

Integrated Logistic Support
&
Availability Based Contracts



- 1. Introduction..... 3
 - 1.1. What is an Availability Based Contract? 3
- 2. Business Challenge..... 5
- 3. CSW's Background 6
- 4. Solution Benefits 7
- 5. Case Study 8
- 6. Contact us 12
- 7. More Information 13

1. INTRODUCTION

Current contracting for aeronautic platforms relies on service providers (platform users) having to deal with maintenance and spares management. This adds risk and redundancies to the business, creating inefficiency at the service supplier level, whose business model relies on contracted turn around times with spares providers and internal stock management. Contracting for availability moves the responsibility boundary to the provision of service levels. By contracting this way, all the responsibility for managing maintenance and the supply chain falls under the supplier's scope enabling more effective modelling of the whole support system, ultimately allowing industry to provide the same service level more efficiently and at a lower risk.

Moving the responsibility to the supplier's scope is no light task and the management of the supply chain assumes a seamless integration between all the involved support platforms. Supply chain and maintenance performance has to be constantly aligned. The integrated system not only has to perform better with a lesser TCO but it has to answer questions such as:

- What metrics should be contractually required?
- What part of the supply chain is holding back?
- Which partner is underperforming?
- Which partner is over performing?
- What are the consumption trends?
- What is the current service level?

Only being able to answer these questions will provide business the confidence it needs to move traditionally costly and core activities along the supply chain, and increase the ROI when adopting an *Availability Based Contract* with any or all of the suppliers.

1.1. What is an Availability Based Contract?

An Availability Based Contract is a Service Level Agreement (SLA) type contract in which the end customer contracts for aircraft availability, spares service, maintenance and associated services and technical support levels, as opposed to the traditional model where aircrafts are bought and assets and services are provided on demand. In this way, responsibility, risks and decision making boundaries are moved into the supply chain, making rival suppliers being considered as partners for the end customer and amongst themselves.

It assumes a form of a contract between all the partners of a supply chain, or between those

considered partners in a project or programme and it specifies in contractual terms the services to be provided, defines priorities and responsibilities, determines billing and penalties associated to non accomplished target metrics and pre-defined levels of service, such as availability, serviceability, performance and operations.

Usually a contract of this type applied to the aeronautics segment encompasses different operational areas, such as Aircraft Provision, Supply Support, Technical Support, Training and Service Management, responsible for the support to all the others. They are usually negotiated individually; however, Service Management is responsible for binding them and provides management a single, integrated and trustworthy view of their functioning as a whole.

2. BUSINESS CHALLENGE

Where to cut costs in the supply chain and logistic support in a scenario of unprecedented increasing, unstable and global demand scenario and at the same time increase service levels and spares availability? How can the business improve responsiveness and flexibility to meet increasingly demanding contracts and operational requirements? In sum, how can the supply chain, which the business is part of, successfully compete with other supply chains?

Moving the boundaries of responsibility and associated risks to the suppliers, through the implementation of Availability Based Contracts enables the answers to those and other related questions; however, it is one solution with associated risks and challenges, the first one being the selection of the best structure and information strategy to support multi-layer SLA contracts. It also implies improving the interoperability between systems owned/hosted by the various supply chain partners and along the different supporting areas. A constant and real-time flow of information must exist throughout the supply chain, which means that different data sources must be seamlessly integrated.

However, what can be done if, even integrating the existing systems, the data is of poor quality (e.g. maintenance, flow of repairables) or if data is not available (like fleet wide usage data) or even if the existing data although available, is not being used to get business advantages (e.g. health, usage and platform status data)? The flow down of risks is itself a risk. Can the partners handle the new complexity in their processes? How do they react to the newly acquired risk? How can the decisions taken by a partner impact the performance of the supply chain? How are the partners performing as a whole and individually? How can we measure and quantify the contractually expressed terms?

All these questions are associated with the quantification and measurement of the performance of the integrated supply chain, which can be answered by applying some degree of business intelligence on top of the information gathered from newly integrated systems. Data has to be assembled from several sources on the supply chain, analysed, understood and related in order to create previously unavailable information.

In traditional supply chain environments, relations between partners are opaque and combative. In Availability Based Contracts, information sharing is the basis for establishing trust between all the partners. Thus prime contractors must specify what information must be shared, how the business can prioritize the information to be shared and how to share it, in order to enable that trust relationship.

3. CSW'S BACKGROUND

Critical Software actively participates in partnerships with UK based aeronautics companies together with UK MoD teams and other aeronautics and defence industry representatives in defining new processes for integrated logistic support systems.

CSW has been working on the management information systems for maintenance and logistics processes support since 2004. These include the complete logistic support cycle, including

- safety management
- maintenance and configuration management
- obsolescence
- component production
- stock management
- transportation and optimization
- supply chain management

and performance assessment through KPI's (Key Performance Indicators) and MoE's (Measures of Effectiveness) and the availability of data from integrated systems to allow decision support. As result of this involvement, CSW acquired a profound knowledge of the current implementation and state-of-the-art business processes and has been part of decision making for solution design and roll-out.

Solutions for supporting Logistic Support processes are achieved by modelling processes and existing systems (including, services provided by systems to the processes). Business Process Modelling is a major step required to support seamless integration, and in maximizing the use of existing systems. In cases where existing solutions (in the organization or in the market) do not entirely fulfil business process requirements, CSW develops and implements bespoke solutions. Examples of this type of solutions are the development of a fleet planning platform, enabling the distributed management of different aircrafts with different configuration and operational scenarios, as well as maintenance planning, and a HUMS platform used to optimize aircraft maintenance (through better condition monitoring). In this area, CSW is also providing support and integration services in Ground Support systems for various international aircraft fleets.

4. SOLUTION BENEFITS

Interoperability between all the systems developed by different vendors and underneath different networks in the supply chain is in fact the prime benefit obtained from an Integrated Logistic Support systems approach in an Availability Based Contract. It allows the flow and sharing of information that enables unprecedented levels of collaboration between suppliers and partners.

Information sharing between different enterprise systems builds trust and enables networks of partners and suppliers to act as a single seamless entity. It is in the participant best interest to allow other partners to access critical business information. “End to end” access to critical business information across the supply chain increases cost control, improves innovation and increases performance in getting new aircrafts to market more quickly – through design and manufacturing, and even on long term maintenance and support. Without real-time access to a shared pool of information it is not possible to implement a true Availability Based Contract environment.

Shared information supports SLA contract types and business models, allowing the creation of global and agile operational structures that drive continuous innovation, greater efficiency and cost reduction, allowing the business to manage globally extended supply chains more effectively and to tackle more complex challenges without increasing costs. It allows the existing knowledge that resides on the network of partners to be exploited, skills and know how transferred across boundaries and best capabilities effectively used in close collaboration environments, boosting the whole supply chain.

The availability of supply chain wide information also allows the measurement of contractual Key Performance Indicators on all the involved partners, workshares and sites. Measures of Effectiveness and Management Information on supply chain wide operations provide a solid basis for the shared decision making process between all the involved partners.

Once legacy and existing state-of-the-art systems are kept and their interconnection and usability issues improved, the integrated supply chain will get a real return on investment and decreased total cost of ownership.

5. CASE STUDY

National Defence Ministries and Departments are starting to realize the urge to create initiatives to decrease their logistics support budget and at the same time increase the logistic support service level. This apparent contradictory initiative bears significant business changes and integration and information availability challenges, in order to decrease TCO of the supply chain and associated logistics activities and at the same time improve its performance.

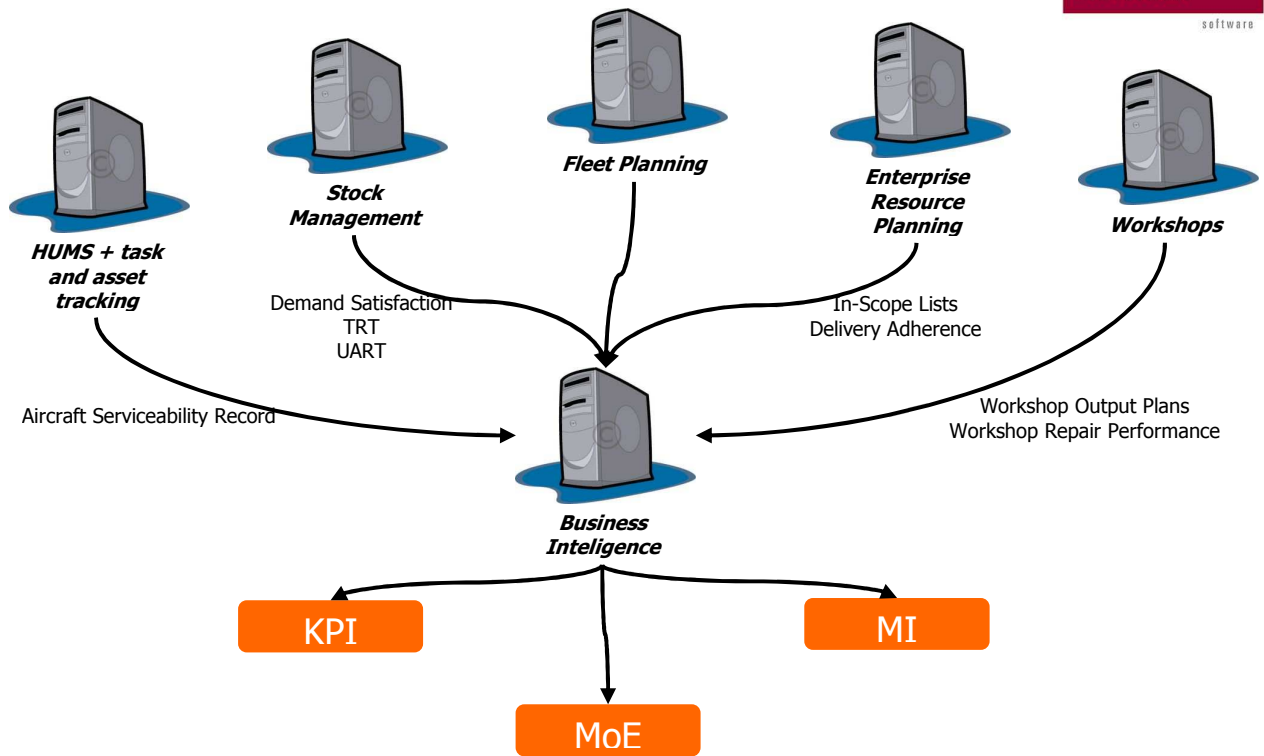
Since 2004, CSW is involved in one of those initiatives from an European Ministry of Defence, through one of its prime aircraft suppliers, in supporting availability based contracts through business analysis activities, development, integration and maintenance of the underlying information systems. The work being developed since then by Critical Software, actively contributes to that global integrated logistic platform across all the areas, including Aircraft Provision, Supply Support, Technical Support, Training and Service Management, analysing and integrating processes like:

- Aircraft Provision
 - Fleet management, including management of serviceable and unserviceable aircraft flows, time to maintenances, resource task scheduling and “what if” analysis
 - Repair and overhaul management – forward and depth maintenance management of planned and unplanned work
 - Health and usage monitoring through exploitation of health, status and usage data from operational sorties, and integration with maintenance systems
- Supply Support
 - Supply chain management through logistics modelling based in fleet estimated flying hours and mean time between failures for all aircraft spares
 - Availability and allocation planning
 - Supplier integration, through consumption levels prediction and large volume discount maximization
 - Transportation and allocation
 - Pro-active stock management
- Technical Support
 - Workflow management of raised technical queries

- Design, technical support and technical publications
- Safety management, through incident signal analysis, trend analysis, ASAM and documentation management, with information flows from documentation management systems, safety and trend tools and hazard logs
- Configuration management at aircraft design stage and for deployed in-service aircrafts, considering information from technical publications, aircraft standards, role fits, required changes and changes priorities
- Training
 - Instructor operating stations, with integrated data from simulation engines, flight planning applications and training management suites
- Service Management
 - Reporting and business intelligence using managerial information such as performance indicators and measurement against pre-contracted levels for all of the above individual processes and service as a whole

In order to fully support those processes, in terms of involved information technologies, CSW performs enabling activities, integrating incompatible systems to allow a seamless flow of information between all the supply chain partners, allowing them to truly be a part of a collaborative business environment, tuning their business processes to improve support, services and assets availability.

When information gaps are found or cumbersome manual processes risk delaying the timely flow of information, CSW designs, implements and fully integrates bespoke solutions. Fleet planning tools and health and usage monitoring systems – aircraft ground stations, were developed to support the requirements of process automation and the bridging of information gaps.



The integration of previously incompatible and unrelated data allows the collection of information and metrics which were previously unavailable. Using that timely and complete information, data analysis, business intelligence and decision making are now possible through the implementation of performance and availability reporting capabilities allowing effective management of the supply chain as a whole and the identification of the capabilities of the different individual partners. It is now possible to collect such information from the supply chain, write contractual terms and define penalties, accordingly to metrics such as:

- Ground stations:
 - Engine hours
 - Number of engine start ups
 - Number of landings
 - Engine heating and cooling cycles
 - Component torsion values
 - Flying hours in terms of effort
- Management Information Systems:
 - Demand satisfaction
 - State demands
 - Line maintenance performance
 - Repairables and consumables cycles
 - Turn Around Times

- Unserviceable Asset Return Times
- Stocks estimation and turnovers

6. CONTACT US

Established in 1998

Headquarter

Offices in

- Portugal (NATO/EU Secret, Pt MoD) Critical Software SA
- United Kingdom Parque Industrial de Taveiro, Lote 48
- Romania 3045-504 Coimbra
- USA Portugal

Customers Worldwide

250+ Head Count



7. MORE INFORMATION

Critical Software SA has the following Core Capabilities:

- Surveillance Systems
 - Data fusion and integration, e.g. of sensors, satellite data, real-time data, AIS
- Decision Support
 - Risk management solutions and open systems integration
- Operational Support
 - Fleet Management, HUMS, safety management, maintenance, support to inspections
- Security and Integrity
 - Secure networks, sensor/weapon interface to command and control systems

Those Core Capabilities are constantly tested and refined in partnerships and relationships with Clients & Partners such as:

