Smart Asset Solutions for the Aerospace Industry

"... when assets themselves become elements of an information system, with the ability to capture, compute, communicate, and collaborate around information... these ‘smart’ assets can make processes more efficient, give products new capabilities, and spark novel business models. “

— McKinsey’s Clouds, Big Data and Smart Assets

Aerospace Industry Challenges

3-5 million Serialized parts on an airplane

- The management of any single part along with its lifecycle records necessitates enormous documentation takes a long time and can be prone to errors.

Antiquated part identification and tracking systems with static data

- Today’s OEMs supply airplane parts with just a riveted metal nameplate with limited information.
- Many times nameplates are impossible to read making it difficult for maintenance workers to interact with the part and know what activity is required when maintaining safety standards.
- Paper and pencil information logging processes track the use and maintenance activities along the chain, resulting in a data management and maintenance tracking nightmare.
- The part records are static and unchangeable from the time of manufacture until the part’s removal from the field.

Frequent inspections required; multiple compliance challenges

- Many items on an airplane like life vests, in-cabin oxygen canisters, etc. require frequent inspection (for presence and expiration date). Today’s existing standard of visual inspection is labor intensive, lengthy and error prone.

100 thousand Serviceable parts

- Air framers are interested in tagging all serialized, repairable, replaceable and maintainable airplane parts — about 10,000 parts on a typical airplane.

Smart Assets Solutions

Digital information embedded on the part

- Including a birth record and all necessary documentations allows the part to be identified with a degree of accuracy.

Digital Part History Records

- Adding Digital Part History Records during significant events in the part’s lifetime allows them to travel with the parts, wherever it goes.
- Future MRO activities can be performed much quicker, especially for activities that require the full set of documentation to be retrieved.
- Embedding information and digital documents in the asset makes them immediately available.
- Digital information on the smart asset can be updated throughout its life.

Digitally enabled fast inspections; compliance with Spec 2000, AS5678, etc.

- Digital information on the item allows an entire cabin to be scanned as quickly as someone can walk down an aisle.

The right data at the right fingertips

- Embedded data on those parts delivers intelligence at the fingertips of the right person so the right action can occur for process and labor accuracy, efficiencies and significant cost savings.
Immediate Benefits

A smart asset platform, such as Tego’s Asset Intelligence Platform (AIP), electronically captures critical asset information and provides the following benefits:

Across the value chain:
- Delivers accurate configuration control and repair history
- Ensures regulatory agency compliance monitoring
- Reduces inventory control and provisioning costs
- Allows for accurate and efficient spare parts pooling
- Exposes rogue parts
- Reduces warranty claim processing costs
- Enables part installation and removal time tracking
- Guarantees accurate flight hours tracking by part

For air framers, specifically:
- Reduces parts receiving costs
- Eliminates data entry errors
- Provides accurate “as delivered” configuration

Industry Leaders Driving the Industry Standard

“*If you had the precise history of an aircraft and its components, you would have the exact valuations. There will be no question, because we will have the exact as-built and as-delivered, true as-maintained, information through IoT to drive the value of parts and components.*”

— Chris Rospenda, IBM’s Global Solutions Leader for Travel and Transportation

Both Boeing and Airbus are now specifying that all serialized, repairable, replaceable, and maintainable airplane parts must be compliant with Spec 2000 and AS5678

Today the Airbus’ A350 line is tagging around 3,000 parts with 700 unique part numbers.

On all other Airbus aircrafts, tagging of seats and life vests has delivered significant operational and financial benefits.

Boeing’s OEMs are also coming online.
Tego's Smart Asset Platform for Aerospace

Data embedded in any asset or component is the foundation of an inexpensive, highly accurate and secure asset data platform. Data connectivity is the next building block as interoperability benefits all stakeholders - OEMs, air framers, airlines and MROs - saving them time and money. Furthermore, the benefits of the platform could be extended to provide new business model and revenue generating opportunities.

Tego Asset Intelligence Platform (AIP) is flexible, configurable and easy to deploy. It ensures data connectivity as it supports all major mobile and desktop operating systems, operates across all RF gateway protocols and handheld devices and makes data easily available for any cloud-based IoT platform or core enterprise systems such as Enterprise Asset Management (EAM), Enterprise Resource Planning or Business Intelligence (BI) and analytics applications. Thus, it delivers fast ROI as it does not require major integration expenditures or high ongoing operating and data connectivity costs.

Tego AIP is the industry-proven solution and has the largest installed aerospace customer base worldwide. In 2009 Tego won the first smart asset contract awarded in aerospace and was the first certified and approved aerospace solution on the market. Since 2009 air framers have been receiving parts from their OEMs with digitalized manufacturing information embedded on them using the Tego solution. Similarly, MRO organizations have been using the Tego solution to add maintenance history on those same parts.

The Tego team is both the architect and author of the ATA Spec 2000, Chapter 9-5 and the ‘go-to’ authority on the aerospace standard.

The Tego team is experienced at deploying end-to-end solutions for global companies - Honeywell, Parker Aerospace, B/E Aerospace, among others.

Interested in an “out-of-the-box” solution?

See Tego’s Aerospace Launch Kit - it includes everything needed to start reading and writing ATA Spec 2000 records on tags in the same day.
Tego's Aerospace Solution:

Tego's Asset Intelligence Platform (AIP) provides the gold standard solution delivering both compliance and major operational benefits. The platform has 3 components:

Operating System (TegoView):

TegoView is the #1 user-rated software preferred by aviation manufacturing production lines and maintenance operations with features that ensure operational and data management excellence:

- Fastest read and write operations
- A pre-configured automatic reader display
- Workflow guidance
- Tooltips information for ease of use

Advantages of TegoView:

- **Compliance with Standards** - TegoView supports single, dual, and multi-record formats of the latest version of the ATA Spec 2000, Ch.9-5, 2013.1, and TDS 1.7 (aviation specific) for organizing data on tagged parts.

- **Standard Equipment** - TegoView runs on standard readers and allows users to work with Gen2 tagged parts.

- **Ease of Use** - The solution is easy to use and facilitates highly efficient MRO activities. All aircraft equipment manufacturers can initialize tagged parts, write to user memory and display tag information on their production line quickly and easily.

- **Data Connectivity** - TegoView can be used either standalone or integrated into a larger enterprise network IT system. The software makes it possible to access and enter information about tagged items without requiring network connectivity to a backend system or database as information is stored locally. This simplifies many industrial work processes like in-field maintenance operations. When network access is available, TegoView allows synchronization of tag data with the backend.

TegoView Benefits:

- Automate parts tagging process without errors
- Utilize an intuitive and customizable workflow, adaptable to your supply chain process
- Read part condition information wherever the part goes whenever it is needed
- Tooltips information for ease of use
- Enforce standards and requirements using instructions embedded in the software
- Get access to historical MRO information
- Store authentication and anti-counterfeiting data based on unique serialization of RF tag

Tego’s unique, patented AIP is the only platform to provide an integrated, end-to-end solution. It is 100% compliant, flexible, easy to use, and the one solution adopted and requested by the majority of OEMs.
TegoTags (Nemo, Primo and Largo)

The Nemo, Primo and Largo are qualified and approved aerospace tags. They are the industry’s best performing rigid tags preferred by the majority of OEM tagging programs.

Advantages of TegoTags:

Each tag:
- is ISO 9001, EN/AS/JISQ 9100, and AS5678 certified.
- supports ATA Dual-Record and Multi-Record tag requirements making it 100% compliant with the newest Spec 2000 standard and TDS 1.7 (aviation specific).
- is lightweight and rugged.

The small footprint and light weight of these tags along with their ruggedness and ability to withstand environmental factors such as temperature fluctuation, air pressure, vibration and shock make them ideal for aerospace use.

Rewritable Memory: The DM’s Rewritable Memory is meant for line replaceable (LR) units or airplane parts, components and systems that require a Lifecycle Record, where users can update as needed during a tagged item’s life cycle.

Distinct Memory Sections: The DM also offers distinct memory sections in User Memory: Permanent Memory and Rewritable Memory. DM’s Permanent Memory is inherently archival, perfect for storing a locked Birth Record where data integrity is needed throughout an asset’s lifetime.

Ease of Use - The solution is easy to use and facilitates highly efficient MRO activities. All aircraft equipment manufacturers can initialize tagged parts, write to user memory and display tag information on their production line quickly and easily.

Guaranteed Compliance: Tego takes no shortcuts, interpreting the ATA Spec requirements to its fullest. The DM guarantees your tagging program is 100% compliant both today and in the foreseeable future since it accommodates all mandatory, conditional, and optional text element identifiers (TEI). Plus it has additional space to store proprietary data or extra TEIs.

TegoChip DM and MM

TegoChips are fully compliant with the newest Spec 2000 Chapter 9-5, Version 2013.1

Rewritable Memory: The MM’s Rewritable Memory is appropriate for tagging line repairable units (LRU) or long life airplane parts, components and systems that receive maintenance and inspection.

Locked Memory Sections: The MM features memory availability for a locked Birth Record, Rewritable Records, and Archival Records.

Widespread Adoption and Interoperability: The MM is in widespread use in tagging programs among airframe manufacturers, parts manufacturer, MRO’s and airlines.

Custom Data Storage: Tego takes no shortcuts, interpreting the ATA Spec requirements to its fullest. The MM guarantees your tagging program is 100% compliant both today and in the foreseeable future since it can store custom data and information on additional memory space allowed by ATA Spec 2000.