

# Artificial Intelligence in Aviation

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## Developments and trends of AI in aviation: an overview



## Information about ZDEL

Focus of the Zentrum Digitalisierung und Elektrifizierung von Luftfahrtssystemen:

- Operational behavior of aviation transmissions
- Digitalization and electrification of aviation propulsion systems
- Digitalization in the field of cabin systems
- Flight physics topics

## Literature

- Izzo, Dario; Märtens, Marcus; Pan, Binfeng (2019): A survey on artificial intelligence trends in spacecraft guidance dynamics and control
- Shmelova, Tetiana; et al. (2020): Handbook of artificial intelligence applications in the aviation and aerospace industries.
- European Organisation for the Safety of Air Navigation (2020): The FLY AI Report
- European Union Aviation Safety Agency (2020): Artificial Intelligence Roadmap
- Shukla, Bibhudhendu; Fan, Ip-Shing; Jennions, Ian (2020): Opportunities for Explainable Artificial Intelligence in Aerospace Predictive Maintenance
- Airbus S. A.S (2020): Airbus concludes ATTOL with fully autonomous flight tests
- Lufthansa Industry Solutions (2021): Artificial Intelligence as a Service.
- Brandoli, Bruno; et al. (2021) Aircraft Fuselage Corrosion Detection Using Artificial Intelligence.

## Projects with respect to AI in Zentrum Digitalisierung und Elektrifizierung von Luftfahrtssystemen (ZDEL)

The approach of the new **i+sCabin2.0** research project is to enable sharing of data obtained from the cabin with ground stations during the flight for automated processing and evaluation using artificial intelligence. A smart networked cabin that communicates with the ground can optimize maintenance planning, increase airplane availability, digitize and standardize processes, and ultimately help keep airplanes running on schedule and passengers satisfied with their flying experiences.

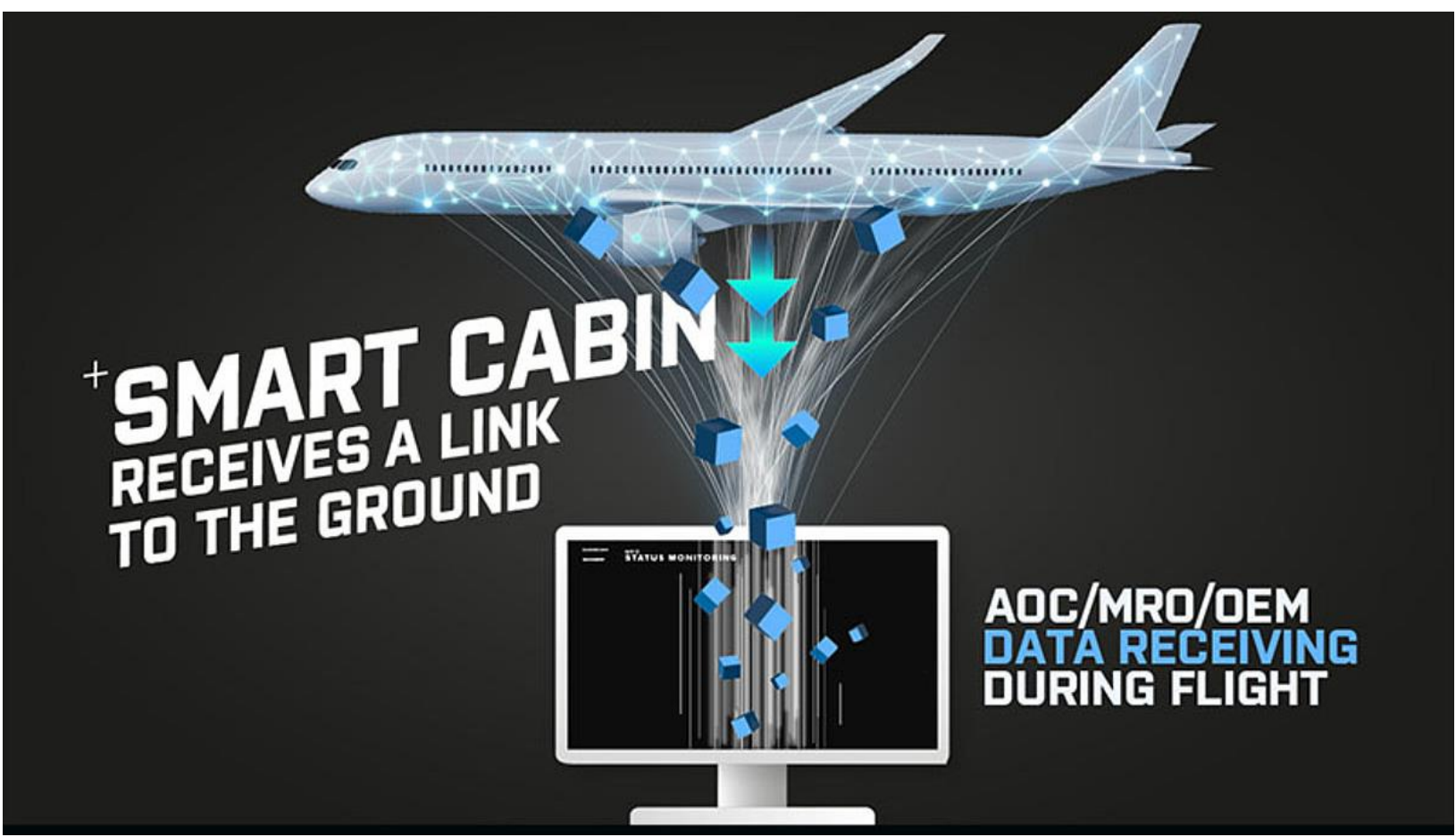


Image: Diehl Aviation

For the next generation of aircraft engines, a planetary gear unit is used in the "Ultrafan" under the highest performance requirements. For this purpose, a system is being developed that uses intelligent algorithms to infer the performance of the gear unit from production data. In this cooperative research project **BELUGA-KI**, production data is linked using AI in a way that is not possible using conventional methods. It has the advantage for the dual partner that inspection intervals are to be extended or cost-intensive tests are simplified.



Image: Rolls-Royce

## Partners i+sCabin2.0



## Partners BELUGA-KI



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