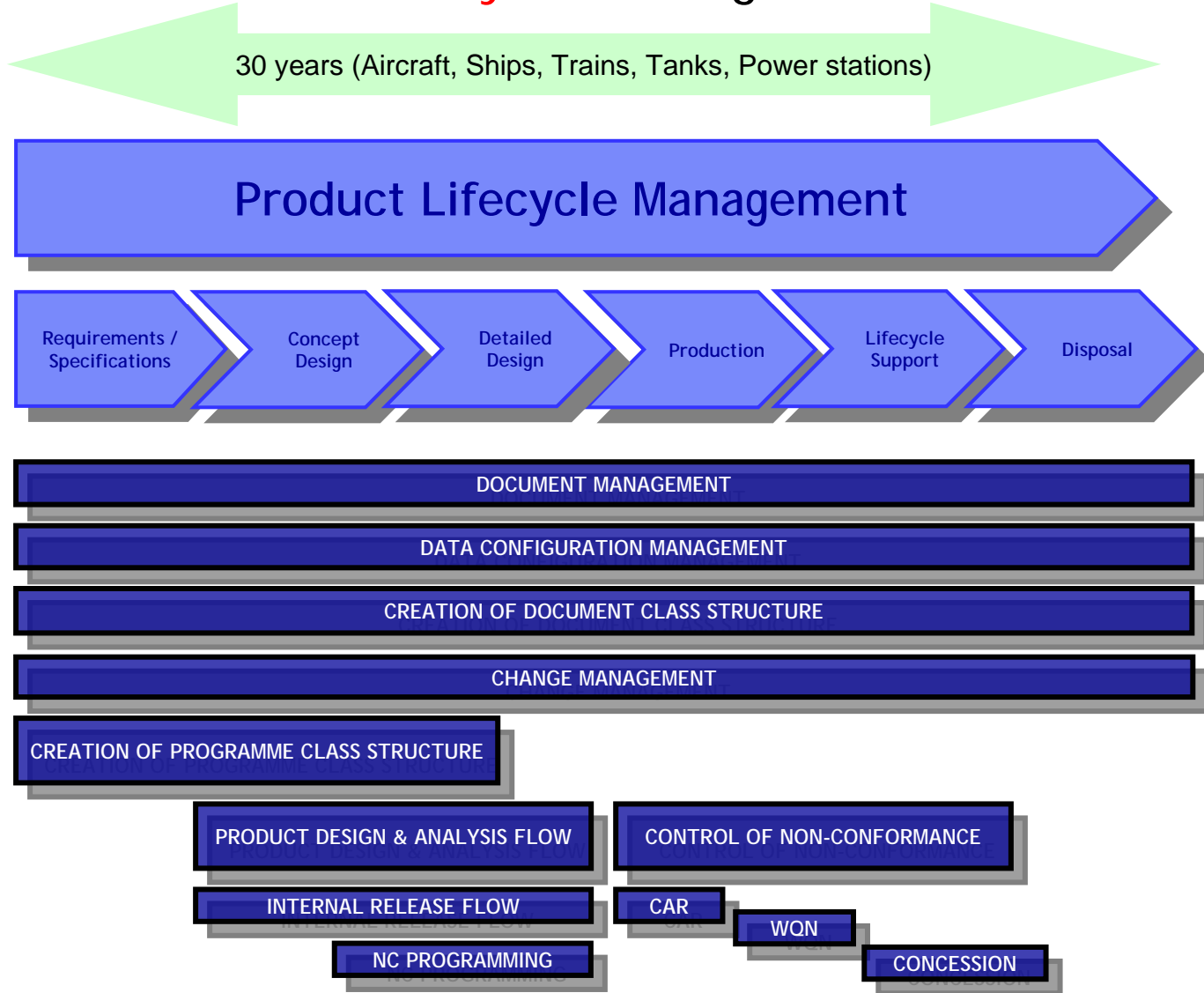




Enterprise Integration and Pervasive Computing

- Russ McKay
- IBM PLM Solutions

PLM is about Product **Lifecycle** Management



Multiple Applications



A single application is never likely to be enough to satisfy the needs of the enterprise



Multiple Applications



And multiple application must be integrated together to enable complete business processes



Point to point integration may work - but what a mess!

multiple programming models



multiple platforms

multiple programming languages

multiple message formats

varieties of "standards"



A better approach to integration involves adoption of an SOA

SOA = Services Oriented Architecture

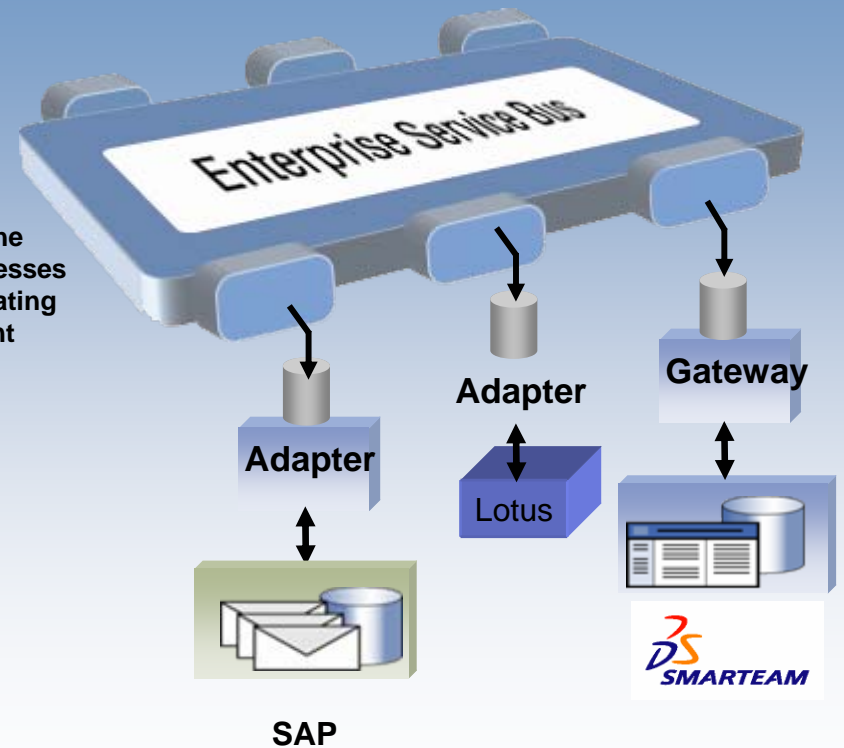
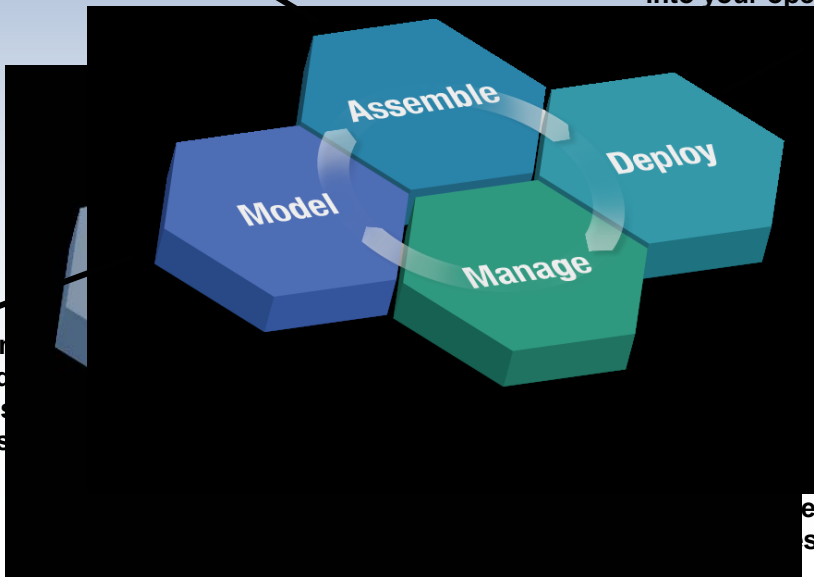
A service is any well-bounded, defined and repeatable business task that can be invoked in a standard manner.

Can be implemented by loosely coupling various 'services' together to develop an application

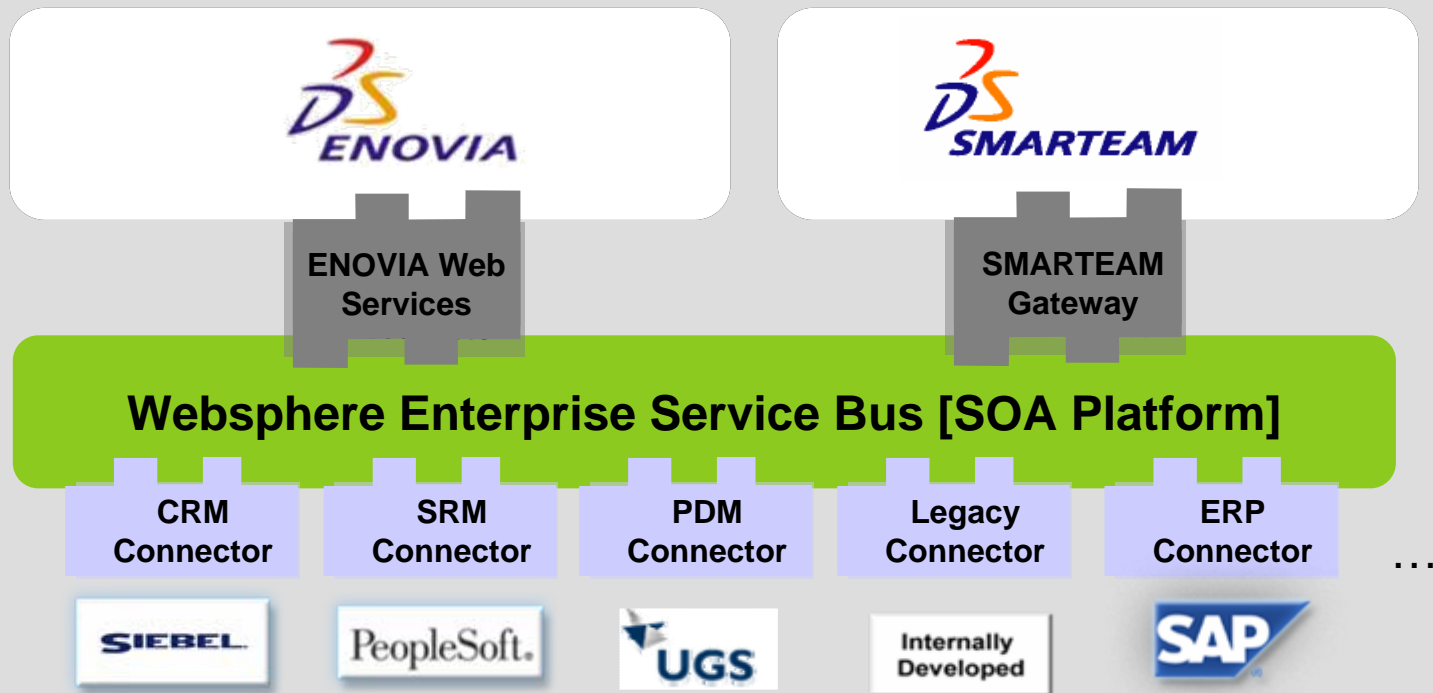
Assembling and constructing the service components to support the optimized processes

Deploying the optimized processes into your operating environment

Modeling and analyzing end-to-end business processes



The Approach: PLM Integration Across Enterprise Service Bus



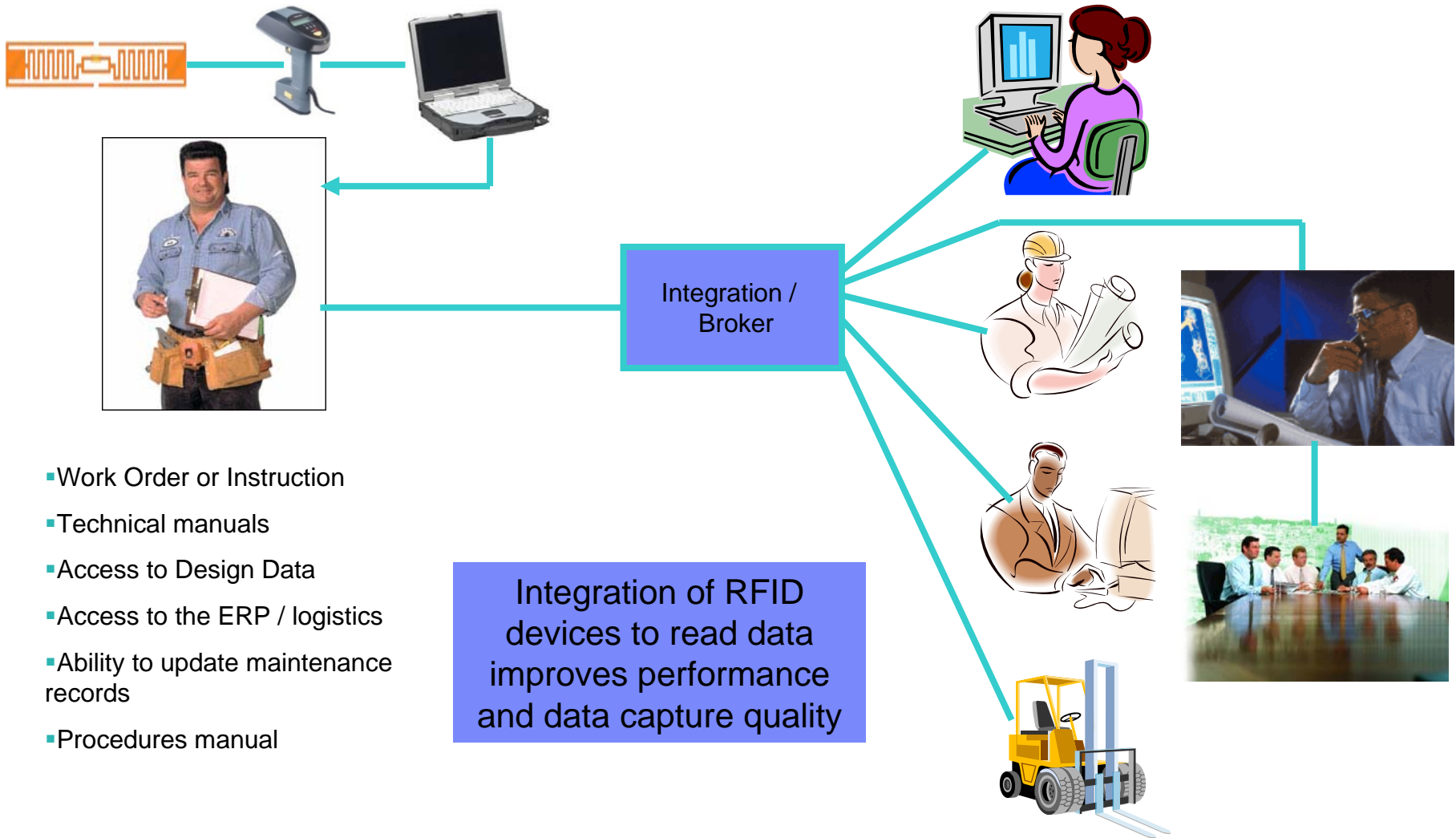
IBM PLM Enterprise Integration Examples

➤ IBM WorkPlace and Portal

- Applications built on a Services Oriented Architecture
- Normal office applications like eMail, calendar functions etc
- Instant messaging
- Persistent and managed collaboration
 - Shared documents, folders, actions
 - Managed mark-up or drawings etc.
- Build on open standards
 - Easy to build 'custom environments'
- Integration with enterprise applications
 - ERP, PDM etc..

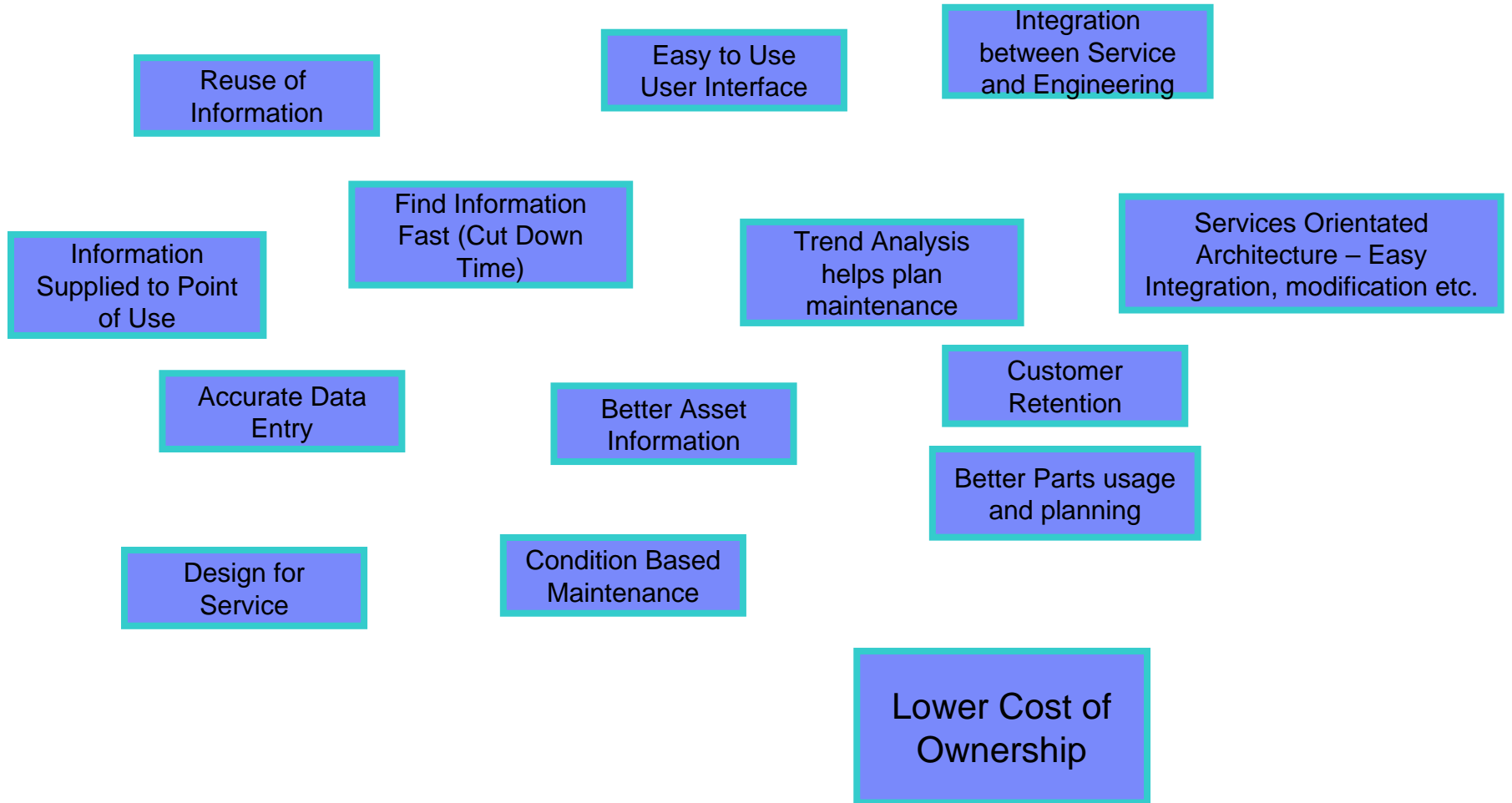
Workplace Demo

Introduction to the Lifecycle Management Scenario



- Work Order or Instruction
- Technical manuals
- Access to Design Data
- Access to the ERP / logistics
- Ability to update maintenance records
- Procedures manual

Business Values



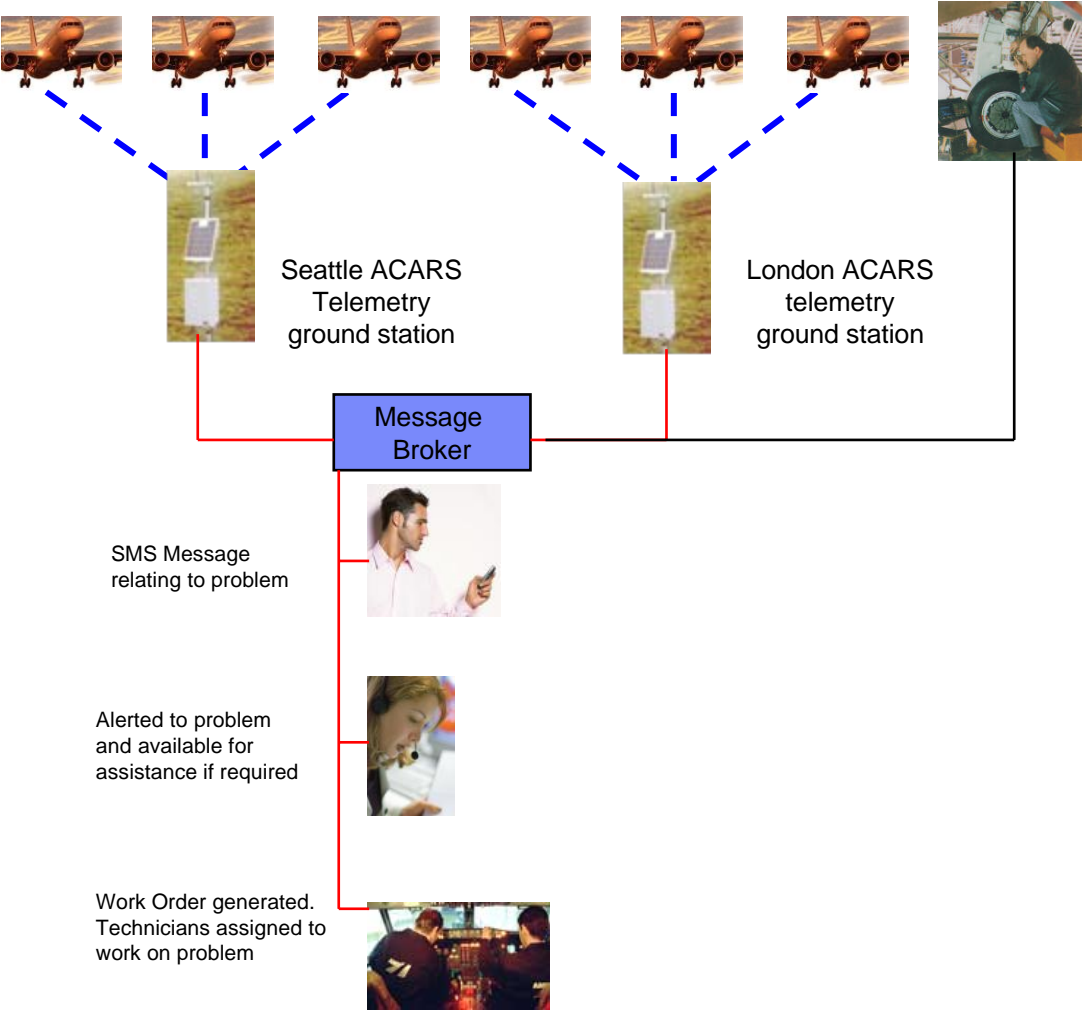
Demonstration

- Complex end-to-end process
- Many actors in the scenario
- Demonstration is divided into multiple parts
- I will do one part at a time and explain what is happening before, and after each part.
- The current process is depicted using red lines between process nodes.

Actors

		<p>Aircraft communicates with ground using telemetry. Information brokered and sent to correct subscribing support staff</p> <p>Inspector communicates with support staff - information brokered and sent to support</p>
		<p>Management receive urgent alerts over Short Message Service (SMS) message.</p> <p>Manager does not have to look for information - it is pushed to him as required.</p>
		<p>Rapid Response Centre receive information and review.</p> <p>All alert information may be reviewed, along with all engineering and maintenance information.</p>
		<p>Engineers assigned to job depending on location and urgency</p> <p>Engineer uses PDAs and toughened PCs to access and update maintenance information</p>
		<p>Inventory control person issues new stock and handles all returned parts</p> <p>RFID scanners, integrated with enterprise systems allow access to part information and relevant processes for part handling.</p>
		<p>Engineer supports engineering changes that result from warranty issues.</p> <p>Warranty and other alerts are automatically transmitted to engineering systems where engineers take necessary action</p>

Stage - part 1



In the first part of the scenario, one of the aircrafts flying over London develops a fault in an electrical control system.

An ACARS message is transmitted to the ground.

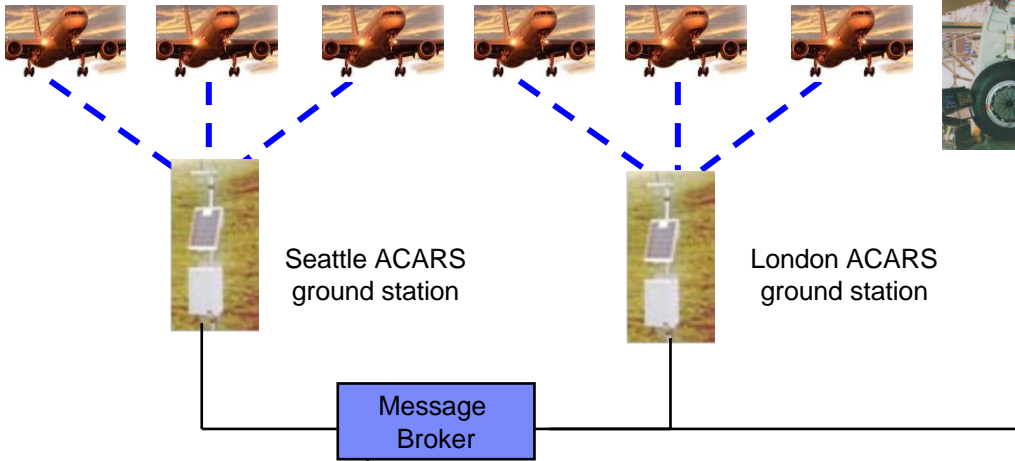
The location of the aircraft is transmitted as part of the message, along with the next port of call.

The message is routed as an SMS message to the maintenance manager of the airport where the plane is due to land

The message is also routed to the call centre.

A Work Order is automatically generated and routed to mechanics located at the landing site.

Stage - part 2



In this part of the scenario, the technician reviews the work order.

He uses which ever device he has to hand (PDA, PC)

He commits to start work (this starts the recording system)

He locates and orders replacement parts

Note : Multiple systems accessed (e.g. ERP, PDM) but technician is not aware of these systems – he just needs and is supplied information

SMS Message relating to problem



Alerted to problem and available for assistance if required



Work Order generated. Technicians assigned to work on problem



Review Work Order

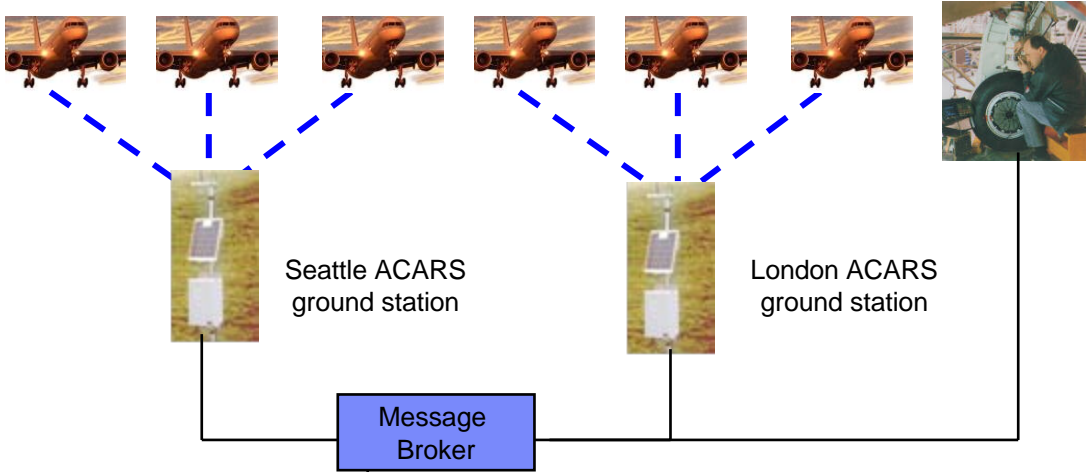


Commit to Start Work

Locate Replacement Parts

Order Parts

Stage - part 3



In this part of the scenario, the technician removes the faulty part from the aircraft.

He updates the as-maintained configuration of the aircraft, at the point of work

He installed the new part and again, updates the as-maintained configuration at the point of work

He completes the work order – this stops the clock

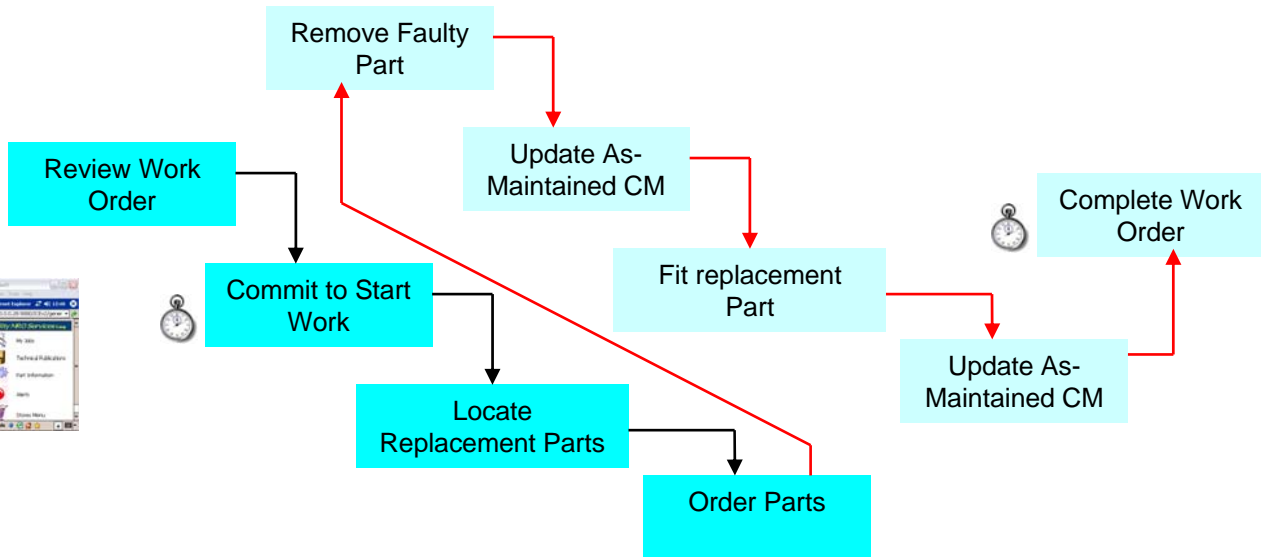
SMS Message relating to problem



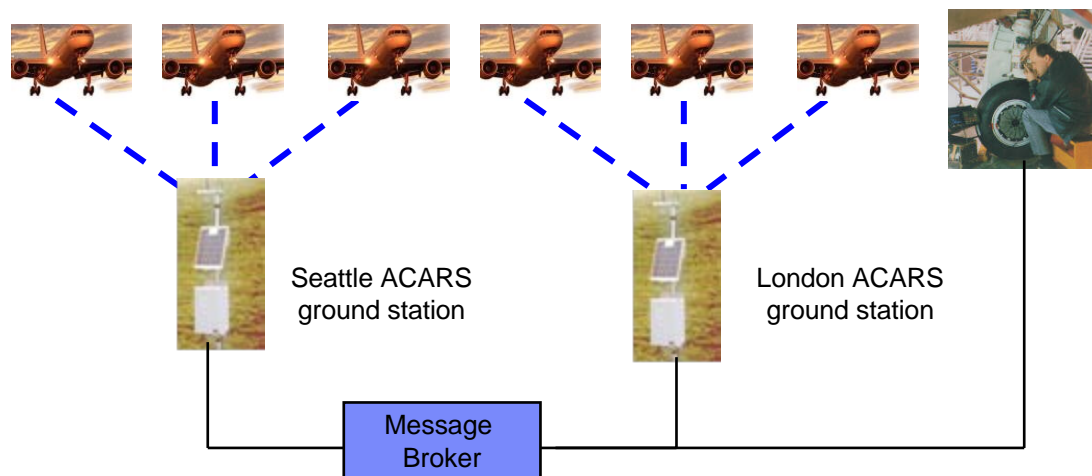
Alerted to problem and available for assistance if required



Work Order generated. Technicians assigned to work on problem



Stage - part 4



In this part of the scenario, the technician needs to collaborate with the rapid response centre.

The connect a wireless linked rugged PC and camera to the network and collaborate using video conferencing technology.

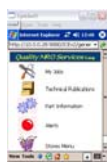
SMS Message relating to problem



Alerted to problem and available for assistance if required



Work Order generated. Technicians assigned to work on problem



Review Work Order



Commit to Start Work

Remove Faulty Part

Update As-Maintained CM

Fit replacement Part

Locate Replacement Parts

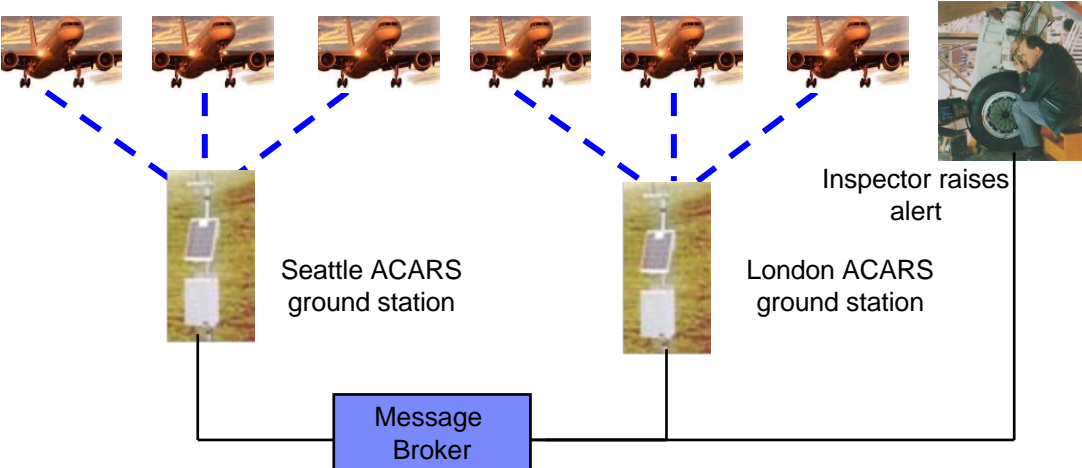
Order Parts

Update As-Maintained CM



Complete Work Order

Stage - part 5



In this part of the scenario the Store Person receives the faulty part

He checks the status of the part – it is for disposal

He attempts to scrap the part and is informed that it contains hazardous components and is advised on how to continue

Engineering are informed of a potential warranty issue and take action

SMS Message relating to problem

Alerted to problem and available for assistance if required

Work Order generated. Technicians assigned to work on problem



Review Work Order



Commit to Start Work

Remove Faulty Part

Update As-Maintained CM



Fit replacement Part

Locate Replacement Parts

Order Parts

Update As-Maintained CM



Complete Work Order

