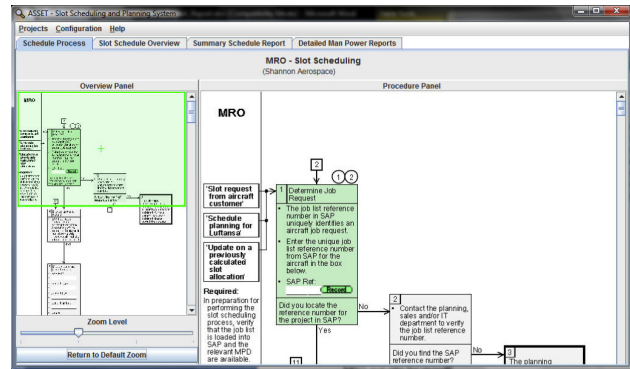


Automated Slot Scheduling System for Efficient Aircraft Turnaround



The **asset** system is developed by Skytek in partnership with Shannon Aerospace, which is a 100% subsidiary of Lufthansa Technik AG. Skytek is a software development company that specialises in procedural support system for the Space, Aerospace and Security industries. Shannon Aerospace is a maintenance repair and overhaul (MRO) which specialises in the Heavy Airframe Overhaul of narrow body aircraft types performing structural maintenance checks specifically on the Airbus, Boeing and McDonnell Douglas type aircraft.

The **asset** system goal is to streamline scheduling operations within the aircraft maintenance repair and overhaul (MRO) industry. This is achieved through the provision of an interactive procedure executor in the form of a decision tree. An MRO scheduling planner can then walk through the complex process of generating an aircrafts total turnaround time for an aircraft repair request.

The system automates the interfacing and retrieval of relevant data from multiple data sources within the MRO, and generates an estimate of the total maintenance activity turnaround time. The system presents a possible allocation of the repair activity to a bay within the MRO hanger facility.

asset builds upon the Logic Flow Procedure Viewer (LFP) technology developed within ESA's International Procedure Viewer (IPV) system

The system is a client/server application where planners, aircraft operators, managers and maintenance engineers can run the **asset** GUI from standard PC workstations. The main **asset** components are deployed via a central **asset** server located within the MRO facility. The system is build entirely using Java technologies which provides great flexibility in the selection of the deployment server and client OS.

asset is supplied with components for automatically accessing the ERP SAP and personnel management CORE system to extract relevant information to generate a maintenance schedule. Through the plugin architecture used by **asset**, these components can be swapped for other equivalent ERP and personnel management systems if alternative systems are used within an MRO facility.

The **asset** system supports slot scheduling procedures to be defined using the open XML standard. The authored procedures can easily be tailored for the specific needs and processes of different MRO facilities and for individual processes based on aircraft types within an MRO facility.

asset used advanced reporting capabilities where the end user can get both a high level overview of allocations to hangar bays and detailed information on a scheduling plan down to individual man hours within a work group on each day of the planned maintenance activity.

The core services and components of **asset** are:

Logic Flow Visualisation and Execution:

This is the main components through which end users interact with the system. It provides a graphical interface for execution of the slot scheduling procedure on the

client workstation. Allows the user interact with the process, make decisions, automatically view data from externally connected IT systems and provide data capture from end users. The end user can save and restart a semi-complete scheduling plan at any point using the **asset** client GUI.

Procedure Manager: All MRO slot scheduling processes are stored and accessed from the central **asset** server. This enables used access available procedures, save and continue slot schedule generation requests on a per-user basis.

SAP Data Exchange: This component provides direct interfacing between **asset** and the ERP SAP systems maintenance module. Details required during the scheduling process are automatically retrieved from SAP and integrated into the executing process.

MPD Data Exchange: This component interfaces to OEM supplied maintenance and planning documents for extraction of man hour information and personnel requirements on a per task basis for total turnaroundtime calculation.

Airworthiness Directive: (AD) retrieval and analysis: this component connects to the web services of OEM and automatically retrieves information on any relevant AD's for the aircraft that a schedule is being generated for. Relevant man hour AD information is included in the scheduling calculation and the AD documentation is stored for engineers to access during the repair activity.

Slot Scheduling Process Executor: This server side located component takes decision made by the planner, data captured from external systems and rules within the scheduling procedure being executed and generates an estimate of the total number of working days required for the requested maintenance operation.

Slot Scheduling Optimiser: The **asset** system contains a global overview of bay resources within the MRO facility. Based on the required turnaround time and predefined rules for hangar bay usage this component suggests an optimal allocation of the maintenance activity to a hangar bay slot. The optimiser component also takes into account if lean maintenance

pulsing concepts are used within hangar bay allocation activities.

Scheduling Visualisation and Report Generator:

This provides access to both graphical Gantt style based displays of hangar bay schedules within the MRO facility. From the overview chart the end user can get summary information on each aircraft. The end user can also view tentative slot allocations of aircraft to hangars. All reports can be exported in Microsoft Excel format from the **asset** client.

The **asset** system is a co-funded project with ESA developed by Skytek and Shannon Aerospace under ESA contract C21328/07/NL/HE.

Server OS Supported

- Linux (CentOS, SUSE Linux)
- Windows NT
- Windows Server 2003
- Windows Server 2008.

Client OS Supported

- Windows NT
- Windows XP
- Windows Vista
- Windows 7

System Requirements

Oracle's Sun Java Run-time Environment Version 6 or later