefits of our products and services, while minimizing the environmental impact of their manufacturing and operation.

In addition, Health and safety should be part of the business culture, so as Airbus is also known as a safe and healthy workplace, where well-being is genuinely valued.

Ensuring management of Environment and Health & Safety is regarded as a business priority, with the following objectives:

- Ensure compliance to current and future Environment and Health & Safety legal and regulatory requirements
- Align ways of working with current management system standards ISO 14001 & 45001
- Ensure effective risk management through robust leadership of Environment and Health & Safety topics

Impacted population

All employees are impacted, with particular focus on some functions: Engineering, industrial operations, procurement, facilities management, Customer Services, and Programmes.

Particular attention and skills, and responsibility are considered for EHS teams, and Leaders.

Emerging jobs and competencies



- Risk management (especially aligned to emerging technologies)
- ECO Design Competence

Objectives in term of competencies

Deploy the common, harmonised competence catalogue and agree a consistent approach to Environment and Health & Safety (EHS) training across all Divisions.

FOR ALL EMPLOYEES

- Raise awareness and promote EHS and Airbus' commitments in this context
- Drive a behaviour based EHS culture with systematic adherence to standards

FOR EHS TEAMS, ENGINEERING, MANUFACTURING, PROCUREMENT & FURTHER NETWORK MEMBERS

- Reduce competence gaps within EHS teams and develop learning paths for key jobs
- Ensure up to date competence level on EHS regulations and standards for activities, products and services
- Increase EHS competences within key functions with particular reference to specific topics (e.g. ergonomics and eco-design)
- Upskill Procurement on EHS commitments related to the Supply Chain
- Develop competencies on methods and tools related to the implementation of the FISH software (e.g. site environmental analysis, risk assessment etc.)
- Collaborate with Industrial Operations teams to develop effective risk management and safe systems of work aligned to emerging technologies
- Upskill on REACH authorisation requirements with a focus on chromates and other substances of concern

FOR LEADERS

- Embed key EHS requirements in the leadership competencies and learning solutions
- Engage executives and senior managers increasing awareness of EHS risk and knowledge of compliance obligations including responsibilities and accountabilities
- Upskill on REACH authorization requirements with a focus on chromates and other substances of concern

TECHNOLOGIES AND CAPABILITIES

We focus here on developing and keeping up-to-date technical competencies (disciplines) for designing, producing and supplying products and services.

Business context

(including transformation projects and megatrends)

This strategic axis is linked to the megatrends 'Innovation & Technologies' and 'New consumption patterns'

We must secure technical expertise allowing Airbus to be truly state of the art worldwide.

These high added value technologies and capabilities are supporting:

- the company competitiveness (e.g. Virtual vehicle; MBSE; automatisation; robotisation);
- new ways of working (e.g. digitalisation impact);
- new or smarter missions for our platforms: with the rise of "smart cities", we need to develop solutions and manage logistics and transport issues e.g. aerial delivery, Space Tug, from designing conventional Helicopters to full VTOL (vertical take-off and landing) solutions; predictive maintenance
- new services (e.g. cloud; internet of things ...)

Impacted population

Mainly Customer services, Industry and Engineering are impacted



We focus here

in developing and keeping up-to-date technical competencies

Emerging jobs and competencies

Emerging jobs and competences Declining competence

To Be
 Defined

- Material, processes and tools (Fatigue and damage tolerance, Detailed carbon fibre structures) - Materials (Nano and micro-structured materials and composites, Ceramics Materials, Smart Materials)
- Computer science (Data Processing, Connectivity system design/architecture, Artificial Intelligence for autonomous vehicle)
- Software Engineering (coding)
- Autonomous flight
- Air traffic management
- Development of simulation & Virtualisation means
- Electrical propulsion principles & technology: High voltage technologies, Power electronics, Thermal Management, High voltage architecture, Electrical architecture & protection system, FPGA (field-programmable gate array)
- Hybrid propulsion (Fuel cell ...)
- Telecommunications
- Survivability (M&P; software)
- · Human factors; user interface / user experience

Objectives in term of competencies

FOR CUSTOMER SERVICES BUILD INTERNAL CAPABILITIES IN:

- Secure Communication: Optical & Satcoms systems, Intelligence: C5ISR, Cyber: Cyber System Design and Integration, Security Solutions: Security solutions
- Secure Communication: Fixed Networks & Cyber: Security Operations Centre (SOC) Architecture
- Intelligence: Imagery, Geospatial Systems & Cyber: ICS Products & Enterprise IT Security Products
- Intelligence, Cyber & Security Solutions in: Massive Intelligence Market, Cyber: ICS & Enterprise IT Security Products

FOR INDUSTRY

Create awareness in the new materials and know how to use them: Additive
 Layer Manufacturing technology, Dry Fiber, Optical Fiber

FOR ENGINEERING BUILD INTERNAL CAPABILITIES IN:

- New materials
- Telecommunications
- Connectivity system
- Electrical propulsion
- Hybrid propulsion
- Data processing
- Design for ALM technologies
- Artificial Intelligence / autonomous decisions
- Industrial process knowledge
- Master Geometry (CAD)
- Simulation / Modelling / Virtualisation

	UTHEN STNATEUIG AND				
	Maximise operational performance	Ensure business continuity		Maximise operational performance	Ensure business continuity
Aim	Develop competences in order to improve performance of a current process/activity/organisation	Develop competences in order to maintain good level of delivery and ensuring business continuity. It can also include recovery topic supporting current competence gaps.	Objective in term of competence	 FOR INDUSTRY Develop process efficiency mindset, to move from technical solution to efficient solution Reinforce knowledge on Master Production Scheduling (MPS) 	FOR CUSTOMER SERVICES • Need to master competence Military Aircraft Subsidiaries • Maintain "state of the art" knowledge on new product and technologies
Business context	 Airbus is maximizing operational performances to support business transformation and maintaining our company competitiveness by: Deploying standards in all industry jobs to kill the silos between entities/divisions (shop floor, manufacturing engineering, planning, production control, logistics & management) Developing station enablement & logistics performance, service consolidation, manufacturing process capability and performance Implementing the Operational Excellence System (OES) to create a self-sustaining, autonomous and continuously improving organization, agile with business needs, and creating values 	 While transforming and adapting to a new digital context, Airbus has to maintain a good level of delivery and ensuring business continuity including recovery topics. Some main challenges: The new industrial strategy requires resources and skills adaptation. Need of Qualifications and Certifications to maintain and strengthen expertise to provide the best level of product and service to our Customers. Decrease in military market demand and for some other programme. 	5	 Facilitate the management of the MPS by enhancing the end to end vision in the Supply Chain Support emerging job/ competence related to robotics & automation operations, manufacturing process, new technology deployment Create a self-sustaining, autonomous and continuously improving organization (Operations Excellence System to be implemented) Develop Supply Chain digital tools management to better connect manufacturing and logistics FOR CUSTOMER SERVICES Grow Data Mining & Processing Services Grow Service Consultancy 	 Maintain the competences related to Flight Operations Maintain excellence in techn expertise Develop the competences to work efficiently with the suppliers, sub-contractors a partners Develop end to end solution Customers for In-Service iss Promote competences relat to company values FOR ENGINEERING Support site specialisation implementation through tran of knowledge and competer development Identify, map and maintain k critical military competences Ensure that all the relevant jo are at least aware or trained, depending on the need of specialisation, to DOA-Part2
Impacted population	 Industry, Customer Services, Projects and Programmes functions. 	All employees, with particular attention to Engineering, Project and Program Management, Customer		Capabilities Grow Service & System Development and Operational Capabilities Cap PROJECTE AND PROCEAMMENTS	Reinforce technical skills and its proportion within Enginee population FOR PROJECT AND PROGRAMME MANAGEMENT Other subjects
Competences to be enhanced	Some examples: Master Production Scheduling (MPS), Data Mining & Processing Services, Service Consultancy, Service & System Development, Operational Excellence System	Services, Marketing & Sales Some examples: State of the art on new product and services, Lean management, Fatigue and Damage Tolerance Advanced, Aging Aircraft	e	 FOR PROJECTS AND PROGRAMME: Ensure a reactive and robust Integrated planning process Maximize industrial productivity & quality improvements by challenging and monitoring portfolio of projects» 	 Strengthen existing competences associated to project/programme management activities and maintain pool of PM professionals FOR MARKETING & SALES Develop knowledge and competences on rules & processers (Ethics & Commiliance Company

OTHER STRATEGIC AXIS

- FOR ALL
- Promote the anticipation culture to detect and re-risk potential failures.

Compliance, Company Excellence System...).

	Workforce polyvalence / poly competence	Right shoring / Globalisation		Workforce polyvalence / poly competence	Right shoring / Globalisation
Aim	Develop competences of our employees, among the ones related to their primary job/assignment,	 Develop competences related to globalization of workforce and processes 	Impacted population	Industry, Engineering, Customer Services, Quality	Industry, Engineering
	either to be able to quickly adapt to workload/ activity fluctuation, either to expand knowledge on new products, services, technologies enabling: • Greater reactivity and flexibility of		Competences to be enhanced	For example: Electrical/Mechanical Installation, automated Jig & Tools,light robot collaboration, 3D printing machine.	Manufacturing Engineering, extended enterprise, procurement.
	 Greater reactivity and nextbility of a given organisation team when facing such changes More autonomy and motivation of the workers contributing as a consequence to productivity/ financial targets. 		Objective in term of competence	Common: • General objective is to ensure the right number of employees are able to perform different tasks/ activities, safely and according to the right quality standards, depending on their respective professional	For Engineering : • Develop engineering capability to specify and verify • Promote collaborative relationship with our suppliers and the complete ecosystem to orient the development
Business context	 The way Airbus is managing its workforce will determine its capacity to tackle challenges and new opportunities. Some priorities: New products and services will require workload movements. The business needs agility to cover the workload fluctuations in the different programs, countries and products. Develop competences of our workforce related to their primary job/assignment, to their ability to quickly adapt to workload/ activity fluctuation, and to expand knowledge of new products, services, technologies More workforce flexibility to cover with financial efficiency requirements (to do the same with less). To deal with these requirements, workers have to develop their reactivity, flexibility, autonomy and motivation. Develop poly competence of Quality Staff to support program needs; Take into account Industrial Transformation Strategy: Social innovation & organisation empowerment; Manufacturing process capability and performance 	 Airbus is an international company which is developing its competencies and workforce in a globalised and right shoring context. Right shoring being a process aiming at achieving high level of efficiencies and productivity by outsourcing simple activities while retaining complex processes and core business at core countries level. Some main priorities Industrial transformation strategy is relying more and more on our international footprint. Maintain our control of product definition and to master supplier relationship, we are actively building our positioning as prime architect and integrator of our products and services 		 and a context. It is the role of the manager to determine what is appropriate for his/ her team (tailored development actions), each situation being specific in terms of jobs/ competences It supports resource re-allocation between programmes, products, divisions, enabling flexibility and reactivity Per Function: Al and AH Industry: specific focus on poly-poly on Maintenance tasks level 1 for Shopfloor IT tools (e.g. tablet charging, patch download, troubleshooting) and predictive maintenance mindset. AH Industry: specific focus on poly-poly on Maintenance tasks level 1 and 2 when possible on machines/ jigs & tools/ robots, as well in services area (fast intervention cell). AD Industry: define and implement a common method and standard tool, focus on poly-poly for Mechanics, Electricians and Aircraft maintenance and Maintenance taskslevel on machines. AI Quality: Develop "Quality Line Side" competence across disciplines. AD Engineering: move to work packages based model (e.g. specifications, check and 	of their capabilities while protecting our positioning • Reinforce the architecture jobs/competences as it will contribute to our ability to be positioned as architect and integrator (Aircraft architect & Industrial architect) • Insource or outsource engineering tasks in line with targeted value chain positioning to identify related impact on internal competences For procurement: • Develop competences to manage supply base performance

	Drive financial performance
AIM	Develop the necessary competences to drive the financial performance of the company NB: Focus on financial expertise – additional competences from other domains were identified in the new model "key competences for Finance" to develop the Finance Community further
Business context	 Airbus can reach its growth target by continually driving down our costs, differentiating our products and services offering in a profitable way, and delivering: "On Quality, On Time, On Profit." We all have an impact on the company's growth. Focusing on boosting our competitiveness, efficient operations, strengthening our customer focus, and delivering on our commitments will help prepare us for the future Financial results are the responsibility of the whole group and all functions. Finance must ensure that key messages related to the financial drivers, financial performance, challenges are broken down and understood across all functions and at all levels. Finance needs to understand the business so that it can support and challenge appropriately. Finance plays a key role to assess and support new business models, particularly when entering new markets. Finance ensures compliance with our regulatory obligations (IFRS, BDSI, AML, Tax) Finance needs to prepare for the changes that digitalisation and data analytics are bringing.
Impacted population	Finance and all functions
Competences to be enhanced	 Data Analytics for Finance Data Visualisation for Finance
Objective in term of competence	 For Finance: Financial expertise - have the right level of financial expertise to constructively support and challenge the business Risk management – push for risk reduction and define, supervise & implement processes, methods and tools Compliance - ensure compliance with regulatory obligations within Finance Working capital (WoC) and cash generation - optimize the WoC of the company and foster the generation of Cash across the business New Business Models - to be able to analyse, evaluate and support new innovative business models For everyone: Financial awareness Understand the drivers of Financial performance including working capital and cash, and know how to influence them Analyse, evaluate and support new business models Risk management – identify and mitigate risks, methods and tools

METHODOLOGY: HOW DO WE DEFINE THE COMPETENCE STRATEGY?

The competence strategy is defined by the Academies for each domain, with the support of HR (Resource & Develop Centre of excellence).

- Academies capture their domain business strategy and consider megatrends
- They analyse the impact on Jobs and competences within 5 years and formalise 'objectives in term of competence' and associated recommendations (Learning, KM, employment marketing) for their domain
- All academies and the HR Resource & Develop Centre of excellence review together the trans-divisional and trans-functional strategic axis
- For each strategic axis, academies streamline the content (i.e.. Common objectives in term of competence)and find synergies in solutions (e.g. common learning solution)
- The competence strategy is validated by each HO Function for his/her domain; trans-divisional topics are validated by the domain competence & learning boards (eg. Industry competence & learning board with HO industry of each Division); trans-functional and transdivisional topics are validated by the Airbus competence & learning board. (with HO functions from all Functions and Divisions)
- The competence strategy is then communicated to HRBPs, managers, Works councils.



OVERALL COMPETENCE STRATEGIC AXIS

The 18 strategic axes are presented in this chapter (reminded here below) with particular focus on their:

- Business context (including associated megatrends or Airbus major transformation)
- Impacted population
- Emerging jobs and competences
- Objectives in term of competences

They are grouped in three categories engaging particular HR levers sequences: Disruptive axis, New Ways of working axis and Continuous Performance axis



This new approach of having one common competence strategy for all functions and Divisions allows emphasizing transversal topics and finding synergies. The Airbus competence strategy with its 18 strategic axes has been defined and structured at the end of 2017. This first version has been improved in the 2018 new version delivery with the following improvements:

- Update the content with additional objectives in term of competencies
- Identify further shared objectives, cross Divisions and cross functions.
- Ensure that even **more synergies** are identified in the recommendations of HR levers.
- Further analyse what are the declining competences and identify jobs in reshaping, with appropriate recommendations.

It could be then interesting for you to jump to the next chapter providing elements on HR levers practices in general and in particular in the scope of the competence strategy. You will certainly better understand why the competence strategy is fundamental. It brings lot of value to organisation leaders, to team leaders and to all individuals.

You may be also interested in reviewing the Mega Trends chapter to better understand the main drivers of any worldwide industry with a focus on concrete Airbus projects.



HR LEVERS PRACTICES AND CASES

We will concentrate here on HR levers relative to organisations, teams and individuals in terms of resources, competencies and Development contributions to business adaptations and transformations. GWF centres on Human Capital adaptation and growth in perspective of individuals and company development and performance.

We are facing and anticipating some big opportunities in term of company transformation. It is key to building a strong and appropriate approach in order to develop the right competencies. The main success factor is to find the right combination between the different means we have in hand (recruitment, learning knowledge management etc.)

Our objective in this chapter is to provide you with a clear view on:

- What are the HR levers and how to use them?
- How to combine them in an efficient way, depending on the kind of competence we want to develop?

HR LEVERS: DEFINITION AND PURPOSE

The standard HR levers to address workforce adaptation and development are quite generic over industry; nevertheless some clear descriptions could avoid misunderstanding.

It is also interesting to consider these levers with three different perspectives: the employee development, a team development, the organisation development.

The Global Workforce Forecast or Strategic Workforce Planning is a pillar of any company success as it is related to the main asset of any industry: its **Human Capital**. It has to take into account also legal obligations in some countries which tend to protect individuals from a brutal country employment market crisis.

MODEL PUT IN PLACE TO BETTER ANTICIPATE AND DELIVER

BUSINESS IN THE DRIVING SEAT



In order to enhance the connection with business orientations and challenges and to ensure harmonised anticipation of transformation, we have implemented enablers ensuring capture of business needs short, mid and long term:

- The Competence Strategy for the entire group has been designed by the Academies and clustered based on Business Strategies. The 18 strategic axes are a way to emphasise transversal topics and find synergies. The competence strategy is explained in detail in the previous chapter. It helps in addressing mid and long term competency evolutions.
- The Domain Competence & Learning Board is the opportunity for Academy(ies) to share and align with relevant Head(s) of Function on transversal and cross-divisional competencies, to focus on Domain Competencies for all AIRBUS employees
- The Resource Review enables at each organisation level to move from a quantitative (financial and headcount) resource view to a qualitative (job) discussion on competence management with concrete HR levers action plans.

The **HR levers** we are considering here are:

- · Competence referential and mapping
- Recruitment
- Mobility
- Early careers
- Learning
- Knowledge Management
- Employment Marketing

The actors who are key for the enablers and levers success are:

- The **organisation leaders** linking business drivers and orientations with resource adaptation
- The Senior HR Business Partners head of organisation for all HR disciplines.
- The HR Resource and Develop Key Account Managers who advise and ensure most adapted HR levers plans in support of the Organisation's needs
- The HR Resource and Develop experts who adjust and deliver HR levers. They continuously adapt and innovate these levers. You will find more details on these evolutions in the next chapter
- The Leadership University HR experts who focus their energy on company culture changes, values and the leadership model.

- The Academies ensuring relevant competence referential and mapping across organisations. They collectively (trans-organisation) ensure relevant Competence Strategy in close connection with respective head of organisations. They are also looking for the most appropriate learning solutions for each competence with support of dedicated HR Learning experts.
- The team leaders who need to continuously focus on their resources adaptation to their business objectives and challenges. They have to pay particular attention to organisation transformation, competence strategies and respective academies' recommendations. They are in charge of advising their team individuals on these elements. They play a key role in promoting individuals development and identifying competence potential of teams.
- The **HR Business Partner** supporting and challenging team leaders on their HR plans in all HR disciplines.
- All individuals who are the Human Capital of the company and who are encouraged in continuously developing their competencies for their own employability according to their inspiration and their environment and company evolution. Individuals are currently fully empowered in leading their development in the scope of the whole company, with support of their team leader.
 By taking into consideration each perspective mentioned (employee, team, organisation), let's see how HR levers contribute to workforce adaptation and development.

RECRUITMENT

Recruitment is the way an organisation integrates new capabilities to address forecasted workload, to replace people leaving and to capture new competences. In 2018, 6,300 external recruitments occurred for all Airbus worldwide (15% related to future jobs). In 2019, 5,750 are planned (25% related to future jobs)

For an organisation leader, it is a key workforce competence adaptation lever. A good recruitment strategy requires to have a good staffing (financial and headcount) plan including workload evolution with a relevant make or buy plan, a good anticipation of attrition (potential leavers). The challenge for an organisation in transformation is to consider diversity aspects (gender, national, age/generations), good balance experts and practitioners, capacity of the organisation to integrate new comers and up skill them on business knowledge and existing staff development capability.

- For a team leader, recruitment is also crucial. The main challenge is to recruit new resources for daily activities while preparing job evolutions or emerging ones. The team leader has also the duty to anticipate potential of development of individuals in place and to find the right set-up for the team to develop collectively
- For individuals, it is the opportunity to get a job, but more importantly to develop new competencies thanks to the job challenges and its environment.

The harmonisation of forecast and planning in an organisation is consequently crucial.

It is highly recommended **for leaders to have a robust strategy** and **for individuals to consider each opportunity in his/her personal development plan.** An efficient recruitment must be always accompanied by an appropriate on boarding learning programme.

MOBILITY

Mobility is key for a flexible and learning organisation and also for people development. It is the way we support and manage individual moves from one organisation to another inside the company, that is to say management of those who leave a team. (replacement, Knowledge Management) and management of the on boarding.

There are many **mobility situations**, so let's consider a few cases supporting Competence development:

- The mobility can be linked to organisational major changes addressing new business opportunities.
- The mobility can also be linked to individual need for new experience or for personal development.

It is really recommended for all actors to anticipate moves in order to get maximum value out of it.

- For organisations, to encourage individuals in their development, to cross-fertilise competencies, to get flexibility in adjusting workload/workforce with valuable mixed competencies.
- For teams, to get valuable mixed competencies but also to promote individual moves to propagate competencies acquired in their environment. It is recommended to predefine the best mobility for the team members as an opportunity for individuals to grow and disseminate competencies acquired in the team within the company.

- For individuals, to make sure to get positive personal development from their move.
- Avoid silos by sharing the same language

EARLY CAREERS:

Through the recruitment of Early Careers profiles into Airbus we have a great opportunity to prepare our business for the challenges facing us and to position Airbus not just as a leader in our industry but also in our commitment to education and the development of the talent of tomorrow.

Early careers are persons currently in study and working at an organisation to gain work experience relevant to their study and or future career path.

It is also persons in the first 2-3 years of Employment with an organisation, full time position or training programme e.g. Apprenticeship, Graduate programme, having completed their study prior to joining the organisation.

Airbus offers a number of different Early Careers programmes adapted to countries requirements and laws:



INTERNS

By the internship program Airbus offers work experience to students and incorporates new theories into the company. Useful for building a recruitment pool.

APPRENTISSAGE/ PROFESSIONNALISATION

To offer work experience and build a recruitment pool

CIFRE

To build a recruitment pool and to increase level of research within the company.

Collaboration with universities is fostered.

VIE

To provide international experience to Early Careers

5

GERMANY

INTERNS

To offer work experience and to incorporate new theories into the company. Useful for building a recruitment pool.

THESIS/PHD

To offer the possibility to write final thesis and to gain new insights from the studies Working students To gain support on recurring activities

APPRENTICES / DUAL STUDENTS

To achieve future resource requirements and development of key skills

---- SPAIN

INTERNS

To offer work experience and to incorporate new theories into the company Useful for building a recruitment pool

APPRENTICES

For Masters, the same as internships (new knowledge in the company and recruitment pool. For BC (vocational training) internship mandatory to work in Airbus. Curriculares (period mandatory to finish the degree of the students, also pool of recruitment ut more in the future)?

......

INTERNS To offer work experience and to incorporate new theories into the company. The goal is also to convert interns into Graduate positions.

APPRENTICES

To achieve future resource requirements and development of key skills identified through resource review.

GRADUATES

To achieve future resource requirements and development of key skills identified through resource review. To demonstrate Airbus' commitment to Early Careers, we spend approx.100m€ per year (salary cost) across all divisions and countries, and this significant investment in talent offers us the chance to ensure an important contribution to the future of our company. It is essential that we maximise this opportunity and make the most of the talent we recruit through Early Careers.

Your understanding and engagement with these Early Careers Programmes is key in order to prepare our company for the future with:

- A prepared pool of talented potential candidates who could match our short and midterm recruitment needs and competence gaps. It is our goal to recruit 30% of the external hiring out of the Early Careers pipeline the following year.
- An increased awareness of the Early Careers opportunities Airbus can offer them, developing our employer brand and attractiveness at key universities and schools
- An increased gender, cultural and social diversity and the inclusion of disabled persons into the company
- A contribution, as a responsible employer, to the education and professional qualification of people in close relation with universities, schools and educational bodies
 Everyone's role in making this happen is important for the future success of the company.

LEARNING

Learning has been evolving very fast for a few years now thanks to digital capabilities. Developing a learning organisation is the only way to continuously **adapt to the VUCA environment.** Learning is the process of acquiring new or modifying existing knowledge, behaviours, competencies, values, or preferences.

For classroom courses, we have moved from a mass request collection and arbitration to a full offer approach. In 2018, 115,000 seats have been delivered in 2018 (for a catalogue offer of around 6,800 classroom courses. For Digital courses, we have a catalogue offer of around 11,200 courses internal and external and we have 350,000 courses completed worldwide. Their access is unlimited except MOOCs which would require management validations

- For the organisation, this is a key element to get best solutions, from external, when it is about standard business practices, and also from internal, when it is about company specific expertise and practices.
- For a team, it is a very good way to grow and enhance capabilities in a short time frame. It is a way also to propagate in the organisation knowledge/competencies acquired in a specific experience.
- Now, any employee can get the solution adapted to his/her need anytime and anywhere. It is strongly recommended to all individuals to continuously learn reviewing their knowledge and competencies on their practices and on their environment. Learning is not only about following an e-learning or a training course, it is also about practising and integrating the 'theory' into practice, There are learnings proposed and offered by the organisation and learnings managed spontaneously within teams. It is a subject framed by legal obligations in some countries.

COMPETENCE REFERENTIAL AND MAPPING

The foundation of any relevant Workforce adaptation is a robust Competence Referential and mapping. The referential contributes to **harmonise and focus job descriptions and competencies over the organisations for the whole company.** The mapping helps to ensure good understanding of the main competencies spread within the organisation.

- For the organisation, the referential helps to get a clear view on the current job distribution, forecast resources potential and risks, and also anticipate and calibrate most of the HR activities (recruitment, mobility, learning, KM).
- For the team, it is a way to formalise competencies already in and the ones remaining to acquire before being at full capability. It is the best way to prioritise development plans but also to identify potential value of new staffing.
- For individuals, the referential is a good support to measure key expectations of jobs in order to prepare and reinforce themselves to current or new jobs. It is a good support to manage job transitions.

KNOWLEDGE MANAGEMENT

When linked to individual knowledge and competencies, Knowledge Management aims at **capitalising, capturing**

and sharing Knowledge from businesses experiences

(projects, programs...). Knowledge Management can be quite complex but crucial in a VUCA context and is crucial in the Engineering/Manufacturing environment. Some new digital capabilities facilitate the main aspects of KM practices.

- As an organisation, it is mandatory to capitalise from long term, complex or very specific projects and to ensure appropriate sharing.
- A team is in general practising KM naturally, but some specific cases could require support, for example an individual having major but isolated knowledge (capture methods exists) particularly if there is an urgency to the leave or move for the individual.
- For individuals, it is more and more crucial to share the knowledge quickly since it is the best way to enhance collective intelligence potential.

EMPLOYMENT MARKETING

The Employment Marketing aims to ensure that we can **attract and hire the right people with the right competencies at the right place when our company needs to recruit** externally worldwide. This is a great means to establish Airbus as a global employer of choice, in line with our objectives and strategy.

- As an organisation, the best way is to keep close links with Educational organisations worldwide, to better understand existing and future potential, to regularly inform them on our forecast and to create relevant and fruitful partnerships.
- As a team, it could be interesting when recruiting to identify the potential of Universities worldwide. It could be interesting to consider opportunities of apprenticeships.
- As individuals and as team leaders, it is interesting to understand the evolution of worldwide educational capabilities.
- Develop an employer identity and brand

It is key to understand that all these levers are **strongly connected** in their strategic plan set-up even if they could be independent in their daily management. For example, if an organisation plans to recruit externally or internally a new group of people to reinforce an existing structure, the associated learning plan should be flexible and robust enough to secure fast business ramp-up.

COMPETENCE AXIS CATEGORIES AND HR LEVERS PRACTICES

In order to simplify our presentation of integrated HR levers, we will consider three main levels:

- Awareness: This level refers to the need for individuals to be familiar with a concept, a model or some knowledge.
- Practitioner: This is when individuals practice an activity in full autonomy with appropriate skills and knowledge.
- Master: These individuals can modify a model or a way of working for the group, or apply it in any circumstances'. They have a strongly recognised expertise in the subject and have to share it.

So, an individual can be Master in one discipline, practitioner in another discipline and at awareness level in many topics.

Each competence strategic axis could require a different HR lever's tactical set-up. From this perspective, we have identified three main categories:

- Disruptive axis: It groups jobs and competencies very new or for which foundations are strongly challenged by new environments and new technologies. It has to be prepared by few masters and awareness should be raised quickly to some communities. An example would be data analytics.
- Continuous performance improvement axis: It groups jobs and competencies which are continuously enhanced by masters and which should be rapidly propagated to all practitioners.
- New Ways of Working axis: It groups competencies and skills coming often from external practices or rules and often implemented via pilots. It is key to capture experiences from pilot practices and to raise awareness and ensure practice sharing.

We will explore and suggest for each category the best theoretical HR resource & develop set-up: (C) Competence Referential and mapping, (R) Recruitment, (L) Learning, (K) Knowledge Management, and (EM) Employment Marketing. Obviously, it should be adapted to each context.



Experiment/practice and propagate massively

- C: Adjust Competence
 referential
- R: Readjust profiles;
- L: Review external Learning Offer; Social Learning
- K: Capture from pioneers' experience and propagate
- E.M.: Capture new generations' expectations

Mastery foundations set-up and large awareness

- C: Prepare new competence referential
- R: Attract Talents (ext, int)
- L: Massive reconversions (MOOCs,...Collaborative Learning)
- K: Expertise Capitalisation
- E.M.: Anticipation with Universities

Readjust Models with Experts and propagates to Practitioners

- C: Adjust Competence referential
- R: Readjust profiles
- L: Review Learning Offer
- K: Review base of KM and propagate
- E.M.: Align major evolutions with Universities

OVERVIEW AND FIGURES OF HR SOLUTIONS ENGAGED

RESOURCE MANAGEMENT IN AIRBUS ENGAGED A SUCCESSION OF WELL-INTEGRATED MECHANISMS.



culture with Digital & DIY solutions

We will now illustrate with a few specific Competence strategic axes how HR Resource and develop levers have been anticipated:

1. Disruptive Competence Strategic axis

- Global
- Cyber Security
- Data Analysts

2. Continuous Performance Improvement Strategic axis

- Global
- Design to Cost

3. New Ways of Working

Global

Agile Leadership and ways of working

HR LEVERS FOR DISRUPTIVE COMPETENCE STRATEGIC AXIS

The disruptive competence axes are very interesting and challenging to handle. We are speaking about competencies completely new for the company or handled by very few experts in the scope of Research and Technologies programmes or specific Innovation laboratory investigations. When it is established that these competencies will be necessary for company products or business strategy, the best way to reinforce and spread these competencies over the company is:

- Capitalise Knowledge (KM) from expert practices
- Define the associated competence referential (competence definition, job families and jobs impacted)
- Propagate rapidly the awareness capabilities (rich Media videos, short e-learnings) to the whole company
- Identify in the company any individuals having these competencies or capability and willingness to grow fast (Data Analyst experience in this approach is very successful)
- Early communication to Schools, Universities and major business/ new technologies events on these competency needs (Employment Marketing)
- Obtain from the external learning market advanced learning solutions like Knowledge Banks, MOOCs or specific Off the shelf learning programmes
- Engage internal Digital communities on practice and learning experience sharing (Social learning)
- Engage particular recruitment campaigns using all existing channels including social media.

The main elements of success are the coordination of activities and wide communication. It is crucial also that all individuals feel empowered in considering these opportunities and in mentioning their plans to their manager and HR Business partner.


Disruptive **New 2019 Solutions** Hiring **Existing Solutions** strategic axis **Projects** MOOC lanr Advanced 10 (ex: Data 126 51 Digital 70 Analytics & Governance at Airbus Knowledge Banks Big Data Rich Media) + 1 Off-the-shelf program **Cvber & Physical** 25 (ex: Industrial 21 46 Classrooms + 170 Security... Security awareness 210 Digital rich media and eLearning) Digitalisation 68 48 Classroom + 56 405 18 (ex: Digital Marketing (blended) Diaital or IoT for users Rich Media) 3 (ex: 3D Printing 8 Classroom + 19Innovation 35 15 disruptive & Method eLearning Digital incremental modules 74 180 Technologies 10 (ex: Human Few Knowledge and Capabilities Factors eLearning. banks supporting Elec/Hvbrid VTOL awareness level classroom) New products. 10 (ex: Connected 30 75 Few Knowledge services and Services eLearning) banks supporting go to market's awareness level Desian & 34 (DDMS eLearnings, Few Knowledge 110 MBSE for Systems Deliver Product banks supporting & Services Rich Media) awareness level

Competence Management:

- Create Competence Referential for Airbus Learning Management: **Recruitment Management:**
- Attract Talents (external, internal)
- Acting in External Digital events
- Digital Hiring: transverse, focus and daily tracked (2019: 575 RFPs)

Airbus wide shared CVs, and events

- Massive learning (easy access worldwide)
- Numerous Knowledge Banks
- 435 MOOC in place courses to come soon
- 88 courses to be created/updated (80% Digital)

Knowledge Management:

Practice Sharing

Employment Marketing:

- Communication to Universities partners
- Communication on relevant channels

A SPECIFIC DISRUPTIVE CASE CYBER SECURITY

In the scope of «Cyber and Physical security, product safety and crisis management» competence strategic axis, the Cyber Security competencies and jobs require particular attention. These are not new for Airbus obviously, nevertheless it is considered as disruptive due to fast evolution of the subject and digital solutions wide deployment increase drastically needs for enhanced competencies and skills.

Few more elements:

- Harmonisation within Airbus (Divisions, product) Cyber Security represents a business for Airbus
- Digital deployment (Cloud, IoT...) → explosion of needs
- Exposure: increase of attacks particularly in industrial environments
- Airbus is further at risk due to its leading position in the market place and the additional risks associated with Extended Enterprise.
- Concept / models continuous evolution

The main challenges currently faced for competence acquisitions:

- Attractiveness of large industries Airbus is not identified as an actor on Cyber market
- Talent war due to du similar situation in many industries and countries
- Turnover due to high level of demands
- Expectations of candidates in terms of working environment (eg: tools, bureaucracy)
- Need for continuous renewal

We consider 3 levels of competencies:

- **Basic Awareness:** Security for all: Need to reinforce awareness of all employees on security behaviours to prevent physical or cyber attacks
- **Higher Awareness:** Security for key enablers: Have the reflex to anticipate and include security dimensions in all products or process developments and implementation phases
- **Practitioner and Masters:** Security for specialists: Ensure high-level expertise within Security departments

There are no declining competencies or jobs for cyber security. There are mainly emerging competencies and specific behaviours required

Related jobs

- Ethical hacking/ Penetration testing and technical hacking mind-set
- Coding and scripting proficiency (Open source projects)
- Security Technologies & solutions (digital signature, cryptography, fire walling, filtering, secure boot, audit function...)
- General programming/software development concepts and software analytical skills
- Architecture, administration and management of operating systems, networking and virtualisation software
- Network security and architecture design
- Internet of Things/ Industrial Internet of Things security
- Artificial Intelligence use for security (security event monitoring)
- Security Risk Analysis & Mitigation
- Risk assessment methodologies
- Cyber security operation (Security operation Centre and Forensic (root cause analysis and feedback on security solution)

HR Levers engaged:

Competence: referential harmonisation ongoing across the company

- For jobs: Internal model (considering external referential (eg: NICE))
- For competencies: new competencies added to design /manufacturing/ operational jobs for our products, industrial systems, Information Technology systems → planned

Recruitment:

- Enhance position profiles with ext. ref.
- Specific hiring platform: Digital hiring lab 170 hiring planned on cyber security profiles

- Curiosity/ eagerness to learn
- and constantly update own competences
 Analytical abilities (esp.,
- wrt, risk identification)
- Highly adaptable
- Communication skills
- Business thinking/ entrepreneurial mind-set
- Assertiveness

Behaviours

Agility

EXECUTIVE SUMMARY DIGITAL HIRING LAB



(

Governance 3 weekly meeting

- Working group meeting with Com, EM, HD, ZI and D&S: share information, alignment on communication and event
- Operational meeting: Review of the KPI, and hot jobs

Objectives

Scope: all org units all divisions

- Attract IT and techno population
- Generate flow of CVs
- Generate a pool of potential candidates and communities of interest
- Exchange of needs between all the BU

Community

management and Events

- Toulouse Game Show, Gamescom, Devfest... in 2019
- Regular posting on social networks on jobs, events

Key figures

- 250 external recruitment
- planned for 2019 fo ZI
- 150 external recruitment planned for Cyber
- 30 RFPs for the CTO
 760 open positions in 2019

- Channels for Digital talent community
- Presence at specific events (Gamers, cyber, Hackathon etc.)
- Sponsoring of e-sport
- Create or join meet-up events → networking of specialists
- Community manager in Marketing function eg: Airbus cyber security page on Linkedin
- Refer a friend in ADS: 58% of employees hired are cyber profiles (14/24) since 2017
- Specific recruitment process implemented in 2016: active sourcing and reduction of lead time
- Speed staffing events dedicated to Cyber security (Toulouse, Munich, Versailles, Elancourt)
- Reference of worldwide schools/universities → local initiatives (eg. 'Ecole 42')

 'Many roads lead to Rome': Cyber Security could be offered as a specialisation/ further qualification from other course of studies (Math, Computer Science, Engineering, etc.) -> integrate a specific intense reconversion Learning Path (social learning aspects)

Learning:

- Awareness: cybersecurity basics via e-learning
- MOOCS (Coursera)
- Internal solutions \rightarrow classroom 'practice cyber security ' added to catalogue
- Social Learning
- Existing Expert path (includes Cyber) 25 experts in ADS (1 Exec, 5 senior and 20 experts)
- Cyber Security Expert Career Path set-up in progress
- SANS Learning and certification

A SPECIFIC DISRUPTIVE CASE: DATA ANALYTICS

The growing Big Data potential and needs require a transformation in term of competencies, to be pushed across the group. It is a factor of immediate performance values in all organisational domains and opens capabilities for new services like for example SKYWISE aviation's open data platform

SKYWISE aviation's open data platform

- Combining Airbus' aerospace expertise with Palantir's advanced data analytics solutions;
- To become the platform of reference used by the aviation industry;
- Enabling Airbus to harness deep in-service data and insights to improve its aircraft designs and support offerings;
- · Already providing results with several airlines.

ADVANCED ANALYTICS & BIG DATA IS THE MOST MATURE DIGITAL CAPABILITY: EXPLORATION PHASE IS COMPLETE, AIRBUS IS NOW IN THE DEPLOYMENT AND INDUSTRIALISATION PHASE

We consider 3 levels of competencies:

- Basic Awareness: Create awareness on data analytics definition, application and community
- Higher Awareness: Ensure understanding on the main principles of diagnostic, predictive & prescriptive analytics and potential application fields, and opportunities & limitations of data analytics, reinforce data visualisation awareness for Managers, Academies, HRBPs, Employment Marketing. Establish data-driven decision-making as a leadership behaviour
- Practitioner and Masters: data analysts in all Functions, data modellers in IM and advanced analysts and data scientists centrally in DTO.



Business functions

Build on existing programming and/or statistics

Training of internal employees



Advanced Analysts

Central team operating across the group on transversal data analytics projects

Mix of external and internal recruitment

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Data Scientists Central team operating across the group on transversal data analytics projects

External recruitment when needed

.....

Related Jobs and	Behaviours	
 Data Analysts Data Scientists 	 Data Visualisation Data Modelling Data Architect Data Engineer Data Officer Data Extractor 	 Hacker mind-set Creativity Curiosity Being humble Agility Active listening Team player Challenge status quo mind-set Analytical problem solving

HR LEVERS ENGAGED

Competence referential

Jobs: creation of 3 main jobs common to all Airbus

- Data Analysts
- Advanced Analysts (not yet created)
- Data Scientists (not yet created)

Competencies: new competencies added (refer to table above). These competencies can be used for the three main jobs and can be used for jobs in many business function domains like Engineering, IM...

Data Analyst - Competency Details:

- **Data wrangling:** data enrichment, manipulation, cleansing and feature engineering.
- Advanced analytics: supervised and unsupervised Machine learning, statistical inference...
- Data visualisation & communication: visualisation techniques, dash boarding, visual data exploration...
- Innovation leadership: deploy appropriate innovation methods, techniques and tools to support an innovation opportunity life cycle phase.
- Architecture design: architecture frameworks and systems design tools...
- Business & company portfolio understanding: core business context and key drivers.
- Specific IT tools (regularly updated): R, Python, Hadoop, Spotfire, SPARQL

Recruitment:

- Enhance position profiles
- Specific hiring platform, Digital hiring lab: 76 hiring planned on data analytics
- Channels for Digital talent community

Learning:

- Series of Knowledge Banks covering Data Analysts and specific IT basic elements
- MOOCs Major On-Line courses covering many aspects of Data Analyst skills (Udacity): a 6 months training to up skill employees as data analysts

FOR ALL

- Watch video tutorials on myPULSE
- Check HUB communities for digital capabilities, information on ongoing projects...
- Continue the DeMaT learning concept by creating and promoting dedicated e-learnings

FOR KEY ENABLERS

- Perform e-learnings on Big Data and Data Analytics, MOOC(s) from Coursera portfolio, and register for Lunch & Learn sessions
- Inject data-driven mind-set in relevant leadership trainings
- Data Analytics in a box
- Data Governance eLearning

FOR DATA ANALYSTS

• Identify off-the-shelf learning solutions for Spotfire tool and other data visualisation courses

FOR DATA SCIENTISTS

• Data Scientist can specialise further via MOOCs

HR LEVERS FOR BUSINESS PERFORMANCE - COMPETENCE STRATEGIC AXIS

The **BUSINESS PERFORMANCE** competence axes are handled commonly in all organisations. The challenge is the coordination and harmonisation of activities over the company in order to enhance visibility, consistency and performance of overall HR levers implementation. We are speaking about competencies already mastered and practiced for years in the company. In general, the masters or experts for the competence have reviewed the associated process (es), models, methods, tools and practices. The organisation and teams need to propagate new models and practices to all **practitioners**. They need also to ensure that newcomers are prepared for these new elements.

- Capitalise Knowledge (KM) enhances existing knowledge (books, text, videos)
- Update the associated competence referential (structure, description and associated behaviours)
- Depending on the level of complexity of changes:
- Propagate rapidly the awareness updates (rich Media videos, short e-learning) to the whole company.
- Review the learning portfolio, in general mainly internal and adjust content and take this opportunity to digitalise solutions if relevant
- Update the existing internal HUB community on practices and learning experience sharing (Social learning)
- It could be necessary, but not mandatory to update Schools, Universities and major business/ new technologies events on the evolution of competency needs (Employment Marketing)
- It is also important to update recruitment profiles according to competence changes.

The main elements of success are the coordination of activities and focused communication. It is crucial also that all individuals feel empowered in considering these opportunities and in mentioning their development according to changes recommended with support when relevant for their direct management.



Business	New 2019 Solutions		Existing	Hiring
performance strategic axis	Projects	моос	Solutions	planned
Quality excellence	28 (MES Get into practice Classrooms or PPS introduction Rich Media)	-	2000 Quality courses	220
Maximise operational performance	32 (ex: Integrated Planning Fundamentals - Blended)	5	Not yet specifically identified	30
Environment, Health, and Safety	56 (ex: FISH Environment Rich Media, Ionising radiation - blended)	-	685 H&S courses and >15 Environment	5
Ensure Business Continuity	88 (ex: Flight Test Campaign videos or 3DX integration eLearning)	-	Not yet specifically identified	790
Drive Financial Performance	12 (ex: DeRisking - Rich Media or Hedging and Cash Management eLearning)	72	257 Finance courses	5

HR LEVERS ENGAGED

Competence Management:

- Update Competence Referential
- **Recruitment Management:**
- Enhance Recruiting profiles (Competences and behaviours aspects)

Knowledge Management:

 Promote systematic Knowledge transfer when individual changes jobs

Employment Marketing:

• Align major evolutions with Universities

Learning Management:

- Build, update & propagate Learning offer:
- 187 courses to be created/updated (80% Digital)
- 89 MOOC in place courses to come soon
 Significant Design to Cost Learning project
- (whole Engineering community all divisions)
- APQP Master, Champions and Practitioner programs
- H&S harmonisation/simplified Learning offer

A SPECIFIC BUSINESS PERFORMANCE CASE DESIGN TO COST

In the scope of «End-to-end operations improvement" from Design to manufacturing and to support, one major performance improvement driver is the design to cost concept, method and tools. A new opportunity to reconsider this topic came from digitalisation, data analytics and end-to-end ways of working improvement.

It remains a strategic topic due to:

- · Competition strengthening in all domains
- 80% of costs are decided in the Architecture and Design phases
- End-to-end costs need to be considered in design phase to stay competitive and profitable.
- New digital ways of working opportunities

BUSINESS NEEDS DEFINE PRIORITIES FOR DTC PMT'S – BE 'RIGHT FIRST TIME'



Disruptive DtC Processes Methods and Tools

- Digital costing models
- Rule engine
 Tip to tail tools
- Digital Tools for redesign
- Methods for idea generation

The main lever for such competence development is learning. Obvious competence referential need to be enhanced and Engineers, Financial costing and Manufacturing Engineers recruitment profiles have to be adapted accordingly.

Domain of competencies to adjust/enhance Behaviour

- Engineering designers airframe and systems
- Customer centric
 End-to-end

desian choice

understanding

- Finance costing
- Procurement and engineering supply chain
- Quality
- Manufacturing Engineering

HR Levers engaged:

- **Competence:** referential adjustment and kept harmonised across the company
- Recruitment: Enhance position profiles with ext ref.
- Learning (around 1700 to train by multifunctional teams)
- Participative Training Approach: Collaborative training session for maximised knowledge retention
- Airbus internal trainer empowerment: Ambassadors to be taking over the training as soon as possible
- Continuous PMT Integration: Training content constantly updated with new developments
- Business and programs first: Training aligned to DDMS key priority programs
- Aligned with Academies & HR principle: Training along guidelines and handed over to HR & Academies in the long-term
- Project and use case centric approach: Core training material customised to operational needs
- Consider existing and coming material : New DtC training to include all existing DtC trainings
- Modular Training Approach: Training adapted to MFTs
 according to their project needs

	TARGET AUDIENCE: Engineering Manufacturing Engineering Procurement Programs Quality Controlling / Costing
05% Lecture	PASSIVE
10% Reading	TEACHING METHODS
20% Audio/Visual	METHODS
30% Demonstration	PARTICIPATORY
50% Discussion Grou	UP TEACHING METHODS
75% Pratice by Doing	g
90% Teach Others	

Large Scale e-learning

- Understanding of DtC Strategy
- Understanding of basic DtC concepts
- Get to know concrete examples

E-Learning 2.0

• New content that brings DtC to a new level, needs to be (re-)taken by all impacted population

Additional short videos explaining:

- 1. Drivers for DtC and Airbus profitability
- 2. How design impact industrial costs
- 3. Digital transformation of DtC in Airbus
- 4. DtC in MG3, MG5, MG7
- 5. Target cascading & monitoring



Customised learning rooms • Collaborative training adapted to product lifecycle stage

• Hands-on PMT's for immediate implementation

• Training of MFT shortly before entering next 'Maturity Gate' phase



On the job support through DtC Ambassadors

- Mindset improvement, dissemination of best practices
- 600 Ambassadors identified
- Trainers of following populations

HR LEVERS FOR NEW WAYS OF WORKING - COMPETENCE STRATEGIC AXIS

The **new ways of working** competence axes are challenging for the large audience to consider and because it is often about mind-set and culture change. The challenge is that changes are to be conducted in all organisations with significant evolutions and changes are expected while continuing delivering activities with high performance. We are speaking about competencies or practices which are identified from the external environment (start-ups, other industries, new generations... Universities, research, benchmarks).

Some of our experts and leaders or individuals particularly sensitive to the topic push the subject in their environment and start Proof of Concepts or experimentation, they become progressively practitioners. When this appears more and more as a relevant practice it could be then considered as a new reference or model. It becomes appropriate to develop an awareness level across the company. In general, some people are particularly enthusiastic about the subject and created a model which is iteratively propagated and enhanced step by step. For strong step changes, it is key to ensure that newcomers are prepared for these new elements.

- Capitalise Knowledge (KM) from different experimentations or projects (books, text, videos)
- Update the associated competence referential (description and particularly behaviours), including the Leadership model
- Depending on the level of complexity of changes:
- Propagate the awareness updates (rich Media videos, short e-learning) to the whole company.
- Get from the external learning market learning solutions, often Knowledge Banks, some MOOCs or specific Off the shelf learning programmes
- Create and update regularly a dedicated internal HUB community on practice and learning experience sharing (social learning)

- It could be necessary, but not mandatory to update Schools, Universities and major business/ new technologies events on these paradigm changes (Employment Marketing)
- It is also important to update recruitment profiles according to competence and behaviour changes.

The main elements of success are the coordination of activities and focused communication. It is crucial also that all individuals feel empowered in considering these opportunities and in mastering their development according to changes recommended.



New ways of working strategic axis	New 2019 Solutions		Existing	Hiring
	Projects	моос	Solutions	planned
Agile methodology framework	7 (eg: Agile SAFE Classroom)	9	17 (classrooms + Digital)	5
Leadership behaviour and empowered organisation	BigB@ng Leadership programme	19	Leadership offer	10
Customer centricity	9 (eg: Value Management - Blended)	1	Not yet specifically identified	100
Reputation, Brand, Ethics & Compliance	14 (eg: Speak Up Culture eLearning)		Large mix offer (ex: 40 Ethic & Compliance)	40
Workforce Polyvalence/ Poly-competence	4 (eg: Harness manufacturing & installation eLearning)	3	Not yet specifically identified	0

Competence Management:

Update Competence Referential

Recruitment Management:

• Enhance Recruiting profiles considering highlighted Competences and behaviours aspects (Agile, empowering, assertiveness...Emotional intelligence)

Knowledge Management:

• Promote systematic Knowledge transfer when individual changes jobs

Learning Management:

- Build, update & propagate Learning offer:
- Numerous Knowledge Banks available
- 36 courses to be created/updated (86% Digital)
- 27 MOOC courses available

Employment Marketing:

• Align major evolutions with Universities

A SPECIFIC NEW WAY OF WORKING CASE LEADERSHIP BEHAVIOUR AND EMPOWERED ORGANISATION

CONTEXT

Over the recent years Airbus has been undergoing profound changes with the goal to integrate the different Airbus business units as one company "Airbus" with one common culture, one set of values, one leadership model all around the world.

The Airbus Leadership University and Airbus academies answer to the challenges generated by the acceleration of our business context, its higher competitive landscape, and a rapidly changing global shift where volatility, uncertainty, complexity, ambiguity (VUCA) are the new normal. Our ambition is to accelerate the transformation of Airbus, powered by people, equipping leaders "for what's next", through the University as a transformational platform, through an inspirational experience for the business where systemic change can be felt, lived and nurtured. To maximise the potential and opportunities presented by this 'new world'.

MAIN CHALLENGES

- More Collaboration.
- More Empowerment.
- More Accountability.
- Simplification and Standardisation:

We needed to support the company transformation through global change.

Move towards more individual autonomy and accountability of learners. Faster, more scalable solutions. Talented employees all over the organisation, need to be supported. Leadership Development is evolving to include innovative solutions including digital

SOME OF THE SOLUTIONS IN PLACE AND PLANNED TO ANSWER THE DEMANDS

We believe in collective intelligence. We believe that the best way to learn is to experience. We believe that the best way to experience is to be. We believe that without strong emotions, learning doesn't remain. We believe that learner autonomy and accountability is key. It's with this transformational mind-set that we decided to launch the Airbus Leadership University: a transformation platform to accelerate the development of current and future leaders to better meet business targets. Airbus Leadership University provides tailored solutions which go beyond traditional ways of learning. It aims at becoming a global reference in leadership development through:

- Experiential development: providing state of the art development solutions, allowing leaders to develop, experiment and live experiences together
- Experimental labs: acting as an incubator and accelerator for initiatives favouring new technology and new mind-set
- Networking: to face the digital transformation it is key to connect Airbus leaders with external communities and ecosystems such as start-ups, incubators through digital disruption master classes, learning expeditions....

Through the three core pillars of



We deliver:

Individual Accountability & Leadership Assessment

We provide self-awareness solutions through selfservice Applications designed to help leaders with their personal and professional development. Employees can pro-actively drive their development, can understand better their personality, professional interests, stress management style, motivation drivers, learning style and much more. This will help them to plan their next steps.

Our solutions systematically encourage our leaders to be actors of their leadership development as part of structured development activities: guest speaker for internal events, sponsor for projects, expert, trainer, debriefer of 360° feedback results, mentor, peer coach, observer in an assessment centre, facilitator of team workshops or

Individual Leadership Development

A large portfolio of recommended reading, videos, Online digital learning solutions. Classroom based development and experiential immersions aimed at the specific learning needs of the employee including topics such as:

- Being Agile
- Trust
- Leading remote teams
- Story telling
- Empowering conversations
- · Self awareness and personal development
- Facilitation skills
- Assertiveness
- Emotional Intelligence
- Coaching skills
- Dealing with change
- Well being
- Collective Leadership Development & Transformation

With solutions designed for the support and development of teams such as:

- Workshop In a Box self facilitated sequences from a selection of 15 boxed sets on key topics
- Team life cycle solutions
- Business community solutions
- Targeted team coaching
- Focus workshops
- Action Learning

All of this is completely aligned with and supporting the Airbus Leadership Model and bringing to life the Airbus Values: We are one/Teamwork, Customer Focus, Reliability, Respect, Creativity and Integrity



OVERALL HR LEVERS PRACTICES AND CASES

We reviewed the main HR levers: the competencies referential and mapping, the demographic analysis, the recruitment, the mobility, the learning, the Knowledge Management and the Employment Marketing.

These levers address all dimensions of competency evolutions: Emerging, evolving, declining competencies and jobs.

The Competence Strategy, the Competence & Learning board and the Resource Review are the enablers giving perspective and consistency on HR levers implementations.

Obviously, HR levers must be also properly anticipated and used by team leaders and by employees to maximise potential of adaptation and growth for the benefit of the organisation.

In the next chapter, you will understand how the potential and flexibility of these HR levers are increasing significantly thanks to digital models, new consumption patterns and continuously evolving technical features.

We are convinced that once all actors from individuals to leaders will be familiar with HR potential levers, our collective intelligence will generate very high capabilities in addressing future transformation challenges. The HR levers in place and to come are very powerful when well practice.

After having reviewed HR levers potential and practices, it is interesting to review the competence strategy chapter or the demographic chapter to get an overview of the context on which the HR levers are applied.



HR LEVERS EVOLUTION CONTRIBUTING TO AIRBUS TRANSFORMATION

We will concentrate here on Resource and Develop's contribution with a few elements on the HR transformation programme (PULSE) and on the Leadership University's contribution.

The level of transformation we are considering will provide great opportunities if well anticipated and if collectively engaged. All HR actors are practising these different levers which we have illustrated in previous chapters. It is crucial that each employee measures his/her potential in engaging these levers as organisation leaders, as team leaders and as individuals.

Our objective in this chapter is to provide you with a clear view on:

- Different HR levers evolution from 2016 to today, then to 2021,
- Impact expected of practices and efficiency and effectiveness.

All transformations engaged are resulting from different observations:

- Market trend and benchmarks on new technologies companies,
- Social and generational evolutions,
- Worldwide footprint,
- Higher flexibility needed.

HR PORTFOLIO OPTIMISATION RESOURCE & DEVELOP LEVERS INNOVATION ROADMAP

The main evolution steps:

Past:

Harmonisation and simplification of our referential (Competence, Learning) and way of working throughout the company worldwide),

- Today:
- Digitalisation deployment and robustness worldwide, • Future:
- Automation, Artificial Intelligence and Virtual Reality.

These evolutions are supported by new HR Information Management, by new technologies and practices, and more than anything, by a dynamic of major evolution of the whole company in terms of employee empowerment in his/her development and engagement in the company transformation. PULSE is a major HR change programme for the company engaging all employees.



Harmonise, Simplify, Digitalise SHAPE THE FUTURE FOR WORLDWIDE EFFICIENCY ON ALL LEVERS

AUTOMATION (AI) AND IMMERSIVE SOLUTIONS

Data and predictive analytics max values for learning plan, professional opportunities

Competence Management

Recruitment Management

Learning Management

Employment Marketing

Knowledge Management

with a 1st focus on recruitment

Employees and managers empowerment

Leverage globalisation

DIGITALISATION ROBUSTNESS WORLD WIDE

ONE Airbus Competence Management worldwide referential harmonised & simplified (-70%)

Recruitment direct approach for critical profiles Video interview & digital assessment Managers becoming empowered for int. hiring

Innovative Employment Marketing solutions. E-sport, employees social network...

No training mass collection. 200,000 e-learning completed +8000 Digital Learning modules added Accessible worldwide

Digital Knowledge Management offer

HARMONISATION, SIMPLIFICATION AND MOVE TO DIGITAL

3 Competence Management referential 1,900 Jobs, 14,700 competences and skills

Training mass collection 5,000 classrooms + ~250 e-learning Within Europe sites

A common recruiting tool in Europe. Single Request management principle

PULSE

PULSE is the human dimension of the company transformation with a people centric mind-set.

- Connecting People & Minds,
- Switch in Mind-Set,
- We are One Company with Access for All,
- Services fitting your needs,
- A learning Company.

PULSE is a new mind-set, it is a new HR environment and is a great transformation enabler in all company domains. The human capital fully engaged in delivering the company performance but also in transforming all areas of our product, our services, our collective responsibility and our environment.

PULSE is structured around 3 key axis of change

Digitally Powered Capabilities:

Modernising our digital solutions means and moving away from the complex, bespoke to standard systems, cloud based solutions that offer all of the benefits of "Software as a Service" – including more frequent updates and multi-device support. Our Group's digital transformation began with the deployment of The HUB and has continued? with the deployment of our new HR Talent Suite – myPULSE - in November 2016. Other new Apps are also under development!

• Reloaded HR Policies:

"Reloading" our HR Policies and Processes means making them more user centric, so that they better respond to your needs. At the Policy level, we will move away from a heavy, annual, HR cycle to a more open cycle that puts you in control of when things happen. At the Process level, each of the HR Centres of Competence has committed to redesigning key processes - for example Recruitment, Learning, and Performance & Goals – to make them simpler and more consistent across our Group. Mind-Set & Ways of Working

The short-term transformation of our ways of thinking and working is not being driven or managed by any one person – rather it is being driven by pioneering teams in our Group who are experimenting with new empowered organisational models, with the objective of finding the model that work best for them. For the long term company transformation, the Group is putting in place the platform to support leaders and teams development with the opening of the Leadership University in Toulouse – and other locations in Europe!

The company values are also key to binding all of our initiatives

- We are One/Team Work!
- Integrity.
- Customer Focus,
- Reliability,
- Respect,
- Creativity.

COMPETENCE MANAGEMENT

Competence Management is the foundation of any robust Workforce adaptation plan. It has a key role in having a harmonised and clear referential within the company and in having a clear mapping of all positions in terms of job and competency profiles. From the perspective of **organisation leaders**, it is the only way to measure adequate distribution and level of competencies versus business current and future challenges.

Competence Management helps to identify business risks and opportunities and thus engages appropriate HR levers. We created at this time the concept of Academies within each organisation. The Academies' main role was to engage qualitative workforce adaptation analysis and recommendations in support to leaders. The HR organisation provides ways of working rules, tools and governance. The Academies' manage competence referential for their functions. The managers lead the mapping of all positions in their scope and advise employees in their systematic assessment. They are in charge of defining HR development solutions (learning, on the jobs, etc.) adapted to each Competence and Skills elements.

For a **team leader**, it is the only way to define a robust workforce adaptation plan. We recommend to make assessments of an individual's competencies when relevant, to measure gaps and to subsequently advise them in their development.

For an **employee**, this is the best way to define his/her own priorities in terms of personal developments. It also helps to understand future potential job requirements and to anticipate personal development accordingly.

It is interesting to consider the progression of Airbus on this topic. Around 2006 the whole company engaged the design of a common competence referential, then the mapping of all positions and the systematic yearly assessment of each individual with the manager's validation. It took a few years to obtain full deployment as clearly it generated a lot of key questions and opportunities in terms of Workforce adaptation.

The experience was very rich, nevertheless we reached a few limits:

- The competence referential was very detailed from job families, to competencies and skills.
- The harmonisation became very difficult due to the level of detail.
- Each of the lower elements (skills) required specific solutions in specific learning.
- It has created significant overall workload to manage the activities.
- The HR IS was not integrated and required a lot of maintenance and administration.

Around 2015, after a few benchmarks and HR IS market analysis, it was decided:

- To move to a new integrated HR IS which was much more modern and opened to new opportunities (myPulse portal within the Pulse company transformation).
- To drastically simplify the Competence referential and effectively harmonise it.
- To maintain the full mapping of positions.
- To engage team leaders and individuals in competence assessments according to local needs.

Major steps were made moving from 3 Competence Management referential with 1,900 Jobs, 14,700 competences and skills to one Airbus Competence Management worldwide harmonised & simplified (-70%, 573 jobs, 4428 Competences) with more than 90% position mapped.

Harmonised & simplified =70%

We are now continuously improving our referential and level of mapping. The deployment is seen on all Airbus sites.

573 jobs 4428 competences

We are looking into leveraging this.

- At an organisational level, considering referential and mapping are the basis of Workforce forecast enablers which are Competence Strategy and Resource Reviews.
- At team level, using individual assessment to measure global effort for a well-balanced competence level in the team within the 3 proficiency levels (Awareness, Practitioner and Master).
- At employee level, using position description and individual assessment to identify expected areas of improvement and potential for sharing mastered competencies.

The next steps are mainly to enhance links with other HR levers like Recruitment, Mobility, Learning and Knowledge Management. Some fruitful experimentations were made in using standard external job referential.

A major step will be the capability to work on predictive analysis, including demographic analysis and practice in competence development. This could help to better predict areas of risk and to better advise leaders, team leaders and employees.

COMPETENCE MANAGEMENT INNOVATION ROADMAP

2021

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Machine Learning in support to competence identification

Block Chain in support to competences value

PREDICTIVE ANALYTICS

Enhance link with recruitment & learning

EMERGING JOBS & COMPETENCES ANTICIPATION WITH IMPACTED/DECLINING ONES

TODAY

WORLDWIDE DEPLOYMENT

REFERENTIAL AND MAPPING BASELINE FOR COMPETENCE STRATEGY AND RESOURCE REVIEWS

Regular reviews (once a year) embed competences assessment

From 5 to 3 competences Assessments steps

Harmonised Jobs & Competences referential

2016

Detailed Skills mapping

- Very detailed job referential (job, competence, skill level) + 5 proficiency levels,
- Systematic yearly employee assessment, High maintenance and operational cost,
- Airbus European sites only.

LEARNING MANAGEMENT

Learning is certainly the most powerful lever for continuous transformation at an organisational level, at a team level and at an individual level. A learning organisation is a must to engage and enable transformations to come. It requires a lot of engagement of all actors, and - if well used and managed - the values created will always create a high return on investment.

For the past few years, learning capabilities have been strongly benefiting from technology evolutions and their increasing accessibility worldwide at all levels via tablets and smart phones. This is a fantastic accelerator of knowledge and practice sharing. Virtual reality, Mixed Reality and Artificial Intelligence will offer incredible steps in the next months and years.

Mobile Apps and Gamification will bring further innovation and digitalisation into the learning world and will make learning an experience. Social leaning features will complete the learning solutions.

For Airbus, the main turning point started in March 2014 with a strong willingness and consensus on the need to move quickly towards Learning Digital solutions with a few rules built on high quality content and provide as far as possible unlimited access to learning for all, anytime, anywhere, in any discipline.

The first step was to clean-up the classical learning offer from 16,000 to 5,000 classroom courses delivered mainly in Europe Airbus core countries (UK, Germany, France and Spain). It was done in six months. Then, it was mandatory to engage a major transformation of our Learning Management System looking for a state of the art platform and learning environment. Progressively, the learning content transformation was engaged from fast growing to more complex transformations.

- Knowledge Banks (set of pre-existing external digital solutions from a few minutes to a few hours, updated and enriched regularly, mainly in English and sometimes in other languages)
- Rich Media: short digital solution 5' to 10' max produced internally by experts with support of Learning specialists. The solution is combining speaker video with synchronised animated presentation including key words, main steps easy to jump to, and attachments.
- In 2018, we completed the integration of external MOOCs in our system, providing high level of digital learning content from 4 hours to 40 hours coming from the best universities world wide
- We progressively replaced bespoke classroom courses with all already existing solutions, combined with e-learning developed with our experts and some Learning experts (internal or external). This is creating blended learning solutions maximising the potential of each method and the learning effectiveness and retention rate.

We have integrated a Virtual Classroom solution to enable distance learning, reduce isolated training needs and to foster collaborative learning without borders.

It was crucial in this transformation to reconsider our learning effectiveness approach to measure the impact of these transformations and to build the future. We have considered Kirkpatrick's model as a reference and implemented it at all levels, not to mention a star rating approach. We react immediately to feedback or ratings when repeated. To make sure that all employees can benefit from the whole learning offer, Airbus will provide a Digital Learning Environment in the form of Digital Cubes, Hybrid Rooms and IT rooms equipped with Laptops or PCs.

The booking will be supported by an easy to use seat booking tool. Especially people in a production environment will be able to find a guiet room for learning close by.

Short term, our next major challenges will be social learning and virtual/augmented reality. We will consider later the potential of Artificial Intelligence.

The main element driving this transformation is the empowerment of individuals in learning continuously by providing regularly updated content, easy to access and focused on individuals' needs (short, focused and high quality).

Social or collaborative learning is built on the worldwide collective intelligence and capability of well connected groups to get the best out of individuals for the benefit of all. Company and individual values are crucial elements of social learning success.

Augmented and virtual reality will open all the potential of Digitalisation to practical learning in professional and realistic environmental contexts with the possibility to fail and thus learn faster with very limited risks. It also opens the door to collaborative spaces with virtual interactions, simulated avatars or other distant players.

LEARNING INNOVATION ROADMAP

2021

Airbus own MOOCs Artificial Intelligence learning coach Effective Learning Ecosystem connecting optimal solutions Connect learning to digital environment (Ind.4.0) Adaptive Learning

SOCIAL LEARNING

Gamification MICRO LEARNING

Connection between learning and KM Learning APPs for Smart Devices VIRTUAL REALITY

TODAY

MOOCS VIRTUAL CLASSROOM Full Digital Languages packages (incl. distant coaching integration) **Digital COTS** Rich Media 1.1 CSOD quarterly releases Serious Factory Connect to Suppliers, Universities DTO, others to maximise learning & effectiveness 4 levels Kirkpatrick Learning Effectiveness KNOWLEDGE BANKS

2016

99% Classroom

KNOWLEDGE MANAGEMENT

Knowledge Management (KM) was one of the top 2018 Airbus Human Resources priorities and still so for 2019: efficient Knowledge Management is what distinguishes successful organisations from others.

Knowledge Management is based on the fact that an organisation's most valuable resource is the knowledge of its people. Airbus encourages people to create, share and use knowledge/skills for their own benefit, the benefit of the organisation and the customers.

There are many ways to manage the knowledge of the company, and several solutions and practices are proposed to our employees to:

- Identify risk of losing knowledge and critical knowledge,
- Support mobility, reorganisations and work transfer,
- Address new staff integration, high turnover & knowledge retention,
- Improve between projects, share best practice,
- Break silos, faster access to expertise,
- Solve problems, generate ideas and engage teams.

For many years we have developed practices and useful tools. However, the KM in our company is based on an opportunistic approach only used by employees and managers knowing the powerful effect of it.

In the frame of the PULSE program, and anticipating the huge employee turnover foreseen in the next 10 years, we have started a Knowledge Management Transformation initiative to go a step beyond, involving all the employees and making KM an inescapable and obvious way to master Airbus knowledge and create the conditions of a continuous learning.

The new approach aims at systematically ensuring business continuity in case of mobility and retirement both in white collar and blue collar populations; providing state of the art methods, tools and techniques; digitalising tools when it makes sense, developing a KM Do It Yourself practice series; developing an Airbus subsidiary to support Airbus on key KM actions and keep our key knowledge internally; developing a culture of knowledge sharing to ensure that managing the knowledge will be clear for all in our company in the years to come.

WHAT ARE THE EVOLUTIONS (2018/2019)?

The knowledge capture and transfer/sharing for both White Collar and Blue Collar will be systematic.

- In addition to the Experts, people with critical knowledge will be identified and exercise topics such as shadowing, mentoring, narrative experience, story knowledge capture will be highly recommended and Expertise Transfer from Experts and Critical Knowledge Owners to receiver will be systematic.
- For the other employees and managers (White Collars), a "Handover" practice, lighter and with a more business operational focus will be systematically deployed for any move or retirement. The objective is to prevent business information loss, enhance successor integration and value employees' contribution to the Airbus business.
- On manufacturing, the use of tutorial videos to complement the standard work instruction will be largely deployed and will allow us to deliver the right guidance to the operators (Blue Collars), in a clear, easy to understand, at the right time, and in a smart manner. This powerful method is a key tool to the poly-competence policy, it increases flexibility and hand-over, creates visual reference for training, reduces training time (specifically in case of ramp-up), reduces lead time, reduces the risk of nonconformity (CNQ) and thus significantly increases the productivity.
- Lessons Learnt workshops are pushed and highly recommended to bring people together to learn from previous experiences (LL best practices are integrated in the LBIP methodology and now the Company Quality Policy (A35) encompasses the LL).

We are increasing digitalisation. Thus we will offer flexible, easy to use and modern knowledge management tools for all our employees (Blue Collars and White Collars).

- While some digitalisation practices have already started (Extra...), we will propose state of the art integrated digital solutions for Expertise Transfer and Handover to provide access to the transferred know-how and information in one digital place being connected to all other needed tools.
 Chatbots will advise HRBPs, Managers, and Employees on the best KM solution that will fit their operational needs. We are working closely with the teams dedicating their time to equip Airbus with new technologies such as Augmented Reality, Virtual Reality, Mixed Reality to provide employees with modern tools. Major step changes in Manufacturing and Engineering are foreseen.
- Search tool

We are developing a Search application that will allow you to find people in the company who can bring expertise on a specific domain (experts, specialists, authors and owners of official documents, application owners...). This will provide managers with a quick capability to find internal resources with requested experience, skills & competencies, it will ease the internal sourcing for recruiters, enable project managers for crowd staffing, facilitate employee redeployment, and support all employees in finding the right expertise and operational support for their daily activity.

We are developing a Knowledge Management Do It Yourself series that gives employees autonomy through free of charge flexible solutions to the Business:

"How to perform a Lessons Learnt workshop", "How to perform an Innovations workshop", "How to perform an Expertise Transfer", "How to perform and Handover", "How to prepare and launch a Community of Practices", "How to create a Tutorial video"... We foster the Social Collaboration. Social collaboration is about cooperation, sharing goals, sharing information, enhancing learning, connecting brains, creating knowledge, innovating...

- Professional networks, Community of practices in classical or digital mode are already used a lot by our employees to share and create knowledge but also to capitalise our knowledge to enrich our products, services and processes through systemic community of practice organisations. We are promoting the use of these solutions and also largely sharing the best practices coming from the business, such as: Sharing Sessions, Learning Lunch, Learning Coffee, Learning Corners, KM days...
- Enlarging the use of Learning Groups, a successful practice to share knowledge and learn from others' experiences, and proposing several variants of this social learning is what we are also working on.
- Besides, our involvement in Google Suite integration in Airbus we will secure the best use of this tool's knowledge management capacity.
- At least, in the frame of the new learning requests coming from the business, we are integrating formal learning and knowledge management social collaborative solutions like Community of Practices to create learning environments.

We are committed to developing a culture of knowledge sharing

Different means of corporate communication, but also local communication means are used to disseminate the culture of knowledge sharing via **success stories**: tutorial videos to complete SOI in FAL and in plants, Learning Groups in Operation and Support functions, Lessons Learnt in China A330 FAL, Expertise Transfer, first Handover deployments... and through **business** and **benchmark best** practices sharing.

KM ambassadors will be nominated to promote knowledge management values and benefits. They will be nominated in a voluntary manner, regardless of the organisation they belong to. Whoever wants to live these values and promote them will join the KM ambassadors community, where awareness sessions and regular exchanges and information sharing will be proposed. KM is considered everyone's responsibility and everyone can be involved in promoting the subject.

All additional relevant means will be used to foster the culture of knowledge management. Our objective is that managing our knowledge becomes a clear priority in the future.

Capture the key knowledge of our workforce, learn from our lessons, create knowledge and share it.

KNOWLEDGE MANAGEMENT INNOVATION ROADMAP

2021

One KM digital platform covering all Airbus levers

TODAY

SYSTEMATIC K TRANSFER WHEN WE CHANGE JOBS

KM practices integrated in Resource Plan (moves, leavers) Mapping of critical Knowledge

KM APP AVAILABLE FOR ALL EMPLOYEES

Immersive technologies (VR/AR)

Airbus Expertise Discovery tool to get access to knowledge owners

TUTORIAL VIDEOS AT MANUFACTURING EXECUTION LEVEL

Airbus You Tube for all Knowledge Transfer Digital Tool

DO IT YOURSELF KM SOLUTIONS

Develop a KM expertise in Airbus (ABA subsidiary) to operate KM services

Chabot to direct users to the right KM services KM Ambassadors to foster culture of sharing

2016

A portfolio of Knowledge Management (KM) tools KM practices open to all disciplines Robust local KM practices

RECRUITMENT MANAGEMENT

The recruitment of new talents is critical for a company. It is about identifying and selecting the right behaviours, values and skills of a new Airbus team member.

It is always recommended to anticipate these activities, taking into account the balance of the current staff capabilities, the need for a diverse workforce, a teams' job evolution and candidate/job market potential.

Recruitment activities can be broken down into 3 key steps:

• Candidate Attraction:

Employment marketing (which is key and considered in another chapter) Job Advertising and Direct Search Activities.

- Candidate Selection: Pre-Selection (Analysis of all the candidates) and Selection (Interviews).
- Candidate Integration: Candidate offers, Hiring (Contracts etc), Newcomer on boarding.

For many years we have had an integrated tool for the European sites, facilitating open position visibility and a harmonised way to manage candidates' applications. However, the usage of LinkedIn (main professional Social Network worldwide) has progressively increased from a few connected people to all recruiters. Job Adverts have been sent to job boards was via a Multi-posting tool.

The evolution of recruitment has been accelerating over the past 12 months, with extensive social Media usage (internal but also external), attendance at different recruitment events with particular attention to attracting digital profiles (such as gaming events). Attracting different talents was also a key part of the decisions to start using pre-recorded videos during pre-selection. This allows the recruiters to consider more applications in a quicker time, increasing the quality of hire, not to mention providing a better candidate experience as they can respond at their own pace.

RECRUITMENT INNOVATION ROADMAP

Fully automated recruitment process? Social Media behavioural analytics IMMERSIVE TECHNOLOGIES (VR/AR) Block Chain

TBO – Hiring Teams do their own recruitment ?

2021

Automated pre-selection (systematic, short...) Automated CV Screening (all CVs equally analysed) Chatbot CV's

INTEGRATED RECRUITMENT SYSTEM (PRE-RECORDED VIDEOS, GAMIFICATION...)

External and internal applications via Mobile and LinkedIn Worldwide Airbus job market

MANAGERS EMPOWERED IN INTERNAL CANDIDATES RECRUITMENT

FODAY

Predictive Analytics in selection via scientific gamification Careers site Analytics Pre-recorded Video Interview Digital assessment tools Benchmarks

EXTENSIVE SOCIAL MEDIA USAGE (LINKEDIN, FACEBOOK, XING, VIADEO, GITHUB)

HUB: EMPLOYEES PROFILE + JOB ADVERTISING

Intensive Engagement in events (career, digital...)

•••••

2016

Social Media usage (Linkedin) A common recruiting tool

The next steps for recruitment (2018/2019) are looking very promising thanks to the evolution of new digital capabilities:

- We will have a better candidate experience. Candidates for example will be able to apply for jobs easily via Mobile Devices and LinkedIn.
- We will have a truly worldwide job market (through The Regions using Workday).
- We will be able to use predictive analytics in selecting candidates (by using scientific and AI powered gamification during pre-selection for example).
- With the new website, we will be able to have far more analytics from our Careers site to know where our candidates come from, what they like etc.
- With Workday we will be able to have an Integrated recruitment system (including all the digital tools used such as Multi-posting and pre-recorded video interviews).

We will soon enter a new era where managers will be fully empowered in internal recruitment with the support on request of Recruitment business partners.

We are convinced that quality and speed of recruitment will increase benefiting all candidates, future employees and the company via the use of AI Powered automated pre-selection systems, AI powered automated CV screening tools and even chatbot CVs!. This will ensure our capability to analyse all candidates' proposals systematically providing an instant response to them, providing equal chances to an applicant and ensuring harmonised selection criteria.

In the longer term Immersive technologies (Augmented and Virtual reality) will certainly bring opportunities to show candidates what working at Airbus is really like, not to mention the candidates will no longer have to travel for an interview!

Blockchain presents a huge opportunity for Recruiters to ensure that the candidate has the skills/experience they claim to have on their CV, which will improve the speed in which we can identify good quality candidates. The increasing adoption of trust based organisation models could also have an impact on recruitment. In these organisations, recruitment is done directly by teams of their future colleagues without the intervention of HR (this could be facilitated by fully automated recruitment systems using AI, Blockchain and Analytics).

In order for any organisation to grow in line with its values, social responsibilities and long term goals, one has to hire the right people. The recruitment process is also the first time that most candidates have an interaction with the company and it is the recruiters' role to make sure they want to join the company and to develop individually in it.

Recruitment is also critical for the teams as it is about engaging a new colleague for common successes and continuing to support their development. That is why the evolution and success in recruitment is critical for the future of the company.

Recruitment is transforming already and will go through some very radical changes in the next coming years and that the role of the recruiter will transform from today.

In the face of these changes, everyone working in recruitment (not just within Airbus) will have to decide on how far we wish to use technology and work out how recruiters and HR in general will work with self-empowered teams.

There are limits as to what teams and technology can bring and the challenge for us.

SOME IMPORTANT PROGRAMMES AND ACTIVITIES INCLUDING EVOLUTIONS OF PRACTICES

Airbus Global University Partner Programme (AGUPP)

Bringing industry and education together, the Airbus Global University Partner Programme connects a global network of universities to develop the engineers of the future.

The programme currently covers 26 universities in 14 countries, each of which is supported by an Airbus employee acting as an ambassador for the company. Over the course of 2017, Airbus is looking to further expand its AGUPP network, adding five more partner universities.

universities

- 83 Employees are part of the global company-wide campus supporting the programme,
 82 EO2 Observations with Aldress staff.
- 2,500 Students interacting with Airbus staff during the year,
- 950 Members on the Airbus social network for university relations.

Partnering with Education associations

Airbus works with the global education community to support the development of internationally minded students with the skills we have identified as important for our business in the future.

Combining current innovative global research on the attributes of the future engineer and bringing together both Airbus and university perspectives within the broader context of trends in employability, the Engineer of the Future White Paper offers insight into this highly topical area. The document has been updated in May 2018.

You can find it in following link:

http://company.airbus.com/careers/Partnerships-and-Competitions/The-Engineer-of-the-Future-White-Paper.html

OF EMPLOYMENT MARKETING

WHAT IS EMPLOYMENT MARKETING?

THE EVOLUTION

Employment marketing is defined by all activities and strategies aimed at building and maintaining employer brand, extending reach and exposure of career opportunities, building and nurturing candidate relationships, and all management of messaging and advertising of talent acquisition efforts. (Source Analyst firm Brandon Hall Group).

OBJECTIVE OF EMPLOYMENT MARKETING IN AIRBUS

- Ensuring a good understanding of Airbus as an employer (Employer Value Proposition, values, social responsibilities, products, footprint, employees life) and developing a positive and attractive employer image of the company.
- Contributing to better recruit at a lower cost, stronger company advocacy, increased employee retention and productivity when an attractive image is achieved.
- Partnering with Universities worldwide and providing visibility of our competences strategy thus helping to prepare future talent to be Airbus-ready when hired.
- Providing to managers and leaders visibility of the talent market and of relevant universities with whom they can collaborate and from whom they can attract future talent.
- Contributing by leveraging employees' testimonies and involving them in specific events or communication campaigns to support attraction and communication.

GEDC & IFEES

Airbus is a corporate member of the Global Engineering Deans Council. GEDC members are individuals responsible for setting the agenda for higher education in engineering in their countries and universities. The GEDC Airbus Diversity Award is a joint initiative which recognises individuals and initiatives that have succeeded in increasing diversity amongst the engineering student body worldwide.

IFEES works with a large number of member societies to establish effective engineering education of high quality around the world to assure a global supply of well-prepared engineering graduates and Airbus has been a member since 2012. The organisation plays an active role in organising the World Engineering Education Forum and our representative from Employment Marketing (Airbus) was the co-chair of the 2015 event.

Airbus Diversity Award

GEDC Airbus Diversity Award 2013-2017 The GEDC Airbus Diversity Award aims to shine a light on successful projects which have encouraged more young people of all profiles and backgrounds to study and succeed in engineering. The award was developed and funded by Airbus in partnership with the GEDC, the leading international organisation for leaders of schools and colleges of engineering education. For this fifth anniversary edition, the award has been placed under UNESCO patronage.

ONLINE PRESENCE

Careers Website

A company website is, in today's world, an essential communication tool enabling anyone who is interested in learning more about a company to find information about a company's products, values, activities and performance. The Careers section of the website provides information about where and how to apply for a job and also information about what jobs are available and why someone consulting the site should be interested in working for the company. Storytelling and concrete, real life examples are used to communicate an authentic picture of what it's like to work in Airbus as well as the different locations and types of jobs one could seek to hold.

Social Media

Within the last 5-10 years companies around the world have developed significant networks with various communities using social media, like LinkedIn, Facebook, Twitter and Instagram. Social media can be used in many ways, but EM today works with these platforms to engage and interact with potential candidates and to create a positive picture of what it means to work for Airbus. Social media allows for a more agile and personal interaction with a community of followers than one can find via a company website or through more traditional mass media (e.g., newspapers and magazines).

In this way, Social Media enables direct engagement with potential candidates and can facilitate their attraction and application. On the other hand, some other platforms, such as Glassdoor, offer current and past employees an opportunity to express their views and experiences in the company, thus contributing to a sometimes negative view of the company. EM works to manage this presence in an authentic way, and to use the platforms as opportunities to gather feedback that can be useful in bringing improvement in the company.

NATIONAL ATTRACTION AND RECRUITMENT CAMPAIGNS

EM identifies, organises and participates in various campaigns to support awareness of opportunities and of the brand itself. These events and campaigns take the form of career fairs, university conferences or roadshows, advertorial comment in magazines and newspapers and creative campaigns targeting specific populations (e.g., apprentices or dual students as explained below). EM organises hundreds of events each year in Germany, France, Spain and the UK.

Example: apprentices/dual students in Germany

Airbus is offering a wide variety of more than 25 different dual study programs and 20 different apprenticeships at ten sites throughout Germany. As we are recruiting more than 500 apprentices and dual students each year, we are offering diverse apprenticeship marketing actions

BRAND AWARENESS AND TRACKING

Developing and maintaining a consistent brand presence across countries, divisions, and domains is important to strengthen and reinforce the reach of the company. When communicating, EM is responsible to manage a harmonised brand identity, both in terms of its verbal and visual image. It is also essential that this image reflect a strong share of authenticity with respect to what employees live, recognise and communicate about the company.

External bodies conduct surveys on employer attractiveness and can also play a role in helping to raise awareness of a company. EM monitors the various employer branding rankings and agencies researching and reporting on employer perceptions to understand what potential candidates identify as the most important attributes and to assess them against the association of Airbus with respect to these attributes. This helps EM to work to position Airbus as an attractive employer.

EXTERNAL COMMUNICATION

In addition to what has already been mentioned regarding online presence, EM works to ensure Airbus is seen as a positive and attractive company from an employment point of view, using tools from external media presence and coverage to speaking at external conferences and positioning Airbus as an innovative company and thought leader.

Employment Marketing are looking forward for new opportunities via extensive Social Media usage, by immersive Situations for external talents, new technologies and gamers events contribution, Live chats (Webinars), Hackathons & Challenges.

This contributes to provide a more realistic of Airbus values, activities, new ways of working and products. This also helps to understand our potential future talents' expectations and needs.

EMPLOYMENT MARKETING INNOVATION ROADMAP

2021

Immersive Challenge as open collaboration **IMMERSIVE CHALLENGE AS COMMUNICATION MEDIA** Employer Brand Watch Tower Collaboration with Social Media influencers Immersive Situations (VR/AR) **AIRBUS COMPETENCE STRATEGY VISIBILITY TO UNIVERSITIES PARTNERS**

TODAY

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Engineer of the Future White Paper

EMPLOYEES BRAND AND SOCIAL MEDIA AMBASSADORS Hackathons & Challenges

New technologies & gamers events contributors Universities partnership expansion to new technologies high schools

EXTENSIVE DIGITAL SOCIAL MEDIA CONNECTIONS FOR PROJECTS AND JOBS

Live- Chats / Webinar Innovation Summer Academy

INTENSIVE ENGAGEMENT IN AEROSPACE AND NEW TECHNOLOGIES EVENTS (CAREER, DIGITAL...)

Universities ambassadors network extension

2016

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Universities partnership Worldwide

- Aeronautical event participations,
- Aeronautical Universities partnership Worldwide,
- Media presence and Social Media to communicate,
- Worldwide universities potential visibility within Airbus,
- Airbus Diversity Award.

Make Airbus THE World-Wide Employer of Choice to embrace THE Future!"

THE EVOLUTION OF OVERALL HR LEVERS

The HR solutions are evolving in the same way as many functions thanks to new technologies and associated social evolutions. They are becoming much more flexible, user centric, accessible worldwide and for all. For two years, Airbus PULSE HR programme has boosted these transformations. In this study, we concentrated on the elements which support the evolutions of HR levers.

Since two years, we have drastically simplified and harmonised our solutions (example: from three to one competence referential (-70% job and competencies references).

We began the digitalisation journey with our learning solutions (No more training mass collection but **predictive classroom** plan, 200,000 e-learning completed, +8000 Digital Learning modules added accessible worldwide). For recruitment, we have set-up a direct approach for critical profiles, and video interview & digital assessment Managers becoming empowered for internal hiring. Innovative Employment Marketing solutions are engaged like E-sport, employees' social network... We are also setting-up Digital Knowledge Management offer.

We are now securing for all our disciplines the **digitalisation** worldwide in Airbus One Team. We are progressively engaging **Data analyst and predictive** models (x: Professional Opportunities), preparing Chabot services & Artificial Intelligence with a 1st focus on recruitment and then immersion with Virtual Reality which is a promising opportunity.

The PULSE ambition is boosting our transformations with strong willingness to empower and therefore to encourage all employees in getting the best of HR levers' leveraging globalisation.

If you are interested in better understanding the potential for future solutions, it could be worth reviewing the chapter describing the HR levers practice in support to the Competence strategic axis.

These two last chapters could help organisational leaders in forecasting the most relevant strategy for business transition plans with support of their Senior HRBP or Resource & Develop Key Account Managers. For team leaders, it could support their team development orientations, including mobility aspects. For individuals, it is crucial to understand and make maximum benefit of all solutions in place or to come to engage their own development based on their inspirations and based on the company's anticipated evolutions and priorities.

As mentioned already in the Executive summary, we encourage each reader to consider actively information captured in GWF. One simple way could be to formalise for you only or for sharing the actions you would engage to progress on the subject, by writing on a simple table "What I will do in the next 3 days?", then in the next 3 weeks, in the next 3 months and perhaps in the next 3 years.

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AIRBUS

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