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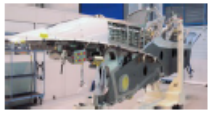
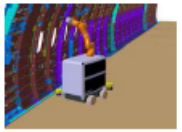
100’ s of digital projects on going targeting improvement of products and operations , organization and culture

	Big Data & Advanced analytics	Internet of Things	3D everywhere	Augmented Humans & Robots	Social & Collaboration
Use digital to improve Products or Customer experience	 Optimize A/C operations with real time health monitoring				 Consolidate market understanding with a marketing collaborative platform
Use digital to improve internal Operations	 Predict & reduce CNQ with advanced analytics on process parameters			 Collaborative robots to support assembly operations	
Use digital to improve Organisation & Culture					 Social Network to favour access to expertise & knowledge sharing

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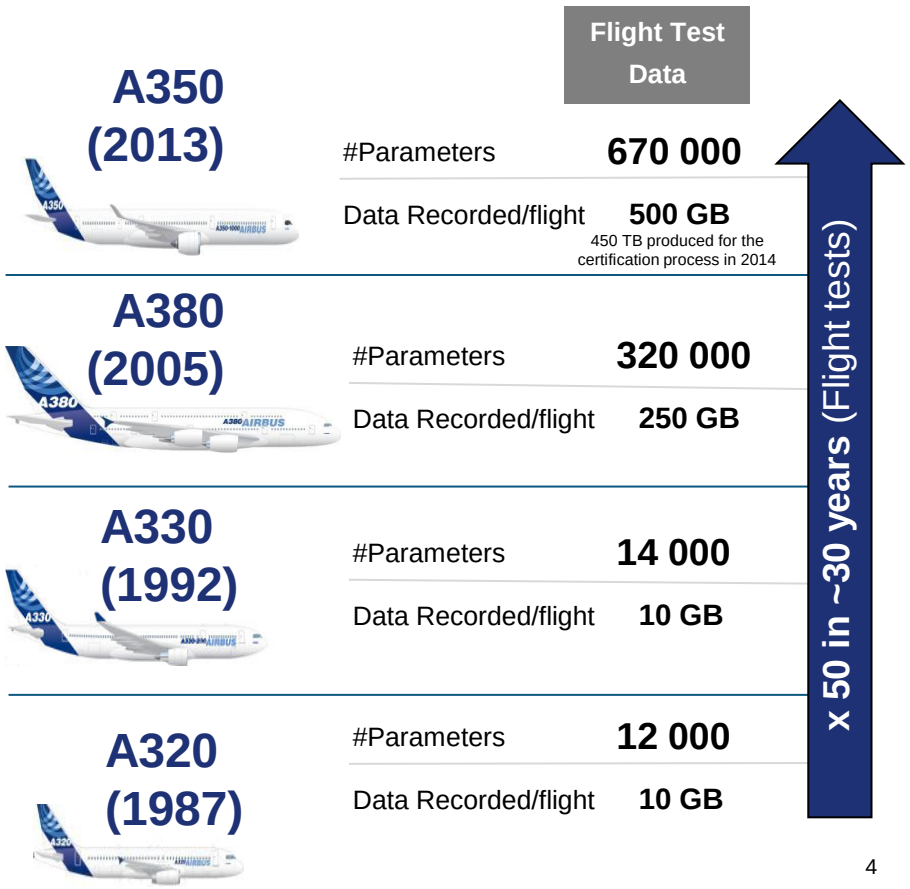
Big Data analytics to improve efficiency, savings and quality over the lifecycle of an aircraft

Explosion of Data



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Potential value :
Each 1% of efficiency gain in air transport ~ 7 billion € per year

Key issues :

- Require new competences to generate value and derive new business model
- Data access over the value chain (suppliers, aircraft manufactures, airlines)
- Storage and management of massive data set over a long time (>40 years) being able to retrieve previously stored information
- Manipulation and correlation of huge data series

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RFID for parts traceability automation :

Current processes, for aviation certification requirements, are based on paper and manual data entry

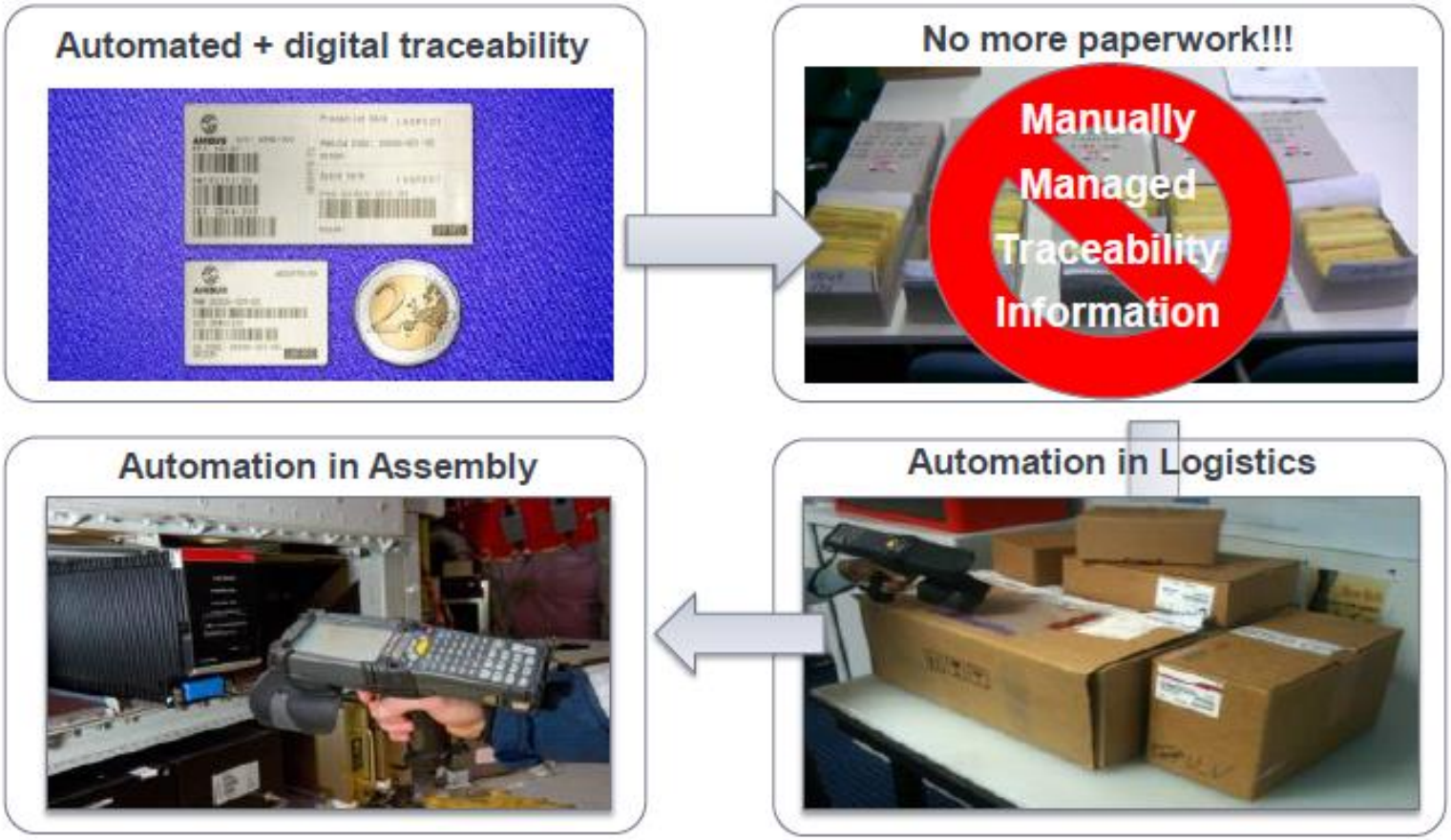
- Multiple handwritten data on paper labels

- Handwritten data is typed into IT systems

- Storage of paper
- Physical handover
- Plant to FAL
- Back again if OSW
- Very heavy process
- Potential non quality

- Multiple papers for each item

RFID part marking enables paperless automation



Benefits : for automated, paperless and digital attestation of lifejackets in A330 , time reduction from 14 hours to 26 minutes !

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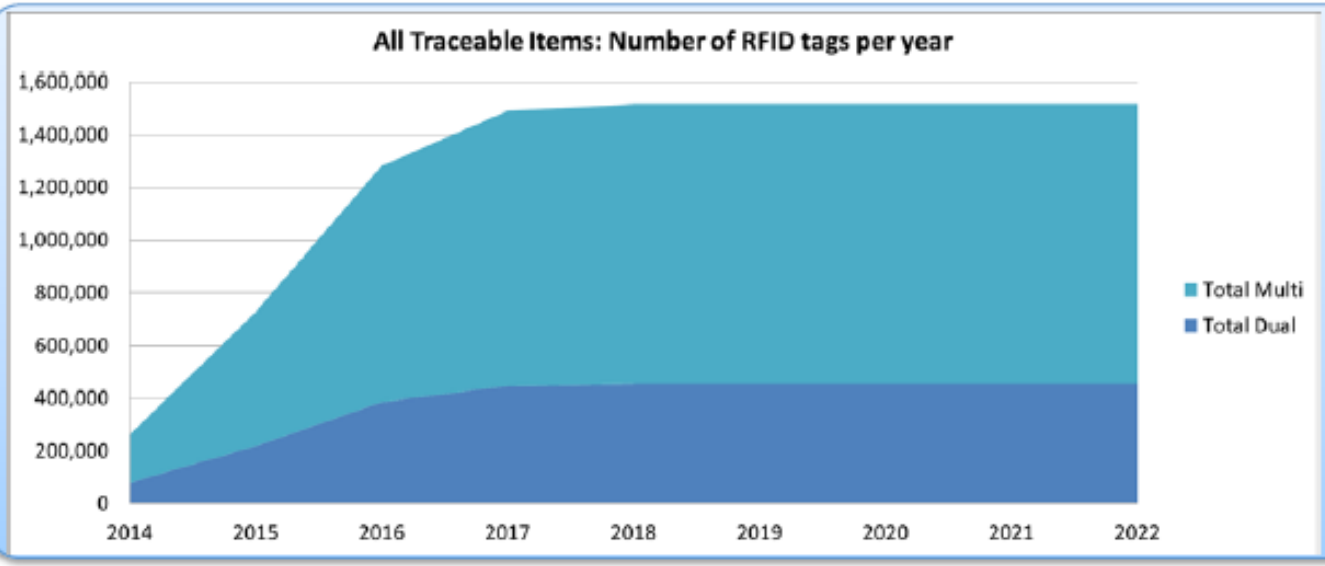
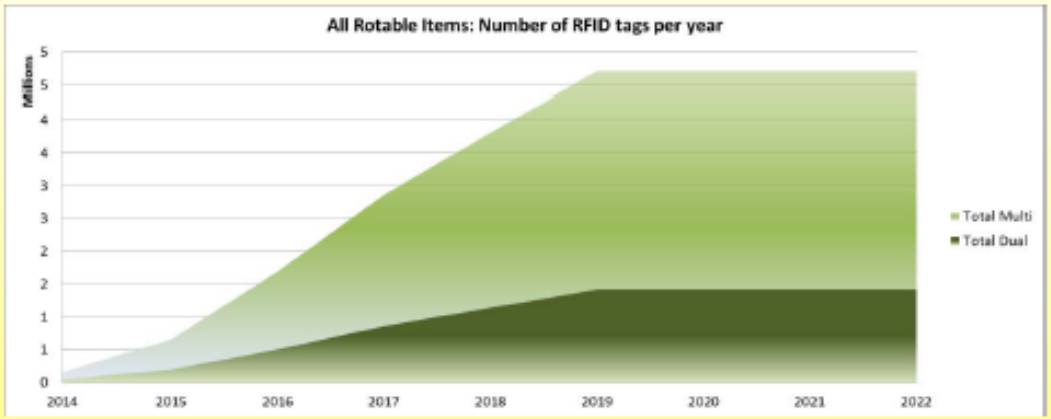
Expected volumes of RFID tags for Traceability Improvement for Airbus aircraft



Scope of the Traceability Improvement project



Vision

Permanent RFID marking becomes standard for all rotable items

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Connected and Augmented workers

- Connected tactile tablet that is superimposing “As Designed” DMU (Digital Mock-Up) over “As Built” Reality
- Before, it was taking 3 weeks to perform the Quality Inspection of the thousands of little parts named brackets (between 80 000 to 120 000 brackets per aircraft depending on the model); brackets are essential to assemble the different equipment’s on the aircraft fuselage.
- After, the inspectors were able to reduce the checking time to only 3 days!

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Collaborative robots

Lightweight robots with a single arm, capable of autonomously moving around inside the aircraft are supporting the workers to install brackets in the fuselage

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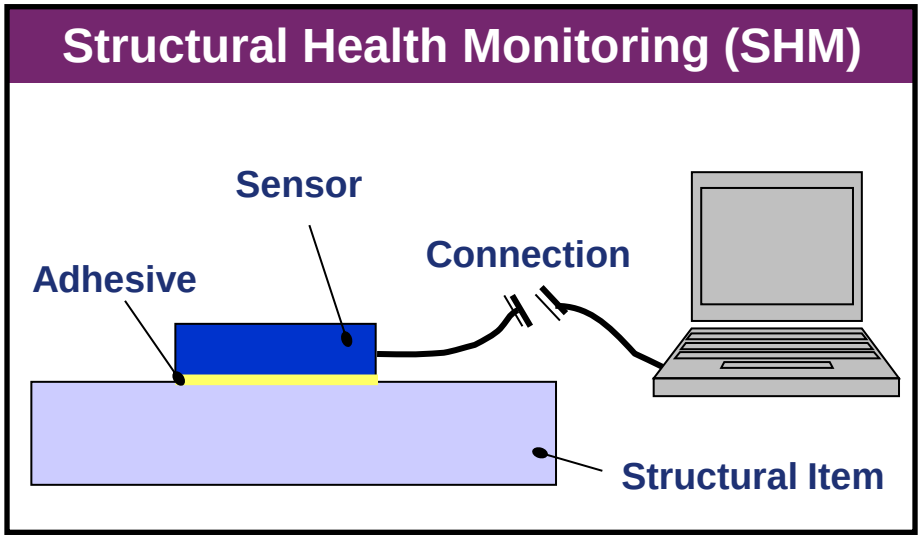
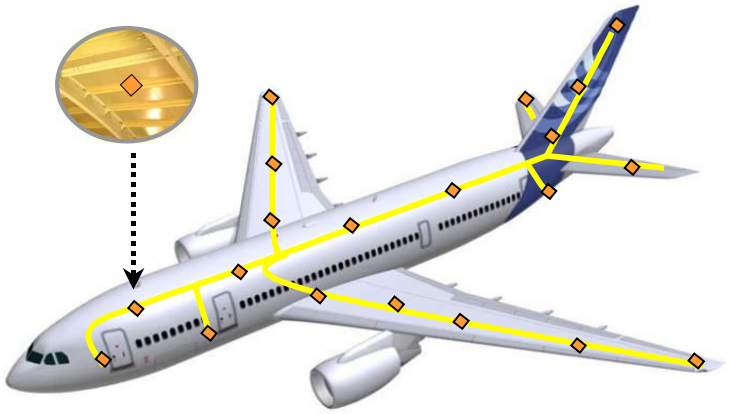
IoT : On board real time analysis of Defects, Damages, Stress





- **SHM now used during structure certification and flight testing (A380, A350), and to monitor specific issues (Tail strike on A380, A400 M loads monitoring)**
- **In the long term, it is expected to know the real time status of all aircraft parts to optimize maintenance operations and increase aircraft availability.**
- **The issues to be solved is to ensure that the system put in place is not itself requiring more maintenance than the savings that can be created by the monitoring**

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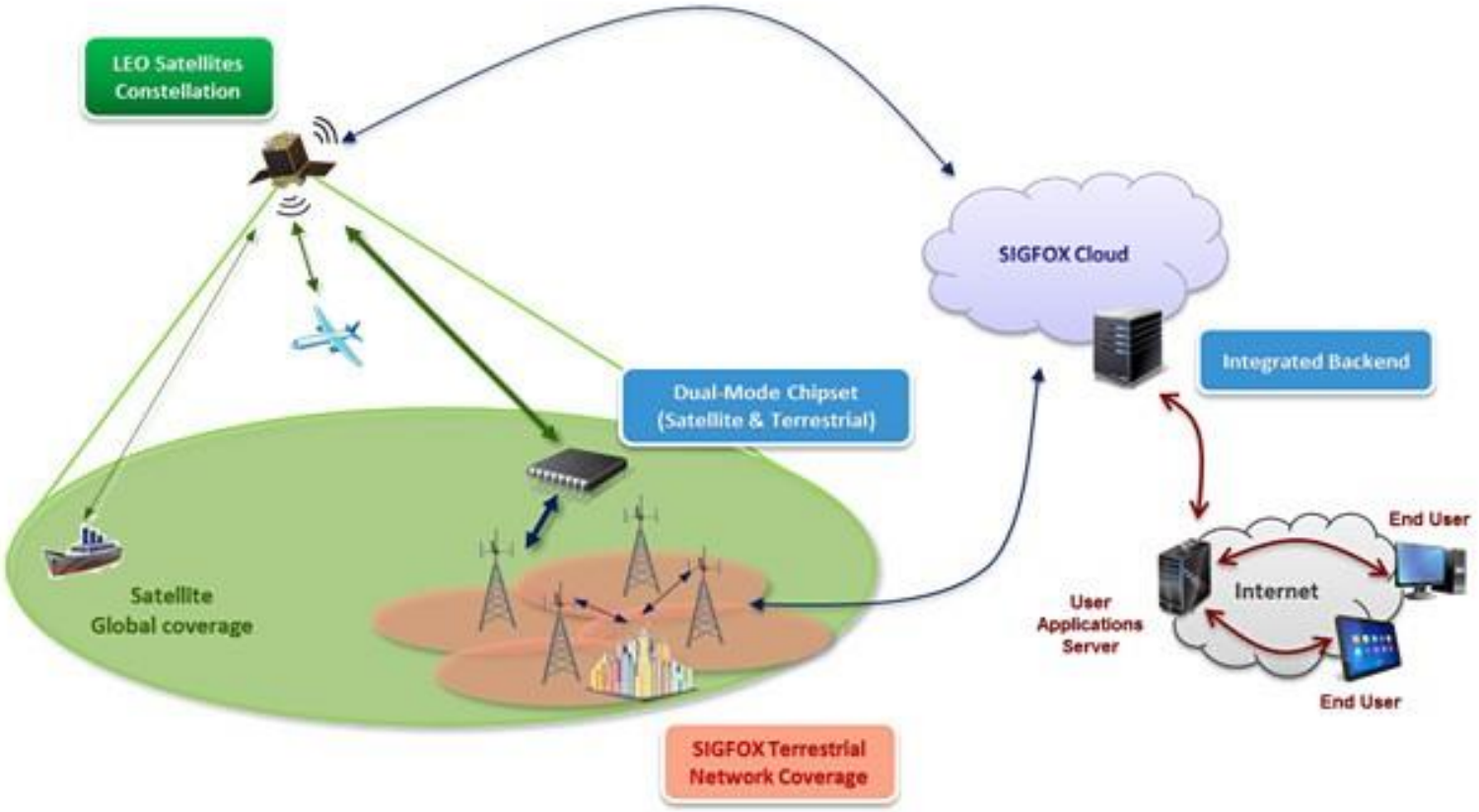
Developing next generation IoT networks

- Mustang project : Airbus Defense and Space, Sigfox, CEA LETI, Sysmeca
- Hybrid terrestrial/satellite low-data-rate machine-to-machine (M2M) communication using new earth-based and satellite technologies.
- Seamless and constant Internet of Things connectivity between continents and over the oceans



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Thank you for your attention