








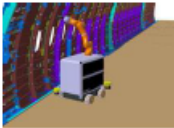

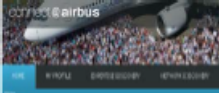
Denis GARDIN
SVP, Corporate Technical Office

Global Forum Oulu
September 29, 2015

Airbus Group

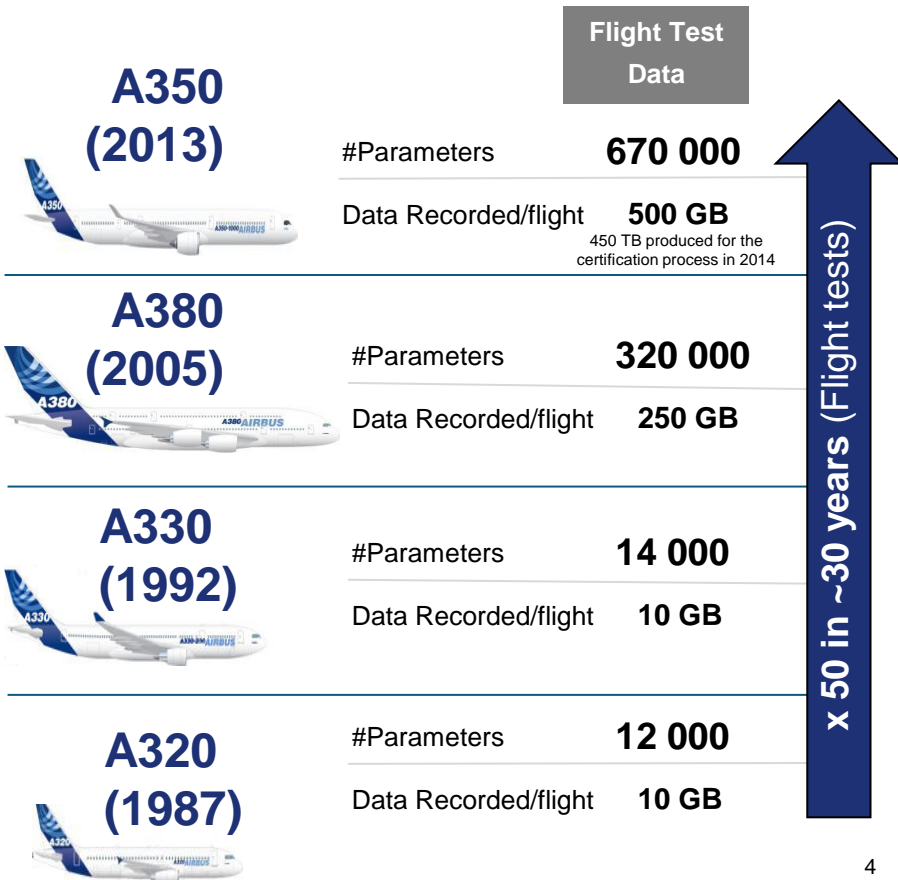


100' s of digital projects on going targeting improvement of products and operations , organization and culture

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

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

Explosion of Data



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

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

Description - Beschreibung - Designation <i>Randschutzhaube</i>		Part No. Teilnummer No de Piece	
Supplier - Lieferant - Fournisseur <i>Air Liquide</i>		Code No. Code-Num NO de Code	
Model - Typ - Type <i>AS-401</i>		Serial No. Seriennummer No de serie <i>2105 025</i>	
EQUIPMENT LABEL GERÄTE-ANHÄNGER ETIQUETTE POUR EQUIPEMENT			
Date of assembly Datum der Zusammenbauung Date de montage	<i>01/11/02</i>	If rubber parts incorporated and not for Lined items Wenn Kautschuk vorhanden ist und keine Linienarbeiten	
Latest utilization date in A.T.C. Datum der letzten Verwendung im Flugzeug		If present, date of assembly of its polymer lining	
Consignee - Bestimmungsort - Destinataire <i>02-700</i>			
Acceptance Test No. / Datum der Abnahmetestung / Date de Réception <i>30.10.2002</i>	Check Test Periodicity / Prüfdauer des Testverfahrens	Acceptance Test / Abnahmetestung / Prüfung Date / Datum / Date	
Remarks - Anmerkungen - Observations WE 80010764000			

- 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

EQUIPMENT IDENTIFICATION SHEET			
RIC			
INFORMATION SHEET NUMBER		14497423	
			
Supplier	000013138	ADDRESS OPERATIONS GMBH	
Article	0180129700	TRANSFER TESTER	
PIN	067508-00	EIS2008-00	
SIN	REDO-0115		
Goods receipt sign: ST9855 Goods receipt date: 11/22/2008			
Material document: 5001341927 0001			
Printing date: 25 Nov 2010			
<i>TR 00</i>			

RFID part marking enables paperless automation

Automated + digital traceability



No more paperwork!!!



Automation in Assembly

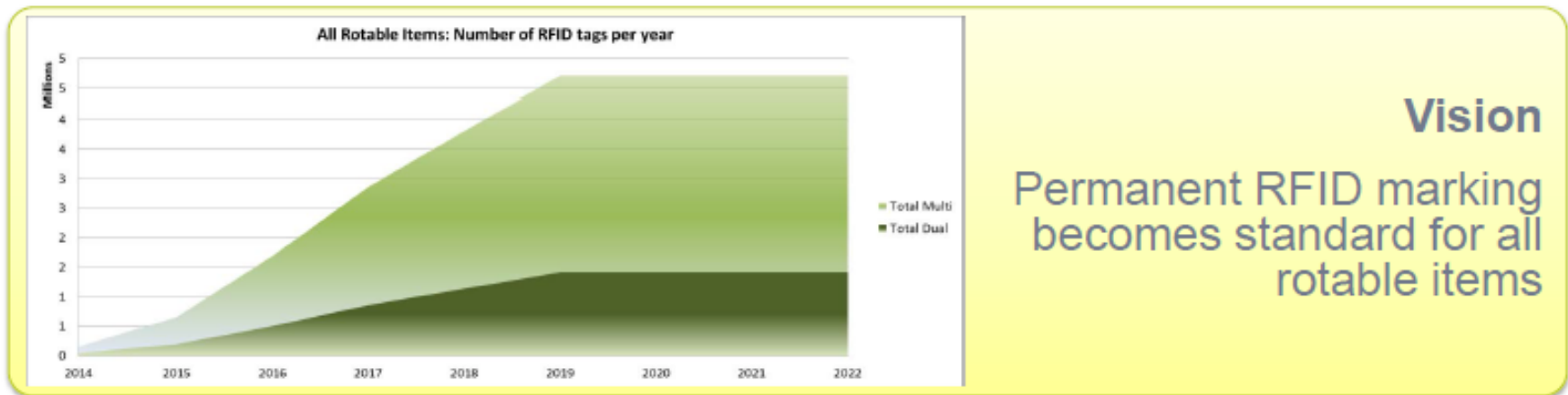
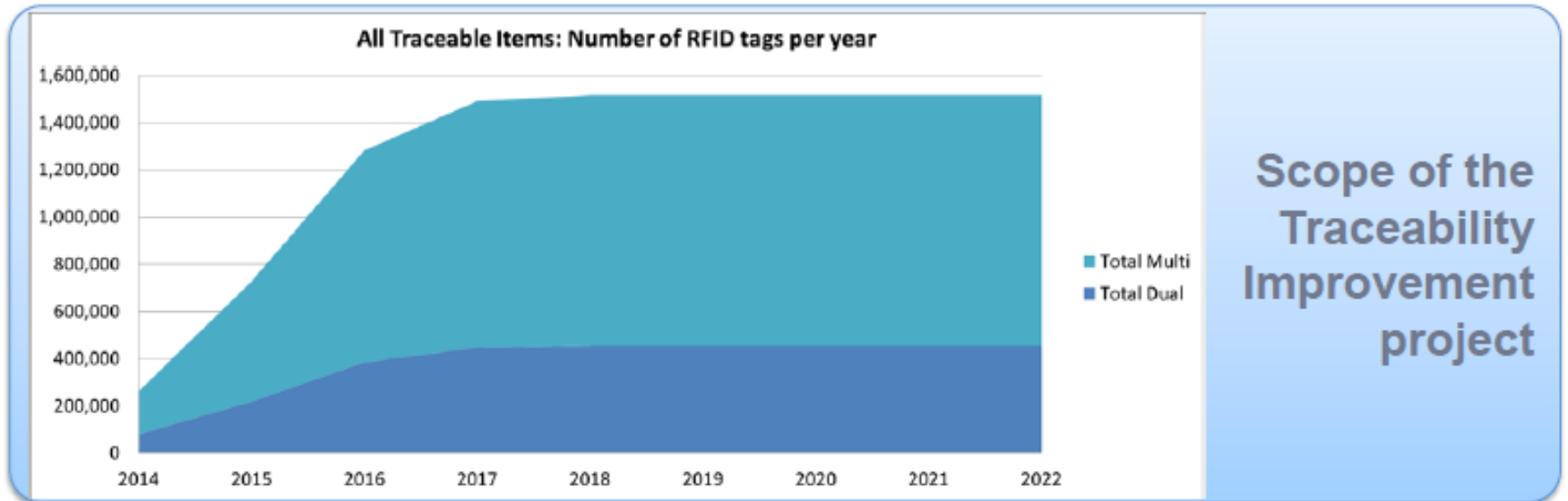


Automation in Logistics



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

Expected volumes of RFID tags for Traceability Improvement for Airbus aircraft



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!

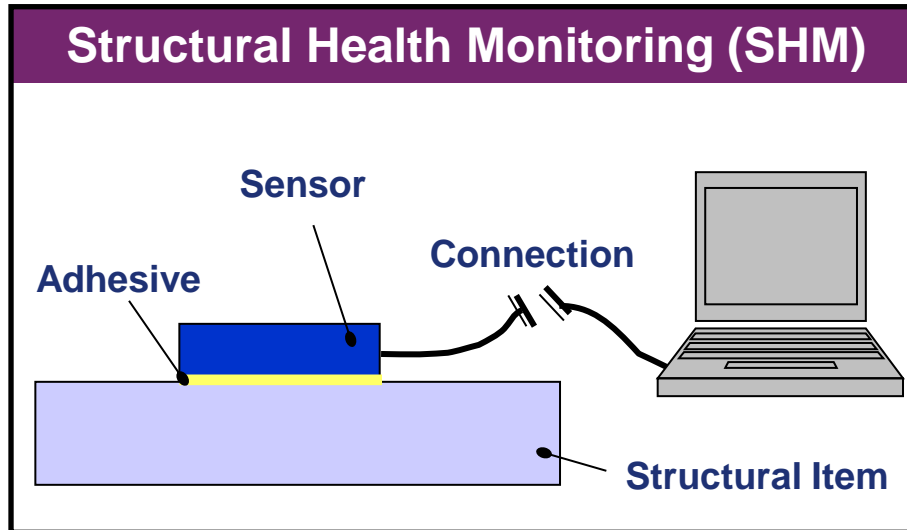


Collaborative robots

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



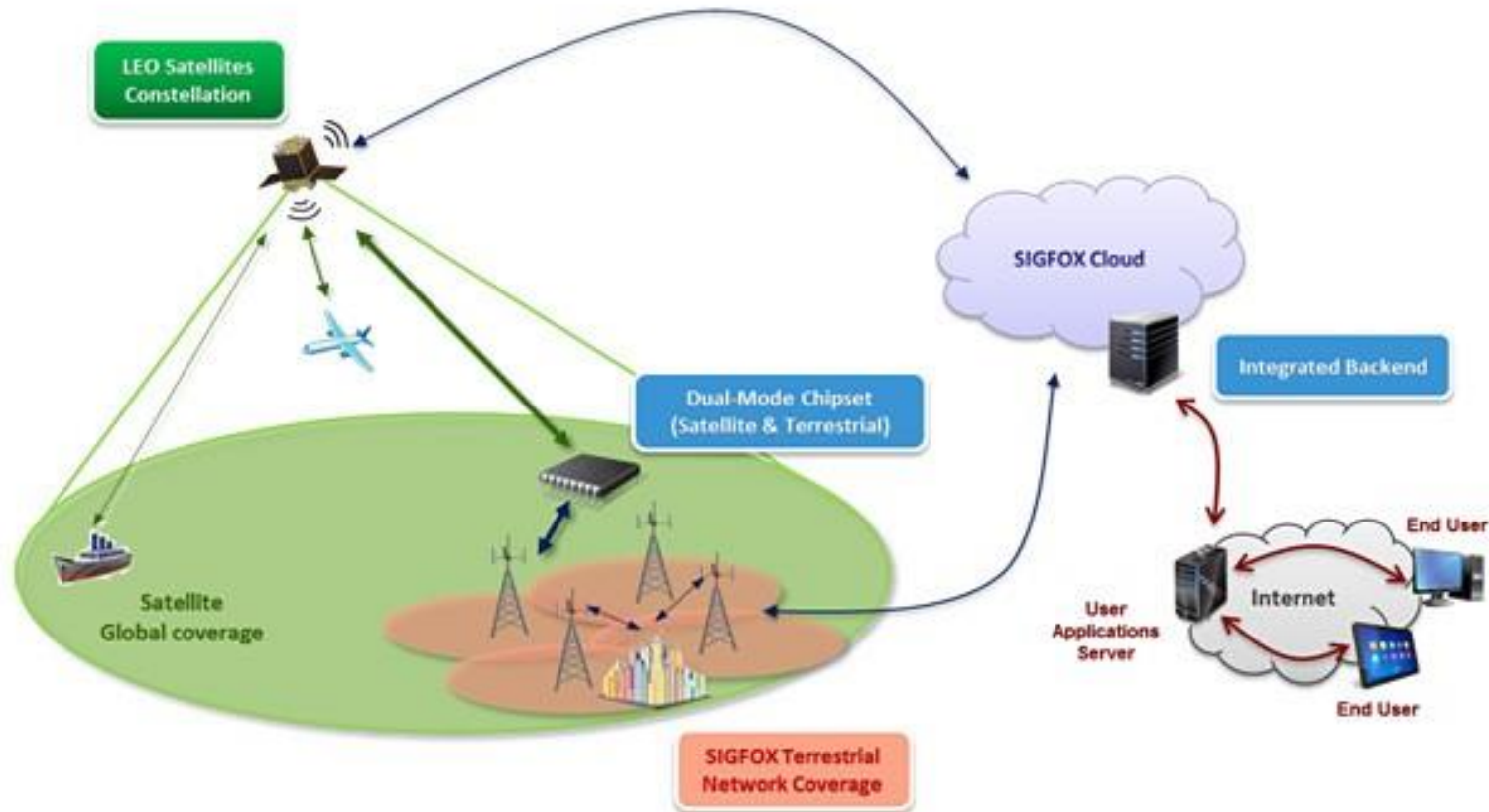
IoT : On board real time analysis of Defects, Damages, Stress



- **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**

Developing next generation IoT networks

- Mustang project : Airbus Defense and Space, Sigfox, CEA LETI, Sysmecca
- 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



Thank you for your attention

