Can software promise on-time departures?

ask me how
NEXT-GEN MRO TECH
can lower TAT

ramco *aviation*

presents

N-GAPS Next-Gen Aviation Problem Solvers

powered by
Machine learning
Cognitive analytics
In-memory based algorithms

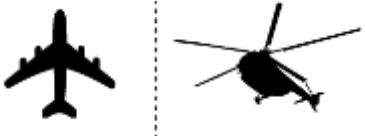# Ramco quick bytes

ramco

4000+ aircraft & 17,000+ users
trust Ramco Globally

Malaysia Airlines group Goes Live in record time
in under 11 months

Largest operators of 7 OEMs run on Ramco
Bombardier - Bell - Sikorsky - Airbus - Embraer - Chinook - Agusta Westland

Ramco raises $52 Million through Goldman Sachs,
and other valley investors to expand next-gen technology pursuits globally

ramco

Agenda

N-GAPS

Key technology innovations

About Ramco

Agenda

N-GAPS

Key technology innovations

About Ramco

What are
N-GAPS

N-GAPS

Next-
Gen
Aviation
Problem
Solvers

Built ground up to fill the voids in your existing system

to ensure your Maintenance operations are future Ready

& seamlessly integrate with any pre-existing M&E MRO system

Next-gen focused leveraging cutting edge technology

Presenting N-GAPS
Next-Gen Aviation Problem Solvers

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

Next-Gen Aviation Problem Solvers

ramco

e- Enablement
**Loadable Software
Airplane Parts
Mgmt**

Performance Redefined
**Advanced
Reliability**

Smart Tail your fleet
**Tail Planning &
Optimization**

Optimized Resource Mgmt
**Maintenance Optimization
& Shift Planning**

why order when its covered
Warranty Tracker

The era of the **connected flight** has dawned upon us

Solution!

Built from the ground up to be
Highly Software Dependant

Introducing
Ramco's LSAP Management

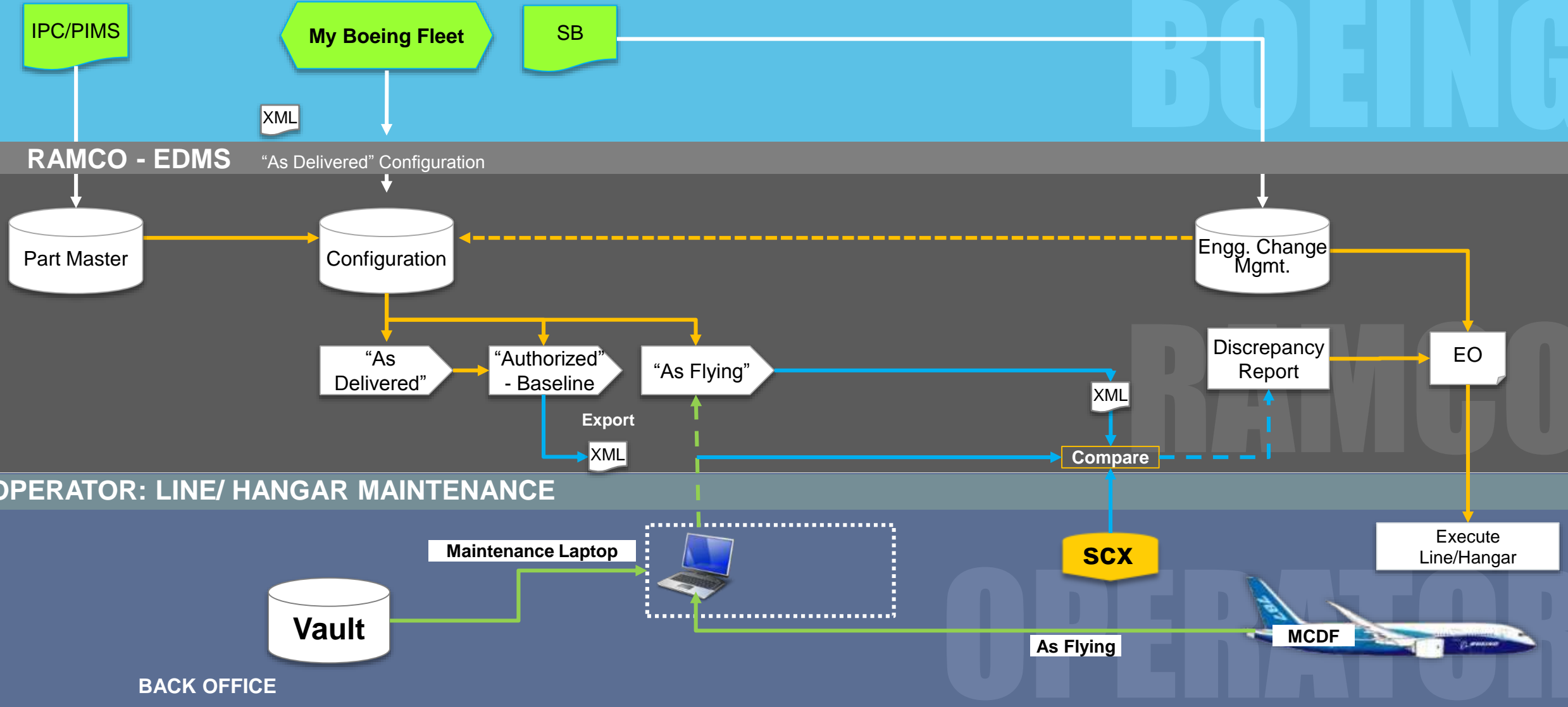How do you manage over **300+ software upgrades**

Managing the era of the connected aircraft

Constantly

Manage B787 LSAP efficiently

Loadable Software Aircraft Parts Management

ramco

BOEING/ SUPPLIERS

BOEING

IPC/PIMS

My Boeing Fleet

SB

XML

RAMCO - EDMS   "As Delivered" Configuration

RAMCO

Part Master

Configuration

Engg. Change Mgmt.

"As Delivered"

"Authorized" - Baseline

"As Flying"

XML

Discrepancy Report

EO

Export

XML

Compare

OPERATOR: LINE/ HANGAR MAINTENANCE

OPERATOR

Maintenance Laptop

SCX

Execute Line/Hangar

Vault

As Flying

MCDF

BACK OFFICE

Key Business needs

- Inability in handling the 787 Aircraft Software Configuration
- Unable to integrate with Boeing SCX Tool for comparison and better visibility
- Non-automated Engineering Change Management (ECM) Process
- Non compliant with the ANSP requirements (Aircraft Network Security Program)

Solution offered

- Built LSAP Configuration through integration with MBF(myboeingfleet.com)
- Provision to export latest LSAP Configuration (Hardware & Software) from
- Ramco Application to Boeing SCX
- Repository to maintain the Configuration Discrepancy Report
- Online process for Management level Authorization of Engineering orders
- One click evaluation report submission to any Regulatory Authority and KQ
- Internal Management

Key Business benefits

- Online Monitoring to address any discrepancy between the 'Authorized' and 'As Flying' Software Configurations
- Generating Aircraft Configuration reports in XML for easy interaction with Boeing
- ECM of all 787 software Service Bulletins reviewed, authorized & maintained Online
- Managing the new era of connected aircraft

Next-Gen Aviation Problem Solvers

ramco

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

Presenting N-GAPS
Next-Gen Aviation Problem Solvers

e- Enablement
**Loadable Software
Airplane Parts
Mgmt**

Performance Redefined
**Advanced
Reliability**

Smart Tail your fleet
**Tail Planning &
Optimization**

Optimized Resource Mgmt
**Maintenance Optimization
& Shift Planning**

why order when its covered
Warranty Tracker

Advanced Reliability

ramco

Dispatch reliability of B777s, A380, ATR72 etc…

Actual fleet performance vs Industry avg

Drill down to identify rogue units

Monitor repeat defects

Total revenue FH/FC

and more…

at the
click
of a button

Multidimensional Reliability Analysis across **fleets** Owned Leased…

Mix & match, Sequence reports to generate report books.

Pre-configured work flow to publish OEM & Statutory reports

Flexible, Intuitive and ad-hoc reporting

Configurable Analytics dashboards for management reporting

1
Click Data Consolidation

0
Data Silos

1
Click Report Publishing

- One of the Largest Airline in the world
- Fleet of 200+ aircraft | Worlds Largest Fleet of A380
- Operates over 2500 flights per week to 130 cities across six continents

Key Business needs

- Airline's reliability team spent most of their time in collecting and consolidating data (using excels),leaving little time for analysis
- Inability to publish reliability data in SPEC 2000 format for OEMs
- Difficulties faced in back-dating updates and iterative processing of reliability reports

Solution offered

- Seamless integration with multiple external systems like M&E, safety etc. that was being used by the
- airline
- Consolidation of over 500+ data points for churning out valuable graphical trend analyses, reviews,
- corrections and report generations
- Enables 'click of a button generation' for ad hoc reports, executive dashboards and SPEC 2000
- (Chapter 11) compliant reporting for OEMs

Key Business benefits

- Reduced time to furnish monthly reports from 7 to 2 days
- 100% increase in the identification of rogue components
- Complete data integrity across multiple systems, removing data silos out of the equation
- Tracking changes to reliability data with just a click
- Prepackaged analytics with complete cycle coverage from contract to collection
- Instant reliability report generation for regulatory compliance

ramco

Next-Gen Aviation Problem Solvers

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

Presenting N-GAPS
Next-Gen Aviation Problem Solvers

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

a day in the life of
Robert Sikes

Head - Tail planning, Operations Control Center
of a leading international airline

Rob has to plan across

Rob's PROBLEM A | Honoring every scheduled flight **with a suitable tail from his arsenal**

Rob's PROBLEM B | Maximize yield & Minimize Cost

200 destinations

3000 flight schedules

150 fleet size across 13 sub fleets

Intelligent transit route mapping

Sub fleet **vs** Constraints

Scheduled aircraft **vs** aircraft under maintenance

Rob's Objective | To efficiently assigning tail numbers to flight schedules that you and I book **on**

Expedia®
CheapTickets
cleartrip
tripadvisor®
.com

controlled & uncontrollable variables

200 destinations

3000 flight schedules

150 fleet size across 13 sub fleets

DXB > SIN

Flight Constraints

Aircraft & Station constraints

Connection constraints

Delays due to weather ●

Cancellation ●

Hard landing ●

Bird strike ●

Docking in the wrong terminal ●

Maintenance resource on vacation ●

ramco

Ramco's 'In-memory Tail optimization algorithm'

Inputs all the

200 destinations

3000 flight schedules

150 fleet size across 13 sub fleets

Considers all constraints

Suitable sub-fleet

ETOPS cert

RVSM cert

Minimum Ground Time

High-altitude flight capability

Ground Power availability vs on board APU

Crew Rest Area availability

FAK requirement

and assembles the most cost and resource optimized tail allocation possible **within seconds**

Presenting N-GAPS
Next-Gen Aviation Problem Solvers

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

Presenting N-GAPS
Next-Gen Aviation Problem Solvers

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

Maintenance Optimization & Shift Planning

ramco

San Francisco Airport (SFO)

1

Planner at SJC gets a 3 hour heads up that an A380 will land at SFO

San Jose Airport (SJC)

2 Ramco In-memory processing algorithm sends missing manpower alert to planner **A380 certified** aircraft engineer on vacation at SFO

Planner initiates movement of resource from OAK to SFO

5

Oakland Airport (OAK)

3 Ramco's In-memory processing algorithm alerts planner of a certified A380 engineer idling at Oakland Airport

4 Ramco APO suggests planner – 33 mins travel time on road via CA - 92 W highway using integrated google maps

Solution for Steve
-a day in the life of a maintenance planner

ramco

How does it **work**?
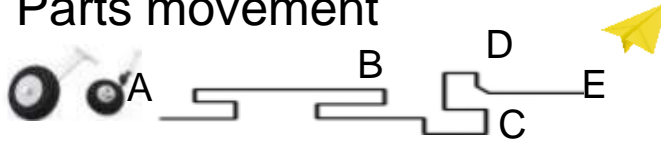## Ramco Line planning and optimization*

23 locations

Servicing 63 airlines Across 56 models
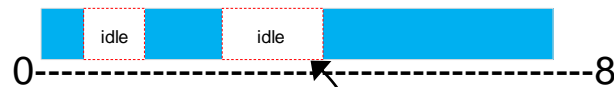
150 maintenance resources

Before | ### After

Parts Logistics

Parts movement

A B D E C

A—B—C—D—E

Shift planning

8 hour shifts x **5** days with **idle** times

idle   idle

0--------------------------------8

5 days work & 2 days off

Resource idle time added due to **variables**

12 hour shifts x **4** days **zero** idle time

0--------------------------------8

4 days work & 3 days off

an extra day off boosts productivity

Aircraft turnaround time

Faster turnaround

* Powered by Ramco's In-Memory Planning and Optimization

Solution for Steve
-a day in the life of a maintenance planner

How does it work?

Ramco line planning and optimization*

📍 **23 locations**

✈ Servicing **63** airlines Across **56** models

🧍 **150** maintenance resources

ramco

Productive Shift planning 🧍
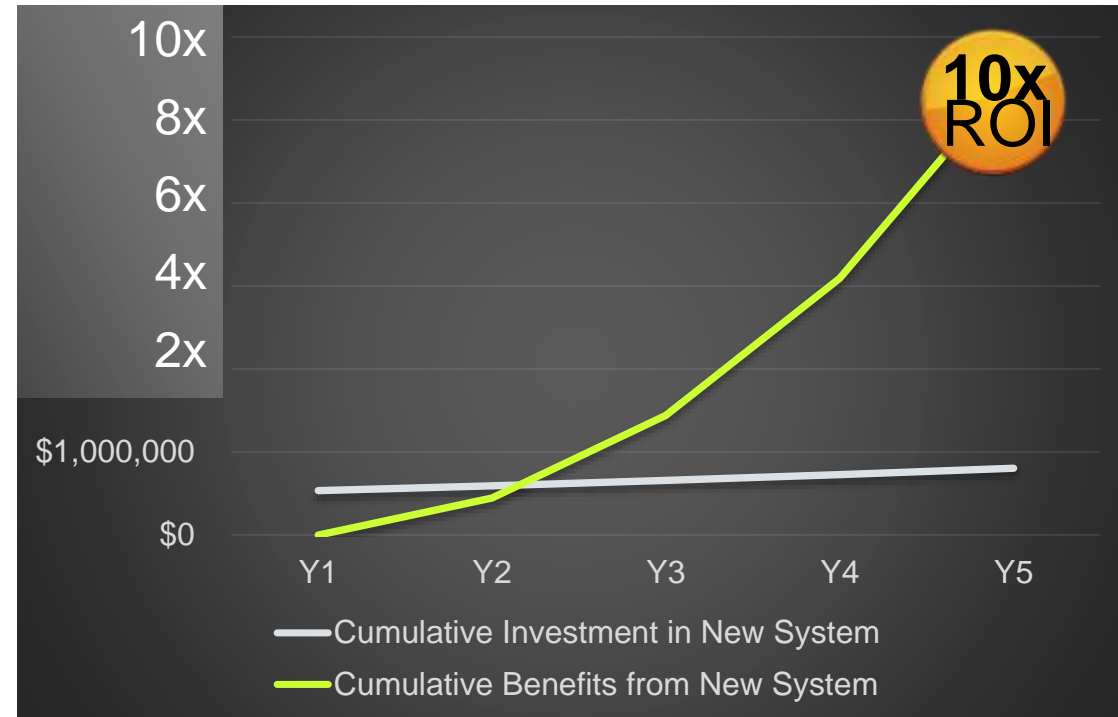
+

Efficient Parts Logistics 📍

+

Faster Aircraft Turnaround time

+

Lower Inventory carrying cost

=

10x ROI

— Cumulative Investment in New System
— Cumulative Benefits from New System

* Powered by Ramco's In-Memory Planning and Optimization

Presenting N-GAPS
Next-Gen Aviation Problem Solvers

e- Enablement
Loadable Software Airplane Parts Mgmt

Performance Redefined
Advanced Reliability

Smart Tail your fleet
Tail Planning & Optimization

Optimized Resource Mgmt
Maintenance Optimization & Shift Planning

why order when its covered
Warranty Tracker

Automate & Seamlessly Manage Warranty. period.

Multiple
Aircraft, Parts,
Purchases, Repairs on a
Single Warranty
 Agreement

Track
Based on parameters
and Calendar

Auto Evaluate
warranty agreements
from component removal
.
.
.
 to routing to external
repair agency

Auto create
Purchase orders

SB/AD
Warranty Management
for Modifications (SB/AD)

Year
2004

Year
2015

PHI

1 of top 5 Heli operators in
the world - a decade old
customer of Ramco

$1.5 M
increase in Revenue
Per Aircraft Per Year -
directly attributed to
Ramco

99.99%
Inventory Accuracy
since 2010

Agenda

N-GAPS

Key technology innovations

About Ramco

Agenda

N-GAPS

Key technology innovations

About Ramco

The evolution of technology & Applications

The **Application** Reality

ramco

year 2009 — System of Records

- Data Capture
- Reporting
- Querying

year 2012 — Embedded Analytics

- Analytics
- Fused Visualization
- Graphical Reporting

year 2015++ — Cognitive solutions

- Straight Thru Processing
- Context Aware Solutions
- Ramco **Assist**

The **Technology** Reality

ramco

Client Server

year **2007**

- Powerful Clients
- Client Installs
- History

Thick client solutions

year **2009**

- Wrapped Solutions
- Heavy footprint
- Web Architected

Adaptive solutions

year **2015++**

- Responsive
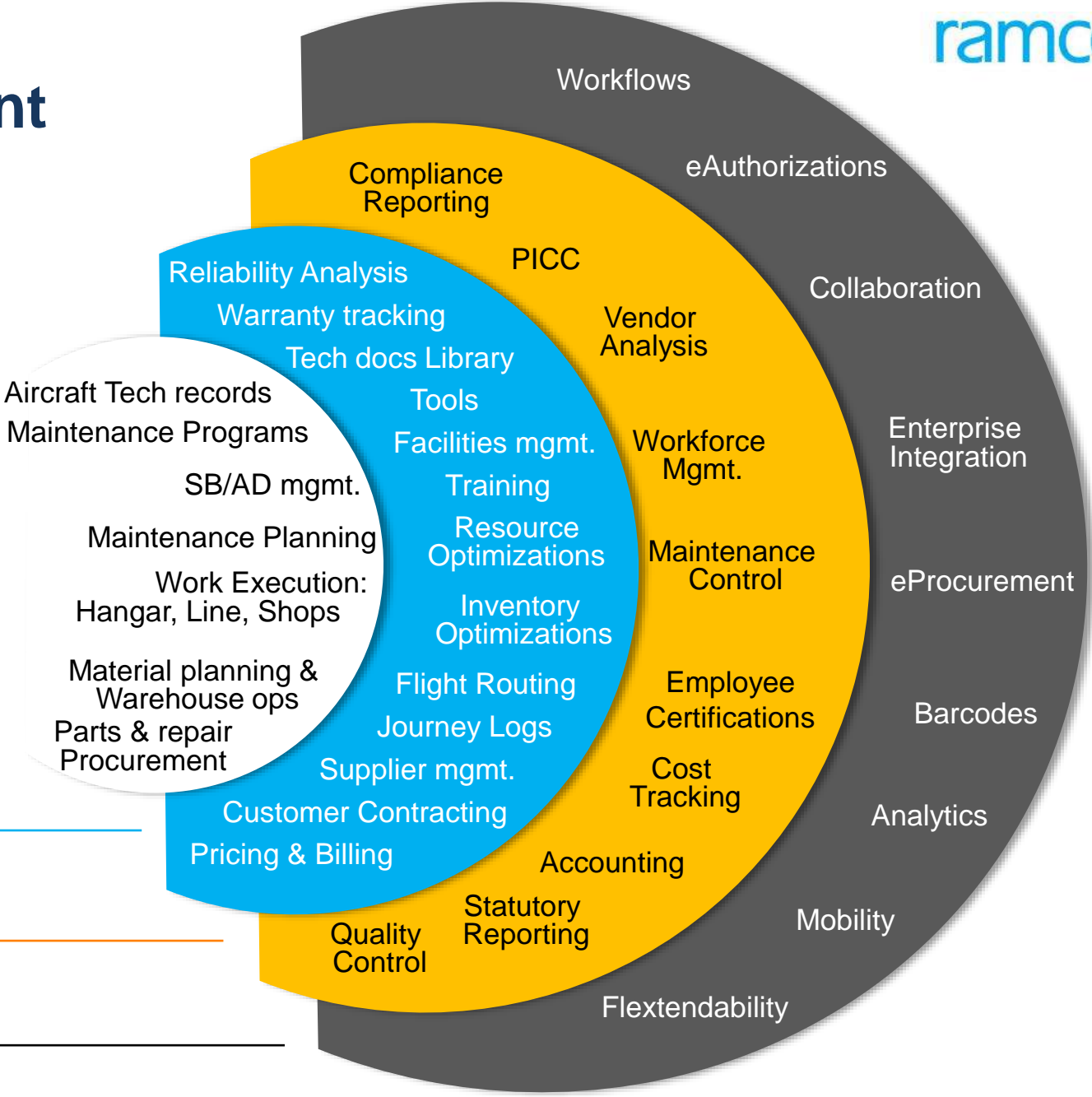- HTML5 is the Standard
- Mobility is the driver

Deriving the formula to
create innovation in aviation

Innovation across the a ——→ z
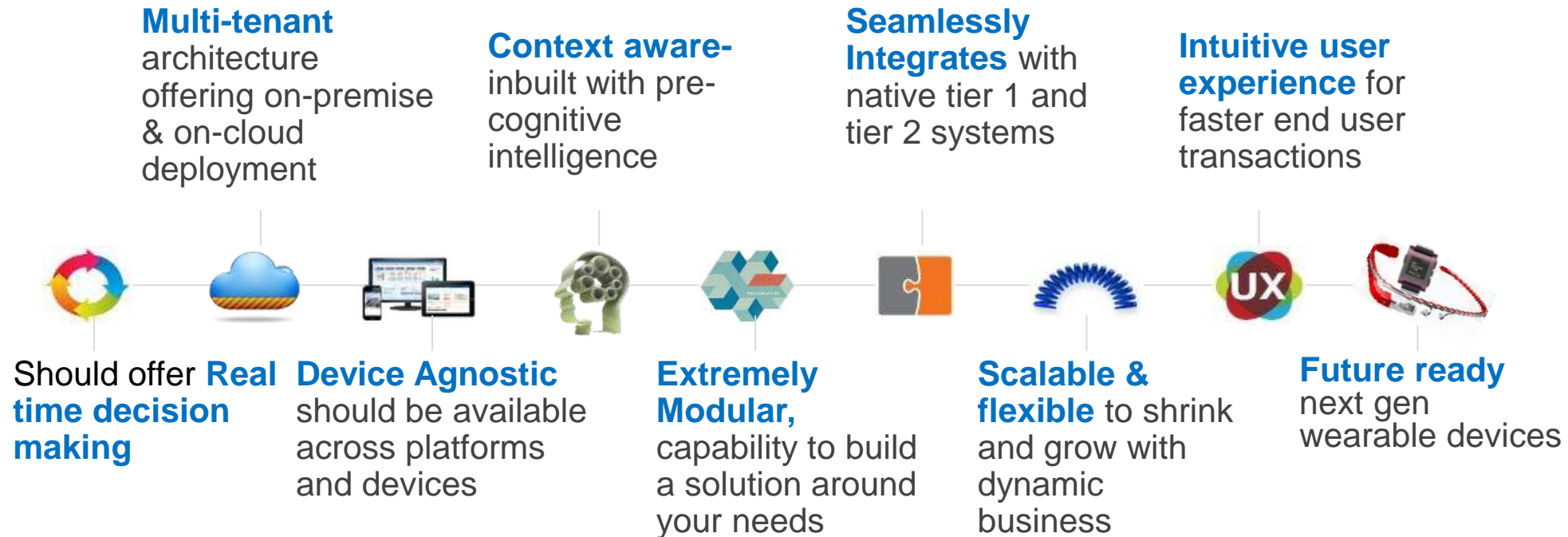## of aircraft maintenance foot print
- to manage next-gen connected aircraft

ramco

Core
Enablers
Monitoring & Control
Enterprise Integration & Efficiencies

Core:
- Aircraft Tech records
- Maintenance Programs
- SB/AD mgmt.
- Maintenance Planning
- Work Execution: Hangar, Line, Shops
- Material planning & Warehouse ops
- Parts & repair Procurement

Enablers:
- Reliability Analysis
- Warranty tracking
- Tech docs Library
- Tools
- Facilities mgmt.
- Training
- Resource Optimizations
- Inventory Optimizations
- Flight Routing
- Journey Logs
- Supplier mgmt.
- Customer Contracting
- Pricing & Billing

Monitoring & Control:
- Compliance Reporting
- PICC
- Vendor Analysis
- Workforce Mgmt.
- Maintenance Control
- Employee Certifications
- Cost Tracking
- Accounting
- Statutory Reporting
- Quality Control

Enterprise Integration & Efficiencies:
- Workflows
- eAuthorizations
- Collaboration
- Enterprise Integration
- eProcurement
- Barcodes
- Analytics
- Mobility
- Flextendability

Innovation across the a ⟶ z of what the future needs

ramco

Multi-tenant architecture offering on-premise & on-cloud deployment

Context aware- inbuilt with pre-cognitive intelligence

Seamlessly Integrates with native tier 1 and tier 2 systems

Intuitive user experience for faster end user transactions

Should offer **Real time decision making**

Device Agnostic should be available across platforms and devices

Extremely Modular, capability to build a solution around your needs

Scalable & flexible to shrink and grow with dynamic business

Future ready next gen wearable devices

The innovation formula for aviation maintenance

ramco

Aviation Functionality

+

Multi-tenant architecture offering on-premise & on-cloud deployment

Context aware- inbuilt with pre-cognitive intelligence

Seamlessly Integrates with native tier 1 and tier 2 systems

Intuitive user experience for faster end user transactions

Should offer **Real time decision making**

Device Agnostic should be available across platforms and devices

Extremely Modular, capability to build a solution around your needs

Scalable & flexible to shrink and grow with dynamic business

Future ready next gen wearable devices

Ethos

+ **IOT** = pure innovation

Future

Propelling Aviation M&E MRO with

Straight Through Processing

Automating the 80% so that you work on the critical 20% only

documentation 📄

maintenance ⚒

Parts Disposition
use case: Landing gear

ramco

📄4 ▦5 ➕ 📄5 ▦6 ➕ 📄5 ▦8 ➕ 📄2 ▦4 ➕ 📄2 ▦3
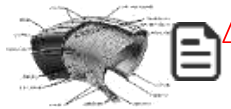
Remove unserviceable tyres to be repaired & maintained as customer inventory

Remove unserviceable break-assembly to be exchanged with MRO

Remove spindles for special hardening (no internal capability with MRO)

Remove a sub-assembly which is directed by the customer to return 'As is'

Remove a sub-assembly, which is in a phase out condition and can be scrapped locally by MRO

Without | Straight Through Processing | Manual intervention of 26 steps by 3 resources

👤 📄 ▦
3 8 26

With | Straight Through Processing | Embedded **disposition code & STP** engine automates entire process in 6 easy steps

👤 📄 ▦
3 8 6

From 26 steps to **6 steps**

Mobility – anywhere, anytime

Now Manage MRO anytime, anywhere

Download our App

Offered as a Hybrid Solution

Use Industry Standard HTML5 rendering

Parts Request ————————— now on
Wearable devices

at the touch of his glass,
maintenance Engineer
checks parts availability in store

based on their
📍 **Store Location,**
📊 **Stock availability &**
⚒ **Project in hand**

Fan duct | 2 days
Store 11-A | delivery
Dallas, TX

745 Miles | 3 units in
away | store

Alternator | 3 hrs
Store 2-C | delivery
Phoenix, AZ

50 Miles | 1 unit in
away | store

A.P.U | 7 days
Store 1-A | delivery
Hradec, CZK

5235 Miles | 3 units in
away | store

Mark, an aircraft engineer is searching for a crucial part to complete the aircraft's landing gear overhaul

Option 1:
Mark goes back to hangar & sifts through multiple catalogues to find the part no

Option 2: Smart Search
Mark types 'landing gear' on his mobile device app
- **Recognizes its Mark**
- **Identifies his designation & seniority**
- **The work order he is working on**
- **Analyzes all other inputs from the screen he is currently on**
- **Identifies the aircraft he is working on**
- **And showcases the accurate part availability on store**

ramco

Seeing the big picture by **cutting through clutter**

Does your Mechanic **spend more time** updating the M&E/MRO software than fixing the Aircraft?

Why should a user

- go through multiple screens to perform a single transaction

- Access multiple modules to complete a report

- Search the system to identify high priority tasks for the day

WorkSpace | One screen does it all

ramco

Transaction

Visualization

fusion

Analytics

Optimization

Role-Based
WorkSpace
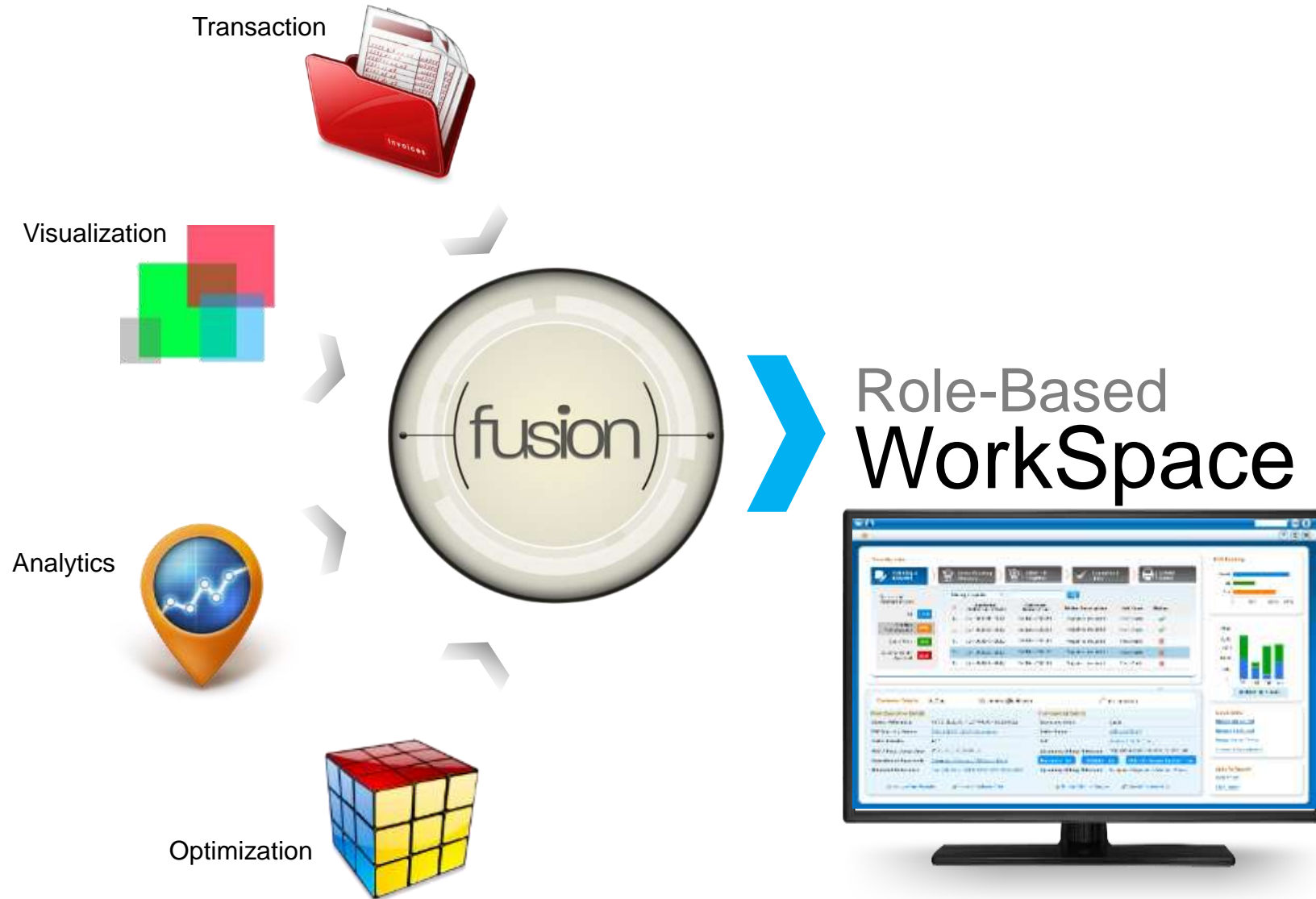
Role-based WorkSpace **in action**

Goods receiving process | inventory workflow

ramco
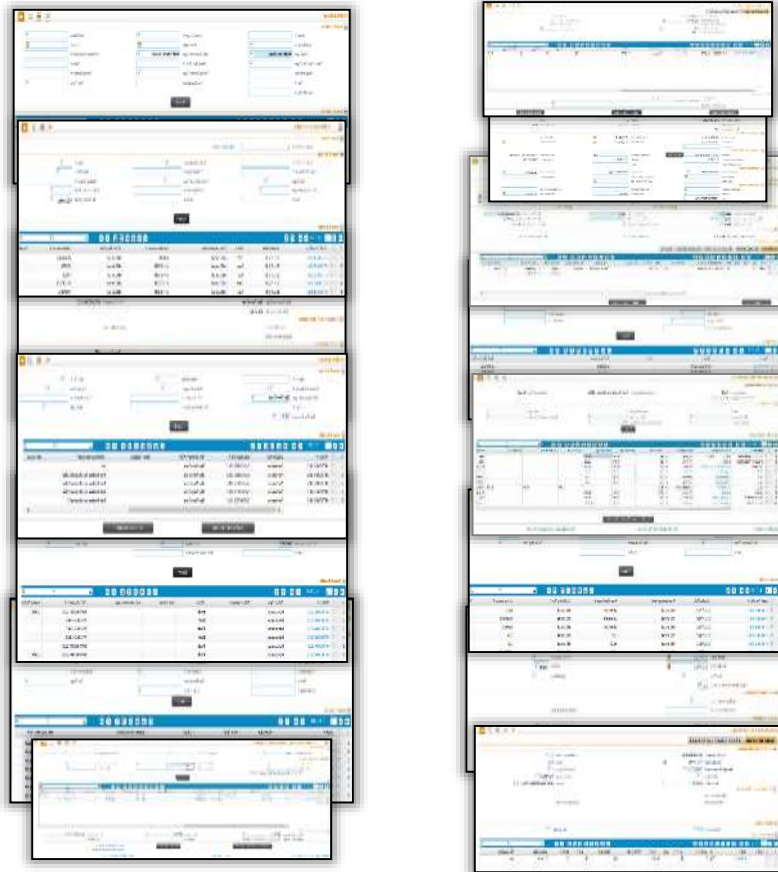
Standard	**New Gen**
16 screens & 16 mins	1 screens & 6 mins

Seeing the big picture **by** **cutting through clutter**

Smarter Ways to induct a Customer Task Card

Problems
faced when an MRO inducts a Customer's Task Card

- Arduous # of Manual steps
- # of tasks can be in hundreds
- Task to be created one by one
- Manual decisions on addition/ revisions
- Delays in inducting a package

Conventional Customer Task Card Induction

6

Step 1 — Manually check the Task master

Step 2 — Add new Tasks

Step 3 — Revise existing Tasks

Step 4 — Activate Tasks

Step 5 — Upload Tasks into Customer order

Step 6 — Process CO into a package

With Ramco's Task Upload Function

1

ONLY ONE Step — **Upload New Tasks**

Using **Ramco's Task Card** feature automates

5

- Addition of new Tasks
- Revision of existing Tasks
- Activation of Tasks
- Uploading Tasks into CO
- Task movement into package

Customer Task Card inducted successfully

Barcoding based on Work Actions

Jack is at the hangar surfing through his assigned tasks

Please scan the action to be performed

By zapping Barcodes, Jack can:
- Record his task time
- Review his tasks
- Request Parts Placement
- Record Material Request
- Complete Tasks

Presenting Ramco Gesture Computing

Wouldn't it be cool if you just move your hands from a distance, & your systems understands you!

Open your hands to start using..

Swipe right to move to the next document

Swipe down to move down the list

Thumbs up to approve

A V sign to successfully close a document

Swipe left to move to previous document

swipe up to move up the list

Thumbs down to reject

A Closed hand to close and exit the experience

Agenda

N-GAPS

Key technology innovations

About Ramco

ramco

Agenda

N-GAPS

Key technology innovations

About Ramco

Aircraft Platform Independent

The largest Civil Operators of 7 Aircraft OEMs use Ramco

Largest operator of **Bombardier** trusts **Ramco**

Largest operator of **Agusta Westland** trusts **Ramco**

Largest operator of **Embraer** trusts **Ramco**

Largest operator of **Airbus Helicopters** trusts **Ramco**

Largest operator of **Bell Helicopters** trusts **Ramco**

Largest operator of **Sikorsky** trusts **Ramco**

Largest operator & Type Certificate Holder of **Chinooks & Vertols** (Civil version) trusts **Ramco**

Company Overview

ramco

Part of the $1 Billion Ramco group

Global R&D Center in India

21 Offices Worldwide

1700+ Employees

Rich history of 24 Years

The Global Aviation Customer Presence

Trusted by the likes of

over 75 customers

malaysia airlines
COLUMBIA HELICOPTERS
COBHAM
Kenya Airways The Pride of Africa
Able
FAT Far Eastern Air Transport 遠東航空
PHi
Patria
ADAC ADAC Luftfahrt Technik GmbH

across 29 countries

29 Americas

6 MEA

13 Europe

30 APAC & Oceania

serving across segments

23 Fixed Wing

23 Rotor Wing

18 MROs

7 Charters

7 Defense & Others

ramco

Integrated Aviation ERP with N-GAPS

Next-Gen Aviation Problem Solvers

ramco aviation

Enterprise Wide M&E / MRO IT Suite with N-GAPS

- Inventory forecasting
- Ramco ePublications
- 787 Loadable Software Airplane Parts Management
- Ramco SmartTail Tail Planning & optimization
- Advanced Reliability
- Ramco Maintenance Optimization & Shift Planning
- Hangar planning
- Offline Field Maintenance System
- Electronic Flight Bag
- Advanced Analytics
- HR & Financials

Customer Speak

The net effect of Ramco is a dramatic improvement in engineering efficiency, optimized fleet management, and reduction in aircraft on-ground time

With a mobile-ready completely integrated system from Ramco, we will be better equipped

Moving from Windows to Web has been a wonderful upgrade

With Ramco, we have moved to a sophisticated end-to-end software for automation of our Maintenance and Engineering functions to streamline the various aspects of our business

ramco

Aviation M&E MRO Suite

On Cloud/On Premise

Complete solution offering for

Part 121, 145, 135, 21, CAMO, FTM, ITM

Engineering & CAMO	Maintenance	Supply Chain Mgmt.		Safety, Compliance & Quality	Flight Operations	MRO Sales	Manufacturing	Human Capital Mgmt.	Finance & Accounting
Configuration Mgmt.	Line Maint.	Parts Admin.	Supplier Mgmt.	Compliance Reporting	Flight Sheet Mgmt.	Customer Mgmt.	Product Data Mgmt.	Employee Information	Finance Setup
Maintenance Program Admin	Hangar Maint.	Warehouse Mgmt.	General Procurement	Std. Reliability Analysis	Flight Charter Contracting	Quote &Pricing Mgmt.	Production Scheduling	Certifications & Qualifications	General Accounting
Technical Records	Shop Maint.	Material Planning	Repair & Exchange	Safety /Occurrence Mgmt.	Journey Log Entry Mgmt.	Contract Mgmt.	Manufacturing Execution	Training	Supplier Invoicing
SB / AD Admin.	Engine Maint.	Stock Mgmt.	Loan / Borrow	Quality Audit Mgmt.		Customer Order Mgmt.	Engineering Change	Time & attendance	Accounts Payable
Maintenance Planning	Tool & GSE Mgmt.	Physical Inv & Cycle Counting	Consignment & PBH	Part Certification & Hazmat		Part Exchange		Recruitment	MRO Invoicing
Task Card Mgmt.	Offline Maint.	Inventory Analysis	Warranty tracking & Claims Mgmt.	Adv. Reliability Analysis		Part Sale Mgmt.		Talent Mgmt.	Accounts Receivable
Library Mgmt.	Dent & Buckle	Scrap Mgmt.	Goods Receiving			Customer Portal		Global Payroll	Mgmt. Accounting
e-Publications	Time Tracking	Shipping						Employee Portal	Fixed Assets
LSAP	E- Signature								Flight Contract Invoicing

Enterprise Add-ons

Mobility		In-memory Planning & Optimization (iPO)		Ecosystem		Hubs		Platforms	
Warehouse Anywhere	Customer Anywhere	Line Mx Optimization	Tail Assignment	Aeroxchange	FedEx/UPS Integration	Tech Record Hub	Procurement Hub	Report Writer	Integration Gateway (iRIS)
Route Anywhere	Approval Anywhere	Component Mx Optimization	Hangar Planning Optimization	Ramco Xchange	OEM Data Interface	Customer Order Hub	Inventory Hub	Advanced Visualizer	DecisionWorks
Mechanic Anywhere	Fly Anywhere(EFB)					Engineering Hub	Accounts Payable Hub	iPO	ZERO UI
								Workflow	Extension Development Kit

Key Customers Worldwide

ramco

And more…

Aviation Suite | Key Highlights

ramco

One integrated platform to run entire organization ❯ Multiple aviation segments ❯ Infinite possibilities

Web-architected, truly multi-tenant and "Cloud ready" solution with option to **deploy On-premise or on Cloud**

Paperless operations through e-Signature, e-Procurement (SPEC 2K) and e-Publications

Seamlessly Integrates with external systems

Enriching user experience through **Uber-Cool WorkSpace** and **Enterprise Search capabilities**

A **full suite M&E/MRO solution** integrated with Financials, HCM, Analytics, and Advanced Reporting

Can be operated from **desktop, laptop, tablet and smartphones**

Extremely Modular, enabling roll out of **Business Components as and when needed**

Scalable, n-tier, model based architecture designed for **high Performance** and **Reliability**

Offline Field Maintenance to **track Remote aircraft maintenance operations** in locations without internet connectivity

3 OF TOP 20 AIRLINES
5 OF TOP 10 HELI OPERATORS
& some of the largest mros

tRUST **ramco** aviation
M&E MRO Software for Civil & Defense