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# AVIATION MAINTENANCE DECISION SUPPORT

**RAAS is a highly integrated browser-based M&E workflow and data analysis solution for fleet operators, MROs and CAMOs.**

RAAS customers enjoy the benefits of a widely accessible and easy-to-use inventory management and maintenance support system that through continued use is able to reduce maintenance costs by increasing maintenance procedure efficiency, reducing held inventory, providing proof of quality for inspection escalations, and by directly reducing clerical manpower requirements.

RAAS was designed as a superior product for the commercial fleet operator that would achieve enhanced functionality through the use of advanced software development tools and browser-based technologies. RAAS has met the design objectives and demonstrates advanced utility through high levels of integration, easy-to-use user interfaces, and many automated reporting and data analysis features. Advanced functionality coupled with modern application delivery methods make RAAS a leader in its field.

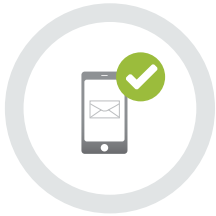
# RAAS Plugins & Services

**A wide range of plugins and services can be included in your RAAS solution either as part of an initial system implementation or as a future enhancement.**



## **Time & Attendance System Integration**

For increased time accounting work flow efficiency, in-process job and task details can be exported to your enterprise time and attendance / electronic time sheet system. Personnel can accrue labor hours against tasks via the time and attendance system and accumulated labor total data will be returned to the RAAS labor tracking module for expense tracking and customer billing purposes.



## **Remote PO Approval**

Remote PO Approval allows roaming users and non-RAAS users to review and approve purchase requests via email link, with no need to log into the main RAAS system. A link embedded in the automated PO Approval emails allows you to navigate to a mobile-friendly approval webpage that will ask you if you want to approve or reject the purchase request. A VP, Director or any other individual with appropriate security permissions will be able to approve an order from wherever they are via their mobile device.



## **LDAP Active Directory Integration**

This plugin introduces Active Directory communication via LDAP, which in-turn allows synchronization of RAAS usernames and passwords with your Windows Active Directory Server. This plugin is extremely useful to help reduce network end-user authentication security loopholes, particularly in larger organizations with larger user groups.



## **Paperless Operation: Electronic Task Assignment and Task Signature**

RAAS offers an entire feature set that enables paperless operation including work assignment, electronic signature and maintenance release to the job, job-task or job-task-step level.



## Electronic Maintenance Log (EML) Tablet App for the Cockpit

RAAS offers Electronic Maintenance Log (EML) iPad/Android apps for the cockpit. Our EML apps are designed to allow defect reporting from the aircraft while inflight, closure and/or deferral of defects, display of recently accomplished work and cleared defects, and lists of next due items. The app is able to function in real-time or can work as an offline utility that will sync data to the main RAAS host once your tablet gains 3G/WiFi access.



## Automated Airframe Time Updates and Defect Data Exchange

RAAS supports automated airframe time updates, allowing data from third-party sources such as a flight operations system to be automatically posted against the aircraft in your RAAS database. This feature set also includes the option of two-way communication with your operations/dispatch system for exchange of scheduled and defect maintenance items.



## Aircraft Operational Schedule Overlays and Data Exchange

Planned aircraft operation schedules can be imported into RAAS in order to produce graphic plots that overlay actual operational schedules with maintenance schedules. The utility allows visualization and negotiation of the maintenance plan relative to actual planned aircraft utilization.



## Finance/Accounting System Integration

Accounting/Finance system integration involves one- or two-way data transfer from RAAS to your finance system. The typical objective of the integration is to automate the processes of maintaining inventory values between systems as well as invoice matching/payable details.



## Aircraft Data Loader

The RAAS Data Loader feature allows for rapid import of aircraft status data. This utility is extremely beneficial to growing carriers and third-party contract CAMOs who may regularly introduce additional aircraft to their RAAS database.



## Shop Floor Labor Data Accumulation

For labor data capture on the production-floor RAAS offers a specialized web based user interface that allows scan-in and scan-out data collection from shop-floor scan stations, tablets or user smart phones.



## Wireless Barcode Scanner Apps for the Stores Room

Standalone applications are available for remote handheld wireless mobile computers/ scanners in the inventory stores room. Utilities included are offline inventory count sheet distribution and count findings collection, part pick list distribution and inventory stock take recording. Recommended devices include the Motorola MC9100 series handheld wireless mobile computers.



## Next Due Items External Links for Dispatch Planning

A useful external URL link is available from your RAAS database that displays next due maintenance items and status of your fleet in a browser window. The link does not require a standard RAAS login and is specifically designed as an external stand-alone utility for non-RAAS users.

# Technical Records

The Technical Records module is responsible for collecting and organizing post-production compliance information and applying that information to the aircraft configuration. The data managed in this module is central to continuing airworthiness management and reliability analysis functions. The RAAS Technical Records module can function as a traditional back-office manual input system or can be automated using electronic rectification inputs with electronic signature via the production module, and automated airframe time updates from third-party data sources.



- Independent time tracking for items such as APU's, gear or rotary components.
- Electronic technical/maintenance log books for airframe, modification, engine, gear, etc.
- Associated maintenance features identify nested maintenance actions.
- Industry leading part and inspection historical detail.
- Fleet-wide applicability features for any AD's, SB's and EO's.
- Configuration lists for any component or assembly.
- Facilities for recording prior maintenance.
- Automatic email warranty removal notification.
- Scan and store accomplished jobs as digital documents.
- Component certification documents stored as digital documents.
- Automated airframe time updates from external data sources.
- Automatic component configuration verification during installation and quantity of checks.



# Planning and Production

The Planning and Production module is where all scheduled and unscheduled maintenance jobs are catalogued and the bulk of all maintenance activity is controlled.



- Flexible forecasting allows forecasts within an airframe, a base or across the entire company.
- True historical defect analysis reporting.
- Maintenance Control defect staging area for initial defect analysis.
- Integrated deferred maintenance and MEL/airworthiness item control.
- Job card ticketing system for easy job tracking.
- Work package features for easy grouping and distribution of planned due lists.
- Facilities for electronic rectification inputs from the line, including parts on/off.
- Fully developed electronic signature features to the task-step level
- RII and Independent check item management.
- ETOPS significant item management.
- Electronic part requisition system notifies stores/purchasing of part requirements.
- Job templates for any repetitive job including parts lists, trade requirements and graphic attachments.
- Digital document library for inspections, ADs, SBs, etc. automatically printed with job cards.
- Tools for both line maintenance and block/heavy maintenance project activities.
- Easy separation of line maintenance tasks from heavy maintenance projects.
- Links between routine inspection items and spawned non-routine rectification items.
- Track heavy check project accomplishment, parts and labour costs in real time
- Scan and store accomplished job cards as digital documents.
- Pre-defined forecast via email allows automation of repetitive forecasting functions.
- Graphical job scheduling analysis plots for identification of production scheduling conflicts.
- Electronic maintenance status board for quick views of base-oriented production schedules.



# Inventory and Stores

The primary objective of the Inventory and Stores module is to provide the user with a suite of tools to help automate the physical workflows associated with stock management and also allow easy management of large quantities of data.



- Integrated electronic part requisition system between Production, Stores and Procurement.
- Segmented consumption history and one-click reorder features.
- Stale parts and overstock analysis features.
- Internal repair and overhaul facility features.
- Loan, borrow and consignment stock management.
- Warranty tracking.
- Tool crib and tool allocation tracking.
- Numerous email-based status notifications.
- Inventory count utility for rapid count findings input.
- Bar-code support for inventory issues and physical inventory count.
- Handheld offline data collection device (with integrated bar-code scanner) support for electronic sign-out sheets and remote inventory count data collection.

# Procurement and Orders

The Procurement and Orders module is designed to allow easy management of purchase, sales, warranty, repair and exchange orders. The module provides an extensive suite of tools to allow procurement personnel to organize and report on all current, outstanding, and historical order data. Users are able to keep track of an order item throughout its order cycle to the extent that planning and production personnel have visibility throughout the process.

Item Number	Description	Status	Unit	Quantity	Unit Price	Total Price	Order Date	Delivery Date
7	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
8	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
9	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
10	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
11	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
12	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
13	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
14	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
15	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
16	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
17	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
18	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
19	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
20	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
21	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
22	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
23	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
24	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
25	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
26	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
27	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
28	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
29	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
30	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
31	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
32	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
33	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
34	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
35	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
36	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
37	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
38	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
39	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010
40	00000-0-000-0007-000000-0000	Ordered	Each	1	100.0000	100.0000	01-May-2010	01-May-2010

- Fax and email based request for quotation system.
- Complete order tracking and historical vendor analysis.
- Comprehensive purchase approval process with electronic signature.
- Invoice matching sub-module enables payable control and financial system integration.
- Scan and store component certification documents as digital documents.
- Issue inventory against production requests during receiving.
- Email material receipt notifications.

# Reliability Analysis

Reliability analysis features in RAAS are distributed through RAAS modules and combine to allow comprehensive performance and reliability reporting across numerous aspects of the maintenance organization.

- Integrated component overhaul performance reporting.
- True historical defect analysis reporting.
- Integrated defect analysis reporting and graphs including 30 day type, 30 day fleet and 12 month type.
- Automatic email defect alert level exceedence notification for proactive defect level monitoring.
- Automatic email notification on MEL or airworthiness defect item creation.

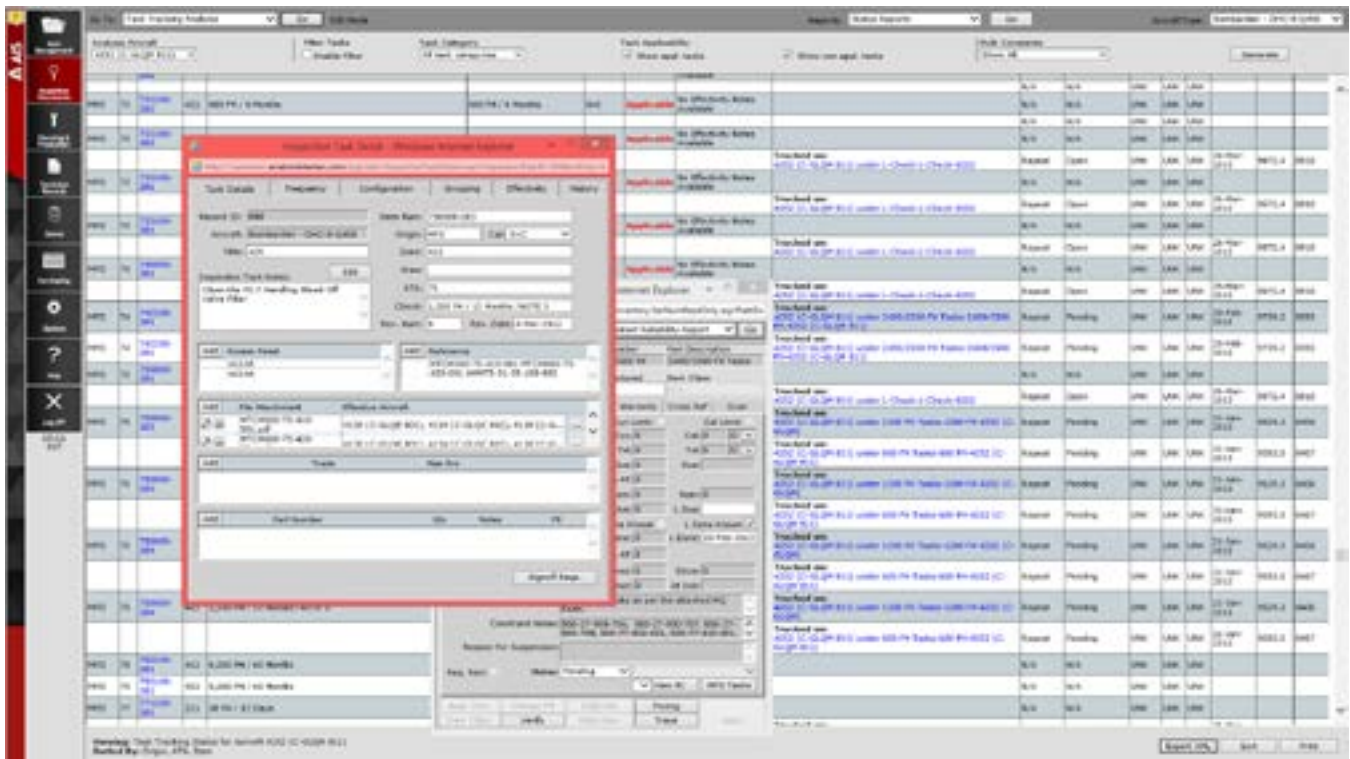
The screenshot displays the 'Defect Analysis' interface in the Porter system. At the top, it shows the title 'Defect Analysis' and the Porter logo. Below this, there is a header section with 'Information from Jan 9, 2013 to Nov 8, 2013' and 'Ordered By: ATA - Log Date'. A table of defect logs follows, with columns for Log Date, Log, ATA, HSR, LSR, Operator, Section, Jobcard, Planned, and Include. Two charts are overlaid on the table:

- Hits Per ATA Grouping:** A grouped bar chart showing the number of hits for various ATA codes. The x-axis is labeled 'ATA Grouping' and the y-axis is labeled 'Hits'. The chart shows a distribution of hits across multiple ATA codes, with some codes having significantly higher counts than others.
- ATA Breakdown:** A pie chart showing the percentage breakdown of hits across different ATA codes. The chart is divided into many segments, each representing a different ATA code and its corresponding percentage of the total hits. A legend on the right side of the chart provides a key for the colors used in the pie chart.

The bottom of the screenshot shows the 'RAAS M&E System' logo.

# Inspection Programs

The Inspection Programs module is where source MRM/MPD task data and associated instruction cards (JIC, MTC, Work Card, etc.) are managed within RAAS. Using this source data RAAS users can develop inspection programs specific to the operating conditions experienced within their fleet and can dynamically customize programs as needs require.

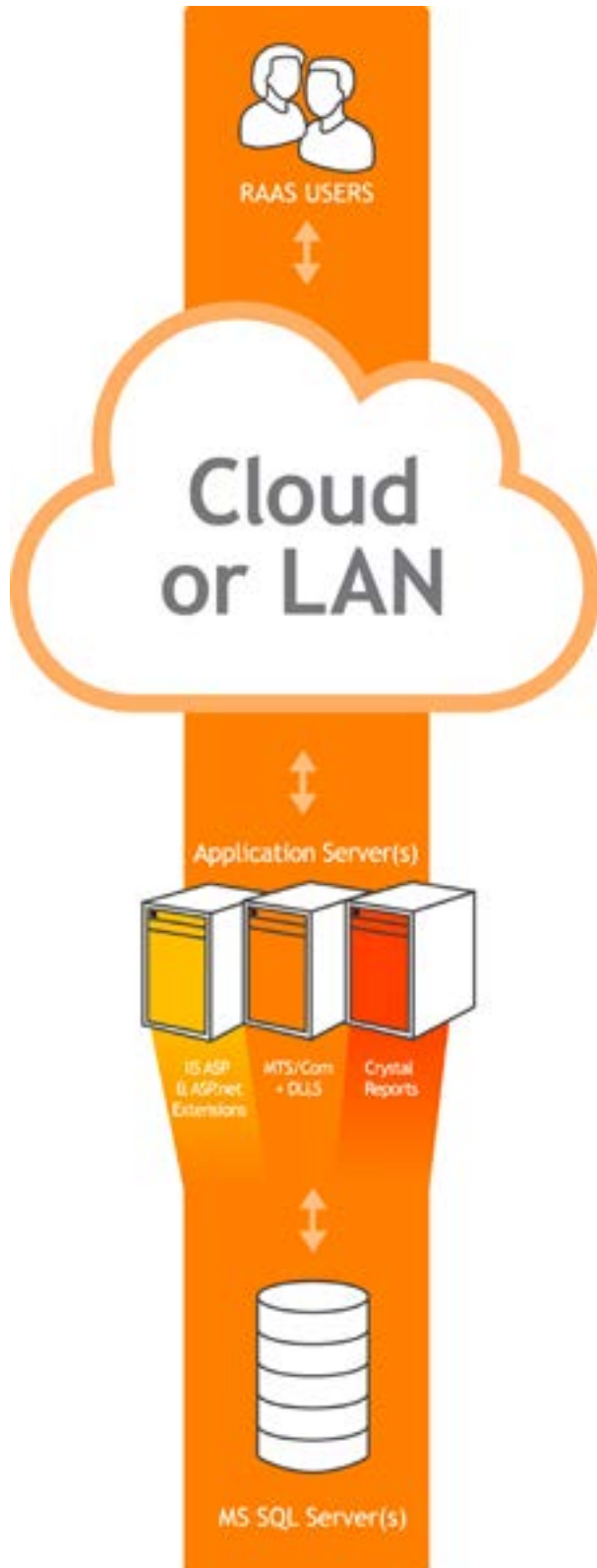


- Maintain all inspection document revision control from a central repository.
- Develop and manage multiple parallel inspection programs per aircraft type.
- Define signature requirements at the task-step level, including multiple signature for RII/Independent confirmation steps.
- Generate audit reports confirming correct and complete compliance within your inspection program.
- Automatically generate inspection sheets for higher-frequency inspections, allowing you to do away with custom company forms for the same purpose.
- Model heavy check visit packages in a pre-production environment for resource, tool, access and part planning.
- Accumulate history for routine to non-routine rectification task relationships.
- Integration with manufacturer online document repositories is available





# System Architecture



RAAS is a true browser-based solution, allowing users to access the system through a web browser. The application can be installed on a web-server on your network or we can provide web-server hosting services for you. Because there is nothing to install on individual user computers, more individuals will have access to the system and end-user IT maintenance considerations are virtually removed.



# Technology Platform

The following server hardware and software specifications assume a non-hosted scenario where RAAS will be installed on a server on your premises.

The actual hardware required to efficiently handle your operational requirements is determined by a number of factors including total number and size of the aircraft in your fleet, utilisation of that fleet, number and type of concurrent users connected to the system, and the number of inventory line items that are to be tracked.

Smaller customers can expect RAAS to run very efficiently using one single or dual processor server. Hardware and software requirements could be as follows.

## Server Hardware

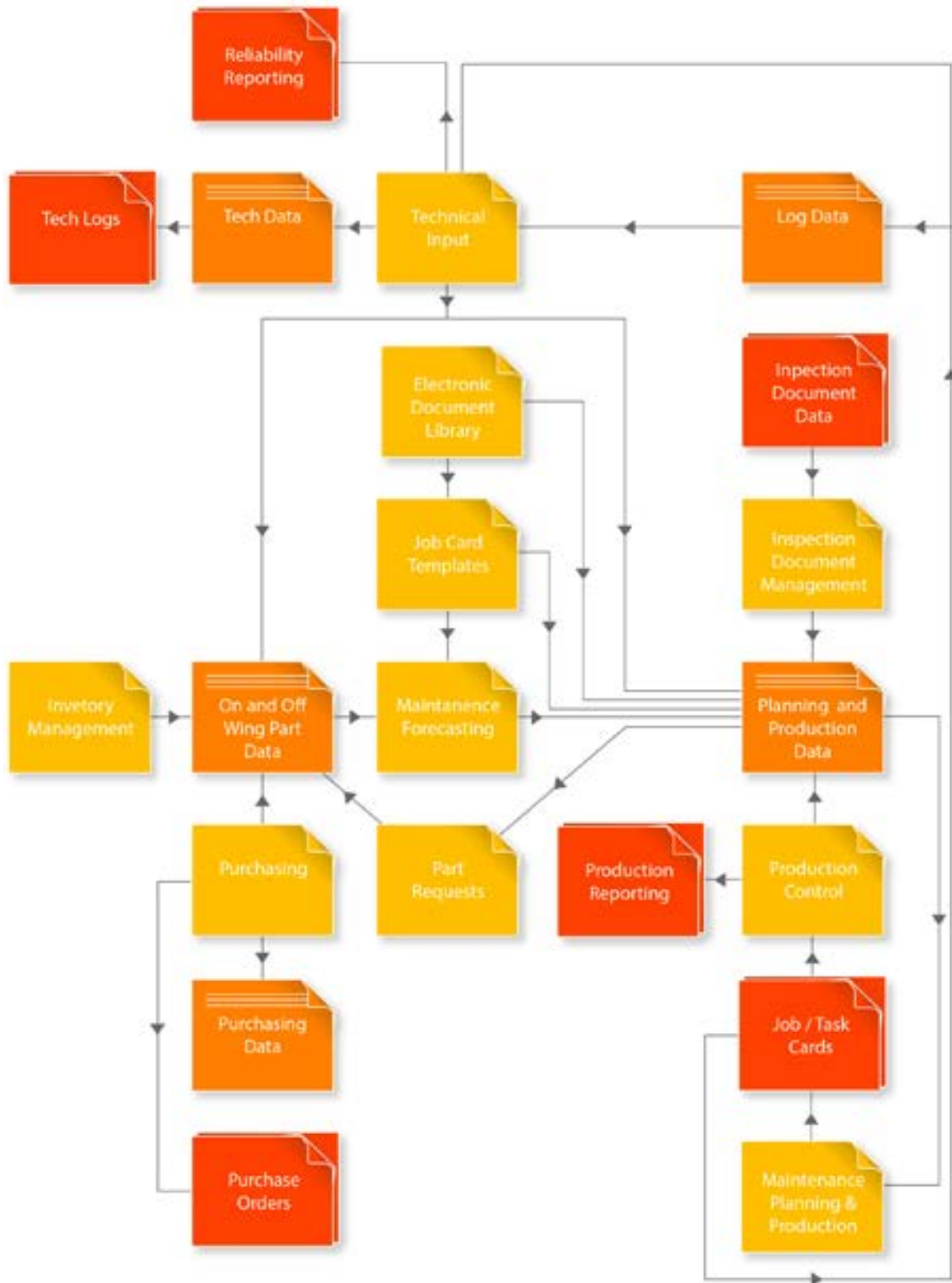
Component	Qty
Web/App/Database Server	1

## Supporting Server Software

Component	Qty
Microsoft Windows Standard Server	1
Microsoft SQL Server Standard Edition	1
Crystal Reports Advanced or Developer	1

Scalability of server hardware is addressed using integrated aspects of the Microsoft Windows server platforms. Load-balancing and server clustering technologies, which operate at the operating system level and do not affect RAAS, allow your organisation to add and/or rotate newer and more powerful hardware into the server cluster as necessary. Additionally, advanced PC server design allows for processor scalability that can significantly lengthen the life of your hardware investment.

# Process Diagram





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