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Airspace - Fly it. Love it.

Flying is not just travelling. It should be a highlight of any trip, which is why providing the best passenger experience is a major Airbus design goal. Our cabins are designed to meet diverse passenger expectations, delivering comfort and efficiency, and ensuring airlines have a versatile space to meet changing market needs. With Airbus, airlines can offer the latest on-board products, enhancing both personal space and passenger well-being, including more personalised services through in-flight entertainment and internet connectivity.

Airspace

Airbus has given the most valuable space in the sky a dedicated name: Airspace. Airspace is the Airbus cabin brand and reflects the importance of the cabin to passengers, airlines and to Airbus itself. Based on our customer centric approach, we have created the Airspace DNA. It covers the most important elements in aircraft cabins for passengers and airlines, driving innovative solutions in terms of comfort, ambience, services and design. Airspace provides the leading passenger experience, offering the most relaxing space with wide seats and biggest storages, an inspiring space with unique lighting solutions and quietness, a unique living space that is seamlessly connected and hygienically clean and, last but not least, a beautiful space featuring an award-winning design.

Airspace stands for a consistent experience across Airbus cabins and is already in service in the award-winning A350 and A330neo cabins, whose fast growing fleets are impressing passengers around the world. Now the Airspace brand is bringing the leading widebody passenger experience to the single-aisle market, setting a new benchmark in the industry and empowering, in particular, the A321LR and A321XLR operations. The first single-aisle Airspace cabin was delivered in an A321LR to our launch customer JetBlue in April 2021 and entered into service on their transatlantic route from New York to London in August 2021.

Airspace Link

With Airspace Link, Airbus is paving the way for the future of the connected cabin.

In a post covid19 context, where airlines are looking for new revenue streams and ways to optimise their operations, and with passengers' expectations which are continuously evolving, Airspace Link will enable the airlines to have the right level of flexibility and agility to adapt more easily to fast changing market conditions, and offer a more personalised experience to its passengers while reducing their cost of operations.

All Airbus aircraft types will be able to benefit from the first end-to-end ecosystem in the air.

The Airspace Link ecosystem comprises 4 layers:

- Airspace Link iCMP: intelligent Core Management Platform
- Airspace Link IoT Services: Smart data-based services
- Airspace Link App Store: Flexible wireless apps for PAX & crew
- Airspace Link HBCplus: Agnostic Connectivity Platform

Airspace Link iCMP: iCMP is a step change of the cabin management system. With Airspace Link iCMP, Airbus creates one common fully integrated and scalable open platform for a digital cabin experience, operations and services. iCMP will enable the airlines and partners to easily connect smart equipment (Connected Assets) and host solutions developed by them and other specific providers which will lead to offering better passenger experience and optimise airlines cabin & cargo operations.

Airspace Link IoT Services: Based on smart cabin & cargo enabled elements, Airspace Link will collect all relevant cabin data, combining those with different data sources (e.g. Customer Relationship Management (CRM), ground operations, supplier, trend) as an input for big data analysis. This enables IoT Services for optimization of ancillary revenues, passenger experience and operational efficiency.

Airspace Link App Store: Based on a marketplace concept, Airspace Link App Store will be made available to our airline customers. Apps can be offered from app developing partners, airline internal developers and Airbus Services. This will allow Airbus, the airlines and/or app developers to bring new applications to the platform and differentiate them from competition.

The first apps are already available via Airspace Link wireless IFE delivered by three Airbus' partners (Bluebox, Inflight Dublin and Display) and has been selected by two early adopters: JetStar (SA) and Condor (A330neo).

Airspace Link Connect: In order to provide an end-to-end offer, we also need to connect the aircraft with the ground. Thus, in the frame of the open ecosystem, we provide our customers with the flexibility to choose air-to-ground (ATG) or SATCOM solutions:

ATG for efficient broadband connectivity using radio-telephony transmission to be tailored for regional operations

Airspace Link HBCplus is an agnostic cross-program platform, capable of hosting several connectivity providers (Inmarsat being the launch partner). Airlines will be able to select a provider from our Managed Services Providers (MSP) panel with the flexibility to easily swap to another one without the cost and operational constraints of replacing the full hardware solution (antenna & modem). EIS is scheduled for 2024nwith KA band as a first step, and KU band coming at a later stage. With this first generation of agnostic platform, airlines will be able to benefit from the latest Thinkom technology antenna, offering better in-service performance, better reliability and a reduction in drag leading to lower fuel consumption.

Cabin Eco-efficiency & Sustainability / Airspace Eco Calculator

Airline activities have been strengthened during COVID-19 with a focus on net zero CO₂ targets and Sustainable Aviation Fuels (SAF). Passenger & cabin topics cover carbon offsetting schemes & improved cabin inventory & waste management.

> 75 % of top 40 airlines are committed to reach net zero CO₂ emissions by 2050 or earlier

> 85 % of airlines perform some type of inflight cabin waste management

> 75 % of airlines with a focus on single use plastic (SUP) reduction

Some airlines with clear targets in place up to “zero waste” strategies Further approaches focus on more recycling in order to avoid landfill. Chinese airlines are focussing on food waste contributing to China “Clean your Plate” initiative

Airbus has been working on cabin-related weight reduction very successfully in the past and will continue this as weight savings ensure the biggest contribution to reduce the environmental impact over the entire lifecycle of the aircraft / cabin. Also smart digital solutions will contribute to more sustainable cabin operations in the future, by using IoT-data to optimize resources and inventory management and avoid inflight waste.

Personalized catering creates better passenger experience and can reduce food and packaging waste by >10 t per year and A/C.

Last but not least, we move our philosophy towards a repair, reuse and recycle approach and take design decisions based on life cycle assessments in order to provide the best sustainable cabin products for the future.

Airbus is involved in making the wider cabin interior supply chain more sustainable. We need to collaborate with our cabin supply chain to achieve more sustainable solutions, as we buy lot's of cabin components. Data availability and transparency are key enablers.

What are the benefits to using sustainable products - costs, lightweighting, stronger branding, improved passenger experience?

Biggest benefits of using sustainable products are weight savings, as this has a huge impact on fuel burn and CO₂ emissions during the entire operational phase of the aircraft. Also inflight waste reduction through re-use or smart digital solutions contribute very positively. If airlines can create awareness of those sustainable solutions and make it visible to passengers a big positive effect will be improved passenger experience and customer loyalty that will result in.

Are there any safety considerations with it, i.e. flammability? No, as we do not make any compromises on safety. The same safety requirements also apply for sustainable cabin solutions. We always have to use/choose the right materials that are relevant for the requested design requirements - independently if they are sustainable or not.

What is being done to ensure cabins can be recycled easily and comprehensively? First of all we have to redesign products towards a design to environment and design to recycle. Secondly

it is beneficial to reduce the number of different materials we use and focus on materials that are easy to bring back in a circular process to reuse them again for cabin or other products. Improved cabin interior recyclability towards a more circular economy approach requires industry-wide collaboration.

Airspace Eco Calculator - Airbus Life Cycle Assessment for Cabin & Cargo

At Airbus, our ambition is to pioneer sustainable aerospace, including the development of a more eco efficient cabin. Life Cycle Assessment is a standardized method for comprehensive assessment of environmental impacts. The Airspace Eco Calculator will enable airlines, suppliers and Airbus to easily visualize the impacts of cabin and cargo products and services. Data are automatically integrated from background databases covering the entire value chain. Main benefits of the the project include:

- Contribute to Airbus ambition towards a sustainable aerospace and an eco-efficient cabin
- Offer new services to support airlines in their sustainable journey
- Support airlines in assessing environmental impact of cabin products along full life cycle
- Allow fast and simple environmental assessment
- Powered by a consolidated Cabin & Cargo database of suppliers products

Passenger well-being onboard

Passenger well-being is driven by a range of factors, including environmental parameters which require optimum management during flight. Airbus continues to lead the way in providing conditions inside the cabin that favour health and well-being. Frequently, the systems that supply this carefully controlled environment go unnoticed, as they work to provide comfortable conditions as good as those in our everyday lives.

Building on its cabin engineering excellence, Airbus' Airspace cabins deliver well-being through their Comfort, Ambience, Services and Design attributes, which are the foundation of the Airspace cabin design philosophy.

Airbus aircraft have the quietest cabins in the sky, which greatly contribute to passengers being rested on reaching their destination. The A380 has led the way with the very quietest cabin, and the Airbus family in general performs substantially better than competing aircraft in this important aspect of passenger comfort. A330 and A350 are quieter than other widebody aircraft, and as much as 9dB quieter in the forward premium cabin area. 3dB quieter means half the noise energy.

Good temperature control is essential to passenger comfort, especially on longer flights where passengers might want to sleep. Temperature is controlled. On Airbus aircraft, the cabin crew can directly control temperature via the Flight Attendant Panel with a greater number of separate zones. This allows them to more precisely adapt the temperature throughout the aircraft to the effects of different flight conditions and numbers of passengers on board.

Effective cabin air conditioning is a major factor in maintaining passenger health and comfort, with advanced environmental control systems maintaining an airy, yet draft-free, environment. The air in the aircraft cabin is completely replaced every two to three minutes with filtered outside air and filtered recirculated air.

Besides continuous cabin air renewal, the air conditioning system is designed to minimise the transmission of any potential pathogen thanks to a top-to-bottom airflow that eliminates fore and aft flow of air. Hospital-grade HEPA (High Efficiency Particulate Arrestors) filters remove more than 99.9 percent of particulates, including viruses and bacteria, from the air which is recirculated.

Furthermore Airbus' lavatory design features antimicrobial surfaces and touchless controls, to further reduce the spread of potential pathogens. Antimicrobial surface protection is also being extended to other parts of the cabin thanks to new developments in the form of polishes or textile additives.

The fresh air flow rate is important for comfort and odour suppression. The Airbus Air Management system ensures a high rate of fresh air flow which is properly adjusted according to cabin layout, and delivers the right amount of fresh air per passenger needed on widebody aircraft. On the ground, Airbus' unique Volatile Organic Compounds (VOC) converter keeps cabin air free of the kerosene odours around the airport.

Airbus was the first to introduce ambient 'mood' lighting as a factory fit option on a commercial aircraft in 2001, an option that is now widely adopted. Today, not only do all Airbus aircraft offer full white LED cabin lighting, but also colour LED ambient lighting with more than 16 million colours. Particularly beneficial on longer flights, ambient lighting comes as standard on every A350. As well as supporting airline brands, lighting scenarios use colours, brightness levels and dynamic transitions to provide the right cabin atmosphere in all flight phases. Lighting scenarios can help passengers to deal with the effects of jet lag by, for example, simulating sunrise or sunset.

A220 - Leading efficiency with exceptional comfort and ambience

The A220 cabin was purposely designed around the passenger, bringing a superior comfort experience into the small single-aisle market.

Greater comfort: With wider seats, the passenger experience is greatly enhanced by procuring a larger perception of space and legroom. In fact, one of the most important factors regarding seating comfort is the ability to move in the seat. Passengers should be able to readjust their posture to stay comfortable during a flight.

Best view from the sky: The large and numerous windows inside the A220 cabin – including in the lavatories – provide beautiful natural light whilst maximising the passenger experience by connecting with the outside world.

One roller-bag per passenger: The pivot overhead bins of the A220 provide space for each passenger to stow a roller-bag. This provides a stress free environment to both passengers and the crew, as well as decreasing turn-around time.

Connected: The A220 Family offers several options for inflight entertainment and connectivity, including, but not limited to: in-seat audio/video on-demand (AVOD), cabin Wi-Fi for on-board entertainment distribution and/or connectivity web-browsing via the latest generation of satellite and ground-based networks, as well as on-board mobile telephony. The A220 allows airlines to maximise opportunities to provide their passengers the best technology has to offer.

PRM friendly: Air travel should be accessible to all levels of mobility. At some point in life, everyone will or has experienced mobility impairments. It was important to find a solution that would simplify the lavatory experience to both the passenger and the flight attendant who procure assistance, in all dignity. The A220 offers several PRM lavatory solutions to its customers.

Efficiency: The A220 cabin comfort and efficiency are constantly improving through innovation. Our efficiency enablers allow maximising the space that can be allocated to seating. As a result, airlines can provide to their passengers more comfort or fit additional seats in the cabin to reach 135 seats on A220-100 and 160 seats on A220-300:

- Dual Aft Lav is a rear lavatory & galley arrangement which converts space taken by monuments into revenue space. It allows airlines to gain up to 5 seats and the possibility to add a lavatory accessible to persons with reduced mobility.
- Compact lavatories allow airlines to recover the maximum usable cabin length. Functionality and key dimensions are preserved, while space is saved through redesign and reorganisation of the interior elements. This enables additional seating or more comfort through increased pitch or more recline

A320 Family - Bringing the leading widebody experience to the single-aisle market

The A320, the most successful aircraft family, is now flying with the Airspace cabin, bringing the leading widebody experience to the single-aisle market.

Taking advantage of the A320's optimized cross-section, seven inches wider than the B737, operators can choose the cabin product that fits their market: from a wider seat for more personal space to a wider aisle for faster turnaround.

The A320 cabin comfort and efficiency are constantly improving through innovation. Our efficiency enablers allow maximizing the space that can be allocated to seating. As a result, airlines can provide to their passengers more comfort or fit additional seats in the cabin to reach 188 seats on A320neo and 240 seats on A321neo

- Space-Flex is a rear lavatory & galley arrangement which converts space taken by monuments into revenue space. It allows airlines to gain up to 6 seats and the possibility to add a lavatory accessible to persons with reduced mobility.
- Smart-Lav, a new optimised lavatory, allows airlines to recover the maximum usable cabin length. Functionality and key dimensions are preserved, while space is saved through redesign and reorganisation of the interior elements. This enables additional seating or more comfort through increased pitch or more recline.
- Ceiling stowage is a compartment that is integrated in the centre ceiling and available in up to three locations. It offers additional storage for emergency equipment, crew luggage and miscellaneous items. This contributes positively to passenger comfort by freeing space in the cabin and overhead bins.

Soon, new innovative enablers will expand the capacity of the A320neo and A321neo to 194 seats and 244 seats respectively:

- A new longitudinal galley at the forward door. This new concept allows opening up the cabin entrance by removing the partition wall in the forward part of the cabin. Opening up this space allows expanding the cabin forward hence providing additional seating space.
- A special seat concept at the overwing exits. This concept allows preserving comfort at the seat rows located at emergency passageways while optimizing the space allocation between the seat rows around it.
- A new setup at the aft door including a shell partition behind the last seat row and a modified Space-Flex version with two cabin attendant seats. This new setup allows expanding the cabin space further aft, while preserving the privacy and comfort of passengers seated in the area.

As a further commitment to Passenger Experience and Airline Operations, our Airspace Interior now flies on A320 Family. It offers a number of features for unmatched passenger comfort and airline operational efficiency as well as facilitating easy customization for enhanced airline branding.

The Airspace Interior for A320 Family includes:

- An impressive new entrance area with a customizable welcome light feature for a unique boarding experience.
Our iconic ceiling lighting offers a fully customized on-board luminary experience that begins at the entrance with a welcoming ambience and continues throughout the aircraft. Leveraging 16.7 millions colour options, the latest LED custom mood lighting creates a personalized in-flight experience throughout the cabin.
- The more spacious cabin environment also comes with more overhead stowage volume. The new Airspace XL Bins offer the largest capacity in its class with up to 60% more trolley bags than the current generation bins.
- New Sidewall Panels with increased cabin width at shoulder level for extra personal space.

- A new Window Bezel: The new fully-integrated window shades provide passengers a larger unobstructed view through the window, evoking the feel of the A350.
- A new Lavatory Design: The new spacious design also features coloured lighting, along with anti-microbial coatings, aroma, sound and optional touchless features.
- An updated colour scheme “Jana White”, in line with A350 and A330neo.

A330neo - Creating passenger loyalty with the award-winning Airspace widebody family

Overall, the A330 cabin is widely recognised as one of the best in the sky being quieter than competition, supporting the latest in-flight entertainment, including video-on-demand, mobile telephony and internet connection via satellite. Passengers on board the A330 can also enjoy state-of-the-art full coloured LED lighting featuring appealing “ambient lighting” scenarios creating a pleasant flying environment as well as helping reducing jetlag

.Across the A330 Family, First and Business Class passengers are rewarded with their preferred window or aisle seats. The eight-abreast seating layout in Comfort Economy ensures that no passenger is more than one seat away from the aisle while offering the best in class seat comfort. To help airlines lower unit cost and capture the most price sensitive passengers, a nine-abreast Economy is available; and to help airlines maximise revenues, a seven-abreast Premium Economy is offered as well.

A330neo Airspace interior

The A330neo displays a new Airspace cabin, driven by consumer-centric development and drawing on the success of the A350. The A330neo cabin features a fully customisable lighting welcome panel, new lateral bins with 66% more bag capacity, latest generation IFE & connectivity platforms, the latest Galley Inserts (same as on A350), refreshed lavatories with improved features, and upgraded cabin management system (CIDS).

Along with this new cabin, new innovative enablers are also being introduced on A330neo to maximise seat count without compromising passenger comfort:

- Smart-Lav and new double centre lavatories maximising the use of available cabin length;
- Angled-wall double lavatory tailored to nine-abreast economy class;
- Modular Space-Flex to maximise space usage aft of Door 4 with a combination of lavatories (up to four lavatories and offering PRM* capability) and galleys (up to 20.5 trolleys);
- Lower-deck crew rest combining rest area for cabin crew as well as flight crew.

* PRM stands for “People with Reduced Mobility”.

A350 - Creating passenger loyalty with the award-winning Airspace widebody family

The A350 is providing the leading cabin experience in the air, benefiting from a clean sheet design and Airbus' most advanced technology, much of which is now being made available across the Airbus product range. The extra wide fuselage enables generous space in all classes with vertical sidewalls, a flat floor and wide seats for the nine-abreast Comfort Economy. To help airlines lower unit costs and capture the most price sensitive passengers, a 10-abreast Economy class is available; and to help airlines maximize revenues, an eight-abreast seating for the growing Premium Economy segment is also offered.

Being the Airspace founding member, the A350 cabin design – with its contemporary design featuring calm surfaces, parallel lines, smooth curves empowered by innovative lighting – generates a pleasant and soothing atmosphere and an ambiance setting the stage for the leading passenger experience. The A350-cabin has been recognized in 2016 by two prestigious design awards: “Red Dot” and “IF” Design.

Throughout the flight, passengers will enjoy the quietest cabin in its class, and the lowest cabin altitude alongside a full LED ambient lighting. Passengers selecting a window seat will always benefit from the outside view provided by the larger panoramic windows. Larger overhead stowage bins provide space for more carry-on baggage in every class, and enable room-like spaciousness in Business class with the removal of the centreline overhead stowage.

The first wave of enablers is also being delivered very successfully to increase seat count and cabin efficiency without impacting passenger comfort:

- Smart-Lav, an optimized lavatory, which allows maximizing the available cabin length to install more seats – 40% selection rate (Already flying);
- ICE* Rear Galley, a combination of two longitudinal galleys (16 trolleys) and two lavatories, for an optimized use of the floor space available aft of Door 4 – 50% selection rate in 2018 (Already flying)
- Optimized centre six-trolley galley, that allows 20% extra catering capacity – more than 40% selection rate (Already flying);
- Optimized lateral three-trolley galley allowing to minimize floor space used while maintaining the volume available for food and drink storage – selected by two customers (Already flying);

Airbus is continuously working on new innovative cabin enablers to improve airline efficiency.

(Note: ICE stands for “Innovative Cabin Enablers”.)

Services

At Airbus Services we offer the latest in connectivity solutions, tailored cabin modifications and technologically advanced on-board retrofit solutions.

When it comes to cabin differentiation, it's all about the services. Willing to be even more connected in the air, passengers' expectations are evolving towards more comfort, more connectivity and tailored on-board services. Airbus Services provides the highest standards of

integrated services, from light cabin refurbishment to full reconfiguration, while encompassing the power of digital insights.

We allow modernization of the in-service fleet with latest linefit innovations, but we also propose tailored cost effective retrofit solutions to extend the economical life of the in-service aircraft.

Based on the most recent and mature cabin solutions common with the linefit, Airbus Services offers the opportunity to harmonise the in-service fleets. Fleet harmonisation allows to meet passenger experience expectations when it comes to comfort and makes the operations more efficient in terms of Aircraft interchangeability, part inventory management, maintenance and cabin crew training.

The latest cabin enablers to maximise space and revenue for our Customers can be demonstrated in our cabin configurator tool.

Airbus Services keeps in mind to provide our customers the most cost effective solutions adapted to their In-service fleet with solutions such as Airspace Link wireless IFE and Flexible in-seat Oled displays, Retrofit Large Bins, or retrofit of Touchless lavatory solutions.

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