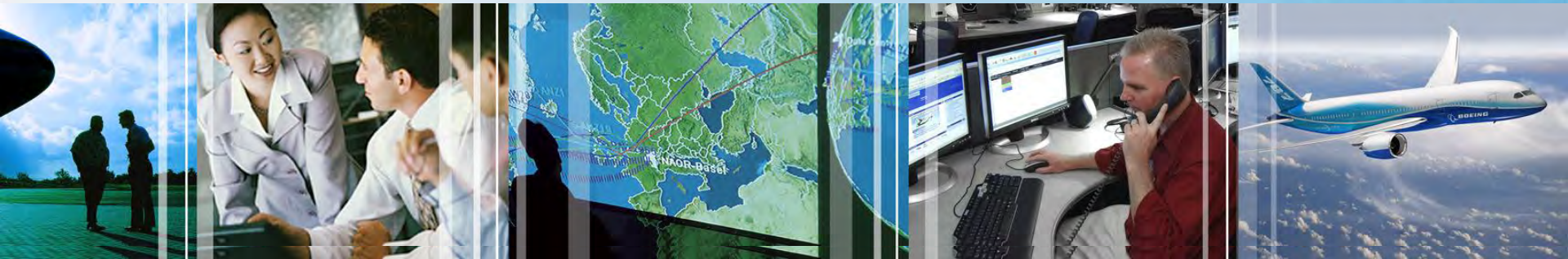




CUSTOMER SUPPORT

Service Bulletins and S1000D



LIFECYCLE
SOLUTIONS

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Customer Support Engineer
June 7, 2011

Service Bulletins and S1000D

Today we will be exploring:

- **What is a Service Bulletin?**
- **A Notional SB Lifecycle**
- **Process Improvement Opportunities**
 - **In S1000D XML Over Paper/ PDF**
 - **In S1000D Issue 3.0**
 - **In S1000D Issue 4.0**
 - **In S1000D Issue 4.1**
- **Summary**
- **Questions?**

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What is a Service Bulletin?

Why would a manufacturer release a service bulletin?

- to communicate with its customers about potential problems with delivered products
- to reduce the risk of injuries to people operating, maintaining or riding on the product
- to improve operation or the reliability of the product
- to mitigate product liability exposure
- to comply with contractual obligations
- to comply with regulatory action
- to comply with the law

What is a Service Bulletin?

- **A service bulletin is not for describing changes to:**
 - normal or planned maintenance procedures
 - routine inspections
 - standard repairs

- **A service bulletin can be a disruption to normal business ... something that was not in the business plan.**

So, we want to make processing service bulletins as efficient as possible, to reduce their impacts on the bottom line.

What is a Service Bulletin?

What does a service bulletin contain?

- **A description of the problem, e.g.:**

Three model SOTD Bicycles have had their front brakes fail during normal operations. Our investigation showed that aluminum that did not meet specification was used for some brake mounting post assemblies delivered with bicycles manufactured from February through April 2010.

- **An applicability, e.g.:**

Model SOTD bicycles serial numbers SO1257 through SO1393.

- **Industry support information, e.g.:**

One replacement brake mounting post assembly is available free of charge for each one that was delivered with an applicable bicycle.

- **Material information, e.g.:**

*SO965-8 brake mounting post assembly, quantity 1
BACB1234-5 bolt, quantity 2*

- **Step by step instructions and illustrations**

What is a Service Bulletin?

How should an operator react to a service bulletin?

- **Decide whether it is relevant to your fleet, e.g.:**

You run a bicycle messenger service with a fleet of 75 bicycles, including some model SOTDs. You check your purchase records and determine that up to 25 of your fleet could be affected.

- **Decide whether to it is worth embodying the service bulletin in your fleet, e.g.:**

If an affected bike were to fail, one of your messengers could be injured which would expose you to workplace injury claims, increased medical insurance premiums and legal liability. The estimated cost to incorporate is small compared to the liability.

What is a Service Bulletin?

Reacting to a service bulletin, continued.

- **Determine availability and schedule a retrofit program, e.g.:**
 - *Inspect the model SODT bicycles to determine which ones have affected serial numbers*
 - *18 bikes.*
 - *Determine when you can afford to have those bikes out of the active workforce*
 - *a maximum of 3 bikes can be retrofitted per day without disrupting the business.*
 - *Determine when you can have the required parts and tools on hand*
 - *tools are already available and the part will arrive in 4 days.*
 - *Determine the availability and capacity of your maintenance crew*
 - *the crew can complete 4 bikes per day*

Starting in 5 days your crew will retrofit 3 bikes per day for 6 days.

What is a Service Bulletin?

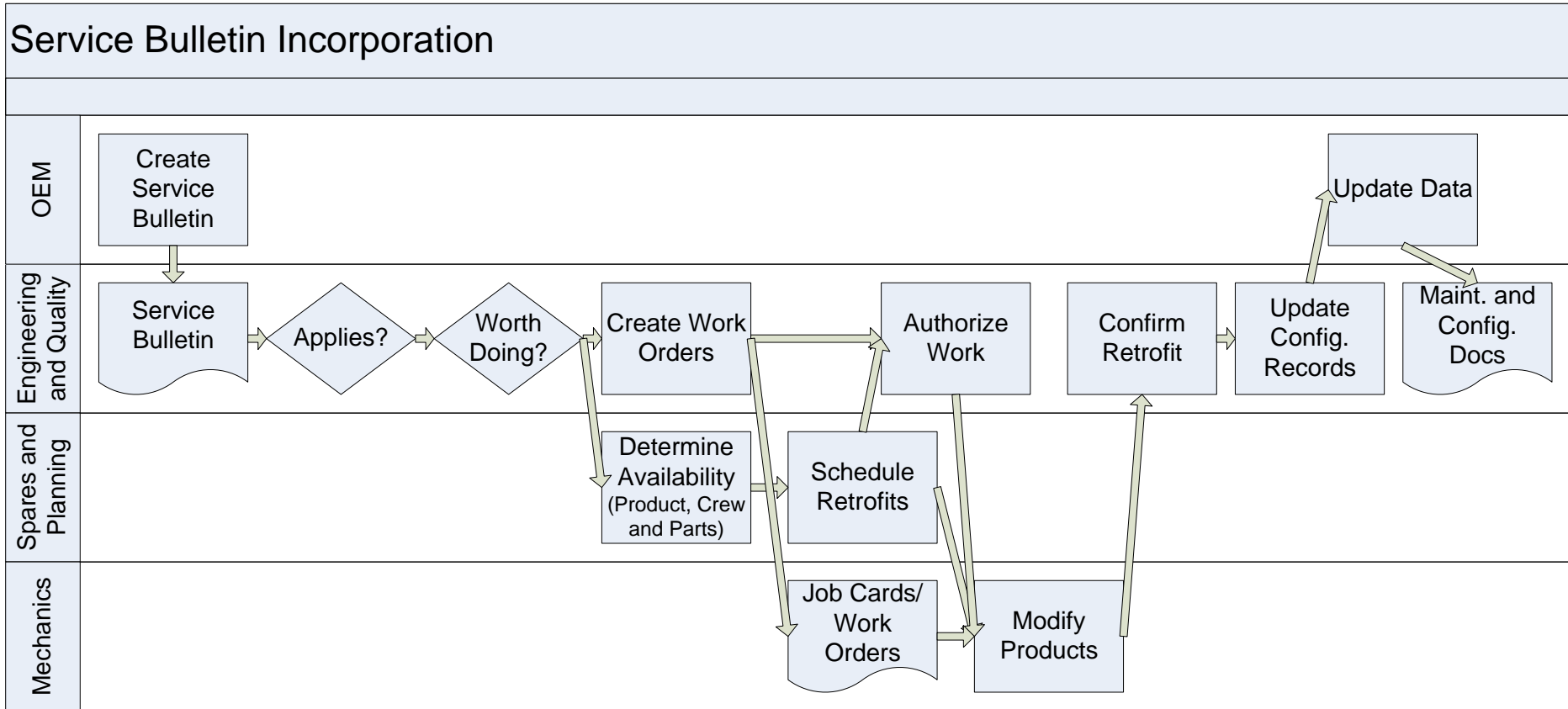
Reacting to a service bulletin, continued.

- **Communicate the job to your crew, e.g.:**
 - Copy the step by step instructions from the service bulletin to job cards in the format with which your crew is familiar.*
- **Perform the retrofit work**
- **Do quality assurance and paperwork updates, e.g.:**
 - *Inspect the bikes to confirm they were properly modified.*
 - *Update your records to indicate which bikes have received the retrofit.*

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A Notional SB Lifecycle

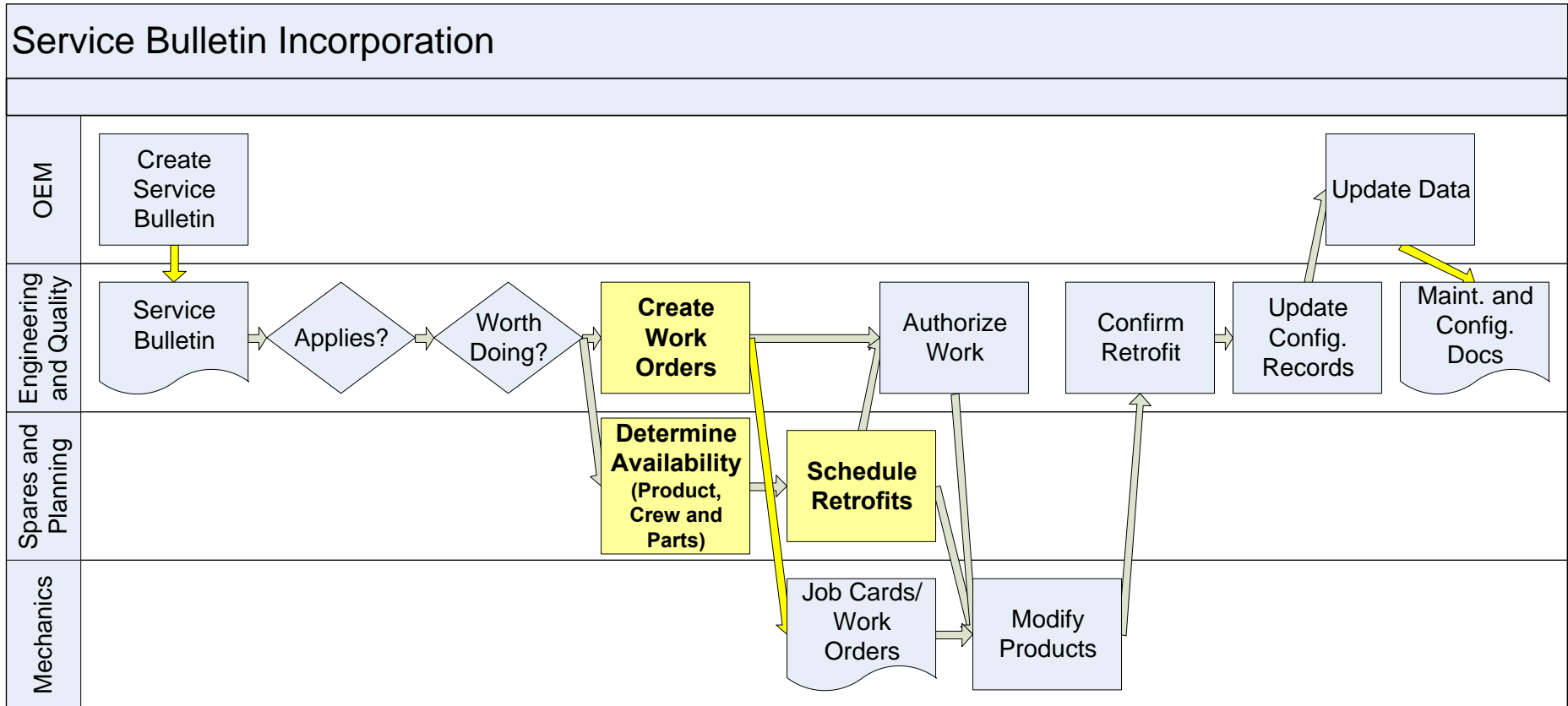


Service Bulletins and S1000D

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SB Process Improvements

Paper/PDF to S1000D XML



SB Process Improvements

Paper/PDF to S1000D XML

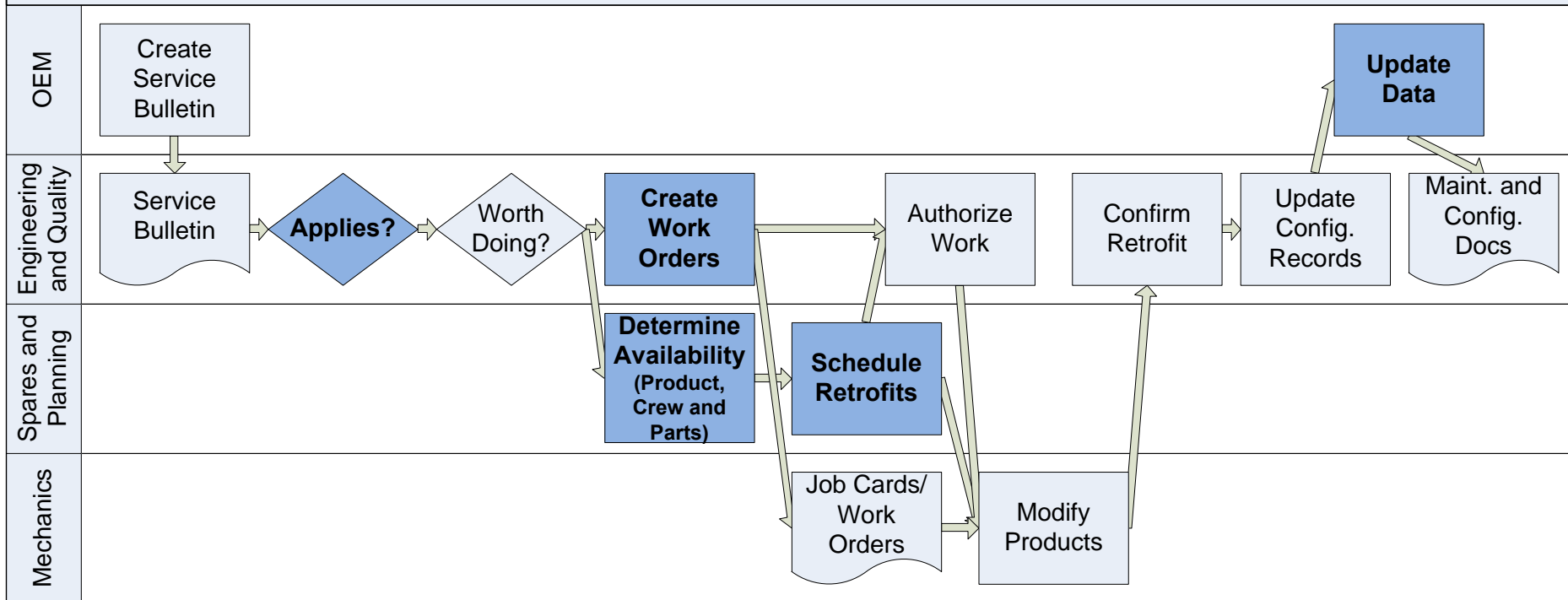
- **Delivery of data from OEM eased**
 - **Electronic delivery**
 - **File naming conventions and metadata to help find the right SBs**
- **Work Orders/ Job Cards can be extracted automatically**
 - **Reduces data entry errors**
 - **Reduces level of effort required**
- **Linked data reduces time to retrieve referenced material**
- **Preliminary requirements in procedural data modules can ease the scheduling process, because it marks up**
 - **Required persons**
 - **Support equipment**
 - **Supplies**
 - **Spares**

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SB Process Improvements in S1000D Issue 3.0

Service Bulletin Incorporation



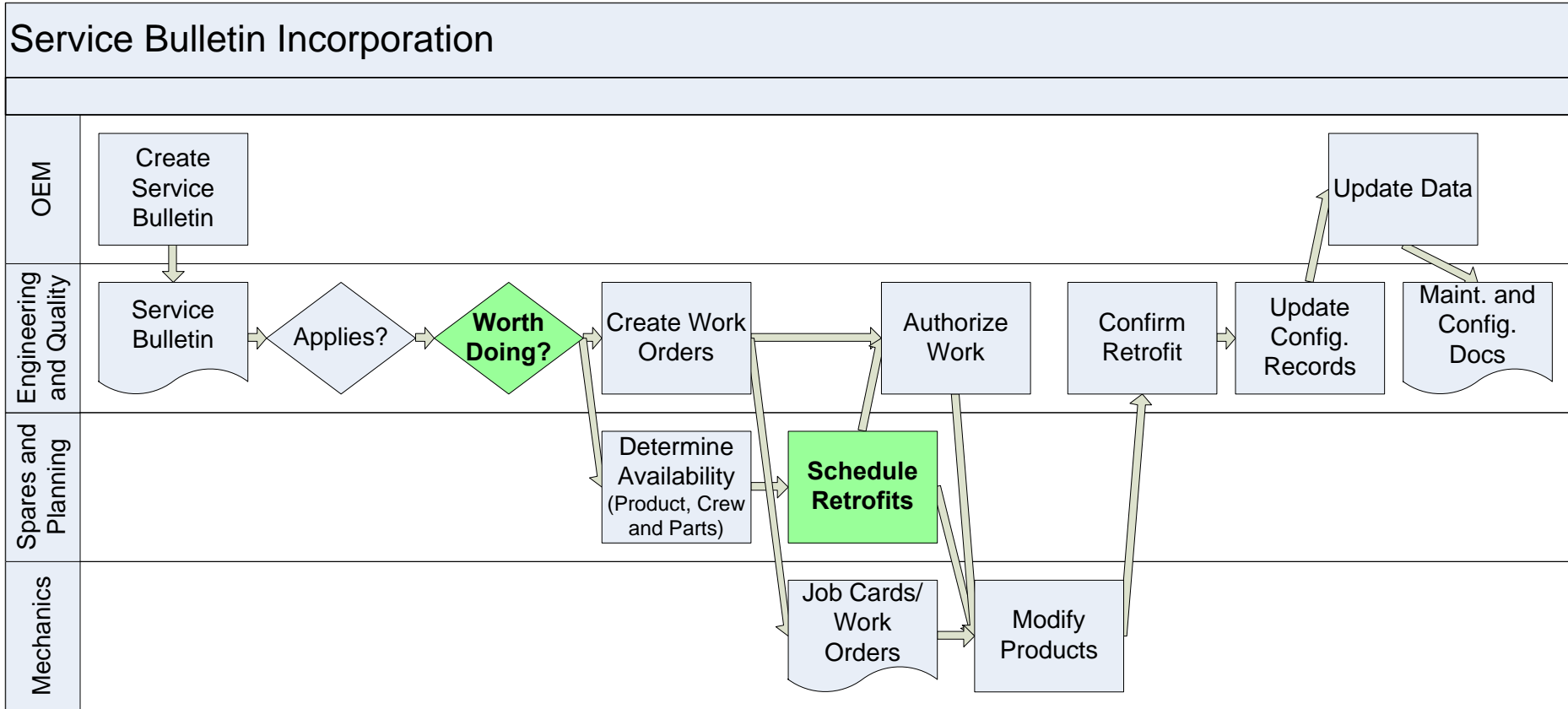
■ **Applicability**

- **Allows for quick determination of whether the retrofit is applicable to your fleet**
- **Eases generation of work orders tailored to particular product instances**
- **Allows for automation to help in determining when product instances will be available for down-time**
 - **eases the scheduling of retrofits to a fleet**
- **Eases updates to maintenance and configuration data (pre-vs. post SB inline applicability)**
- **Product cross-reference table and Technical conditions cross-reference table**
 - **allows for integration to ease applicability determination**
 - **allows for integration to ease updates to configuration records and maintenance documentation**

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SB Process Improvements in S1000D Issue 4.0



SB Process Improvements in S1000D Issue 4.0

- **Introduction of the element `<productSafety>` and attribute `safetyLabel`**
 - **Makes it easier for operators to determine whether the service bulletin mitigates a safety issue**
 - safety of passengers
 - safety of operators
 - safety of maintenance personnel
 - **Informs the decision of whether or not to incorporate the change**
 - **Informs the decision of when to schedule the retrofit program for your fleet**
 - **Supports a particular need for the Commercial Aviation industry**

Example markup:

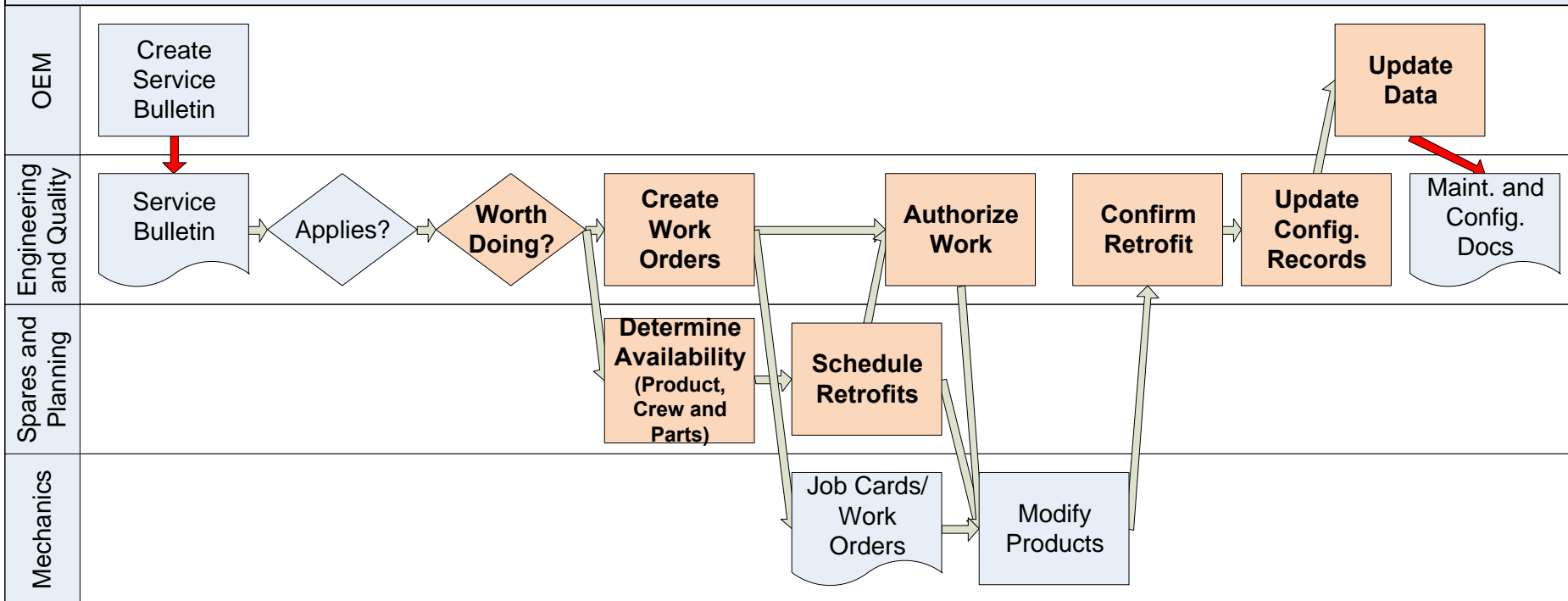
```
<productSafety safetyLabel="Alert">THIS SERVICE BULLETIN  
DATASET HAS BEEN DELIVERED TO THE OPERATORS OF RECORD OF  
THE AFFECTED AIRPLANES. IF AN AFFECTED AIRPLANE HAS BEEN  
LEASED OR SOLD, SEND THE SERVICE BULLETIN TO THE NEW  
OPERATOR.  
</productSafety>
```

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SB Process Improvements in S1000D Issue 4.1

Service Bulletin Incorporation



SB Process Improvements in S1000D Issue 4.1

SB Management information, which contains metadata about the service bulletin:

- **enhances searching (finding the right SBs)**
 - **type of task (modification, inspection, etc.)**
 - **Alert service bulletins**
 - **compliance category and accomplishment limits**
- **easier to determine whether or not to do the retrofit**
- **support for the scheduling process**
 - **compliance information is highlighted**
 - **estimated completion time is tagged**
 - **list of concurrent service bulletins**
- **regulatory information is highlighted to support authorization and confirmation processes**

SB Process Improvements in S1000D Issue 4.1

- SB Management information is metadata about the service bulletin. Its element structure is illustrated below:

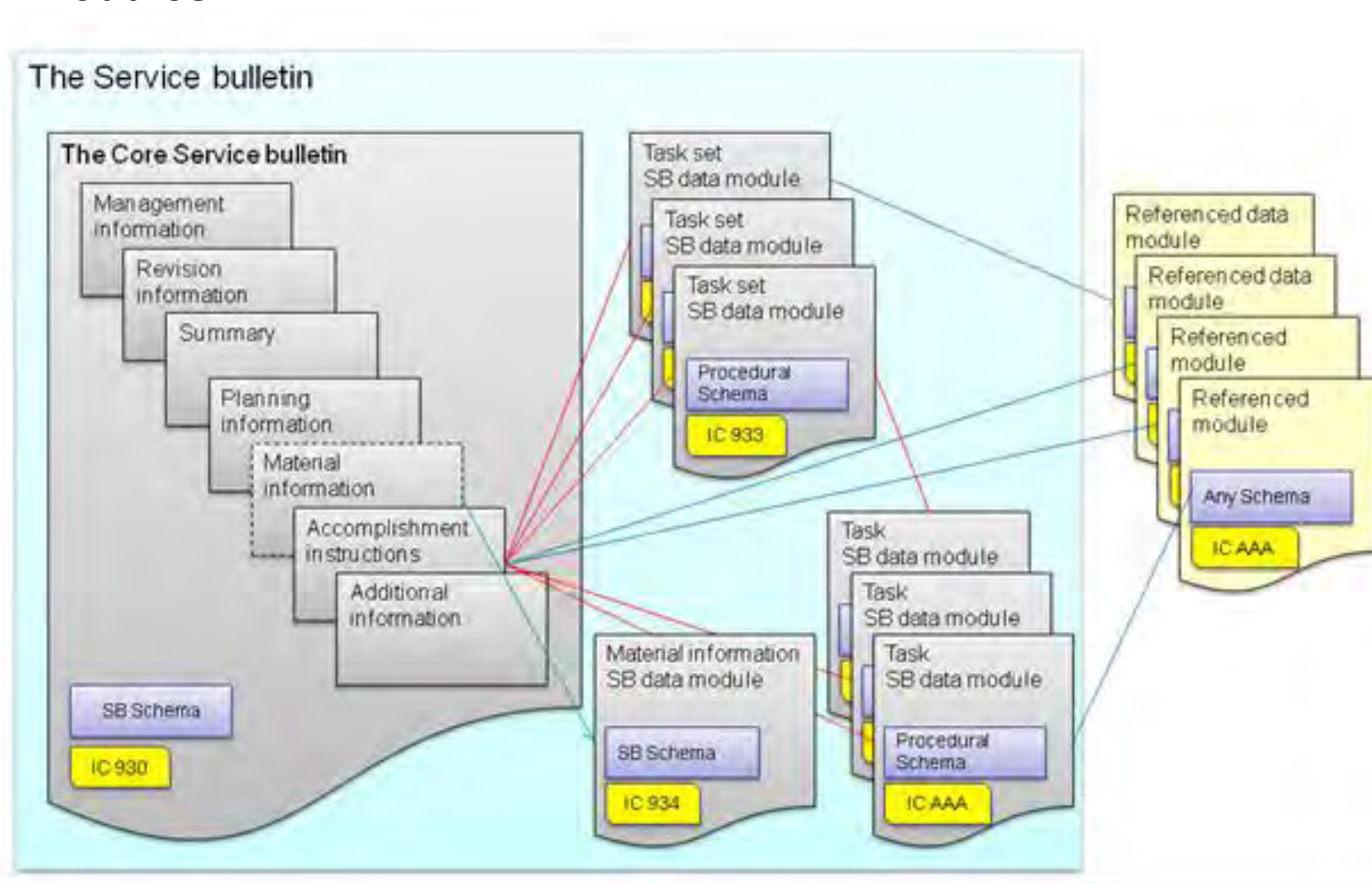


SB Process Improvements in S1000D Issue 4.1

- **Structured content of the core SB**
 - **Makes the boundaries of the delivered SB XML very clear**
 - **Makes determination of whether to do the retrofit program easier**
- **Definition of Task Sets for scalability of complex service bulletins**
 - **Supports work order creation and scheduling**
- **The work location can be more precisely identified, easing the scheduling process**

SB Process Improvements in S1000D Issue 4.1

- Illustration of a complex service bulletin delivered in several data modules:

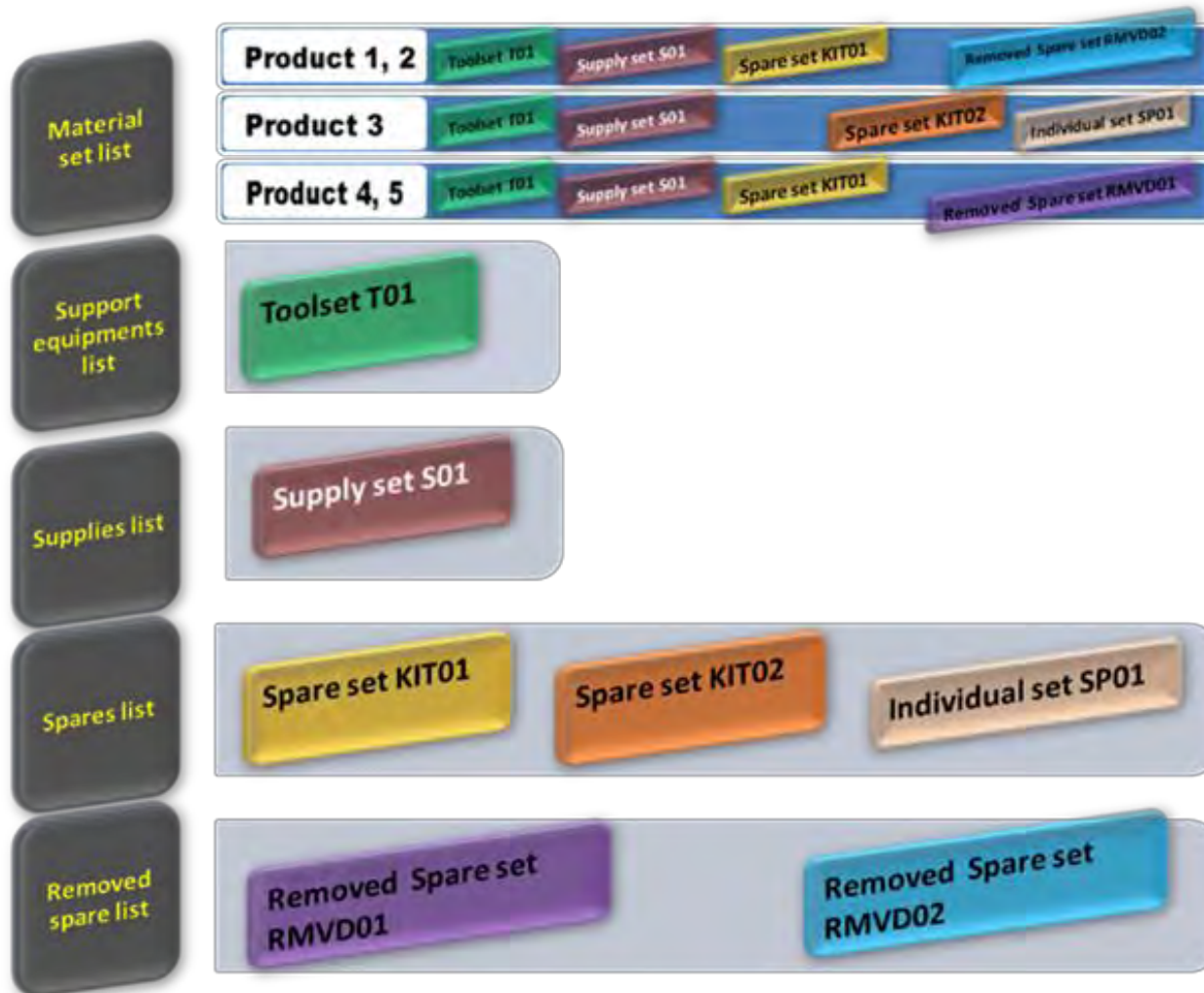


SB Process Improvements in S1000D Issue 4.1

- **SB Material information is semantically tagged information that allows for a high level of integration**
 - **improved access to spares systems**
 - **eased procurement process**
 - **including addition of the “kit” concept to facilitate part procurement**
 - **eased scheduling process**
 - **links to IPD**
- **Marking of removed parts in SB data**
 - **allows for improved communication of disposition**
 - **potential integration with spares system**

SB Process Improvements in S1000D Issue 4.1

■ Illustration of SB Material information:

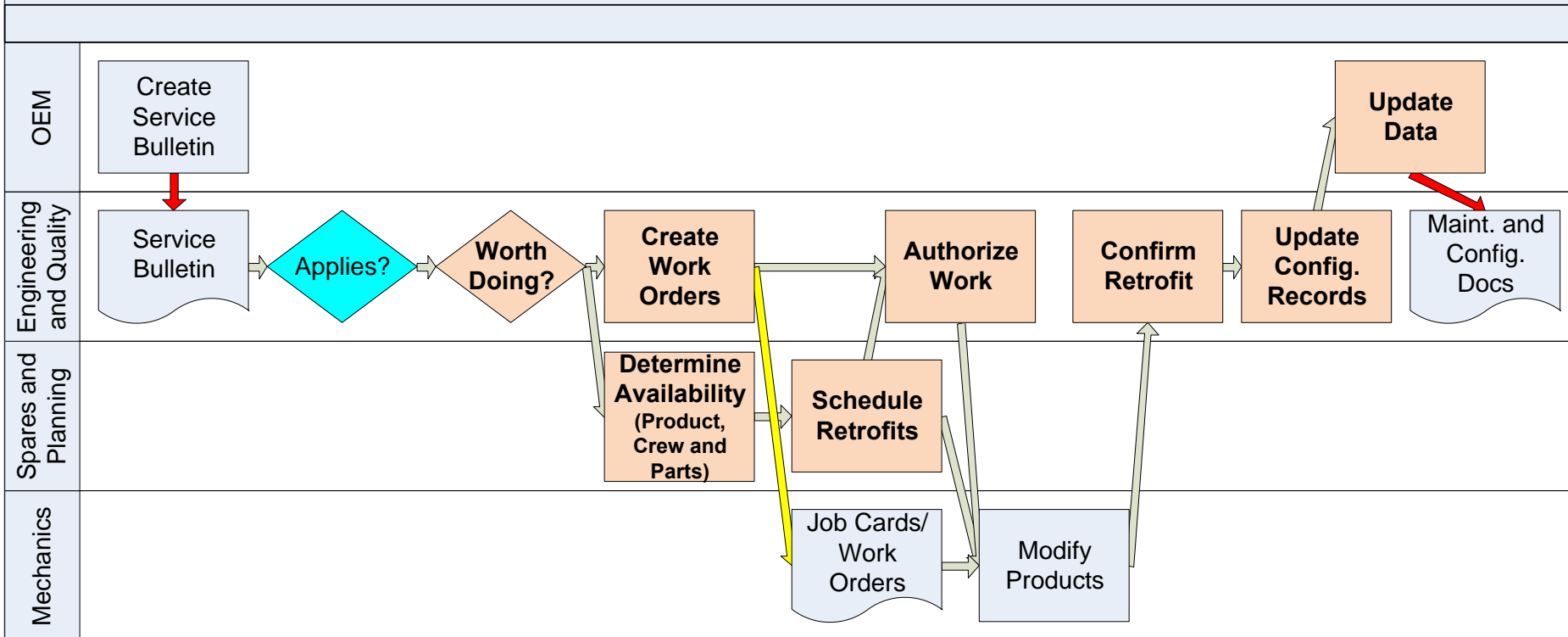


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SB Process Improvements in S1000D Over All

Service Bulletin Incorporation



SBs in S1000D - Summary

- **A manufacturer uses a service bulletin to communicate mitigations to known product problems such as safety issues.**
- **A service bulletin is generally unplanned work, and thus it is important to make processing them as efficient as possible.**
- **S1000D provides opportunities for improving the efficiency of most of the steps for incorporating service bulletins in a fleet:**
 - **SB delivery**
 - **Determining whether or not to perform the retrofit**
 - **Creating and delivering work orders**
 - **Determining availability and scheduling a retrofit program**
 - **Quality Assurance and record-keeping**
 - **Delivering updated maintenance and configuration data**

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