



# What ATA Spec 2400 brings you to perform Aircraft Configuration Validation

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**AIRBUS**

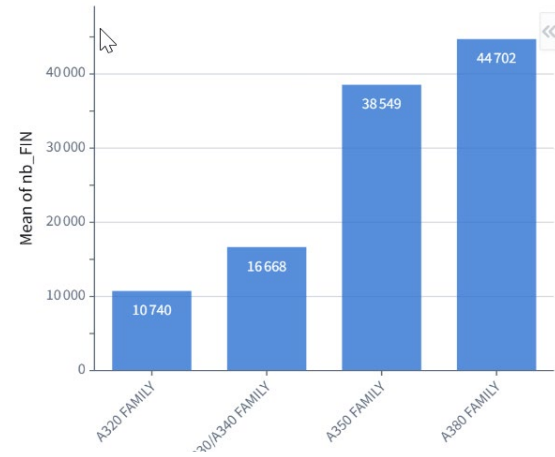
# Why this presentation?

Aircraft are more and more complex products

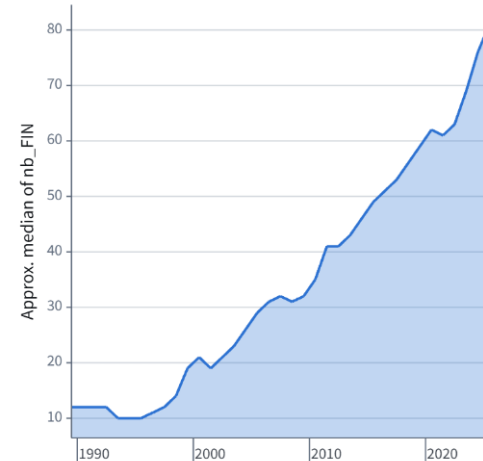
- More systems
- More software...

The complexity of configuration rises accordingly, making it increasingly difficult to follow and keep consistent

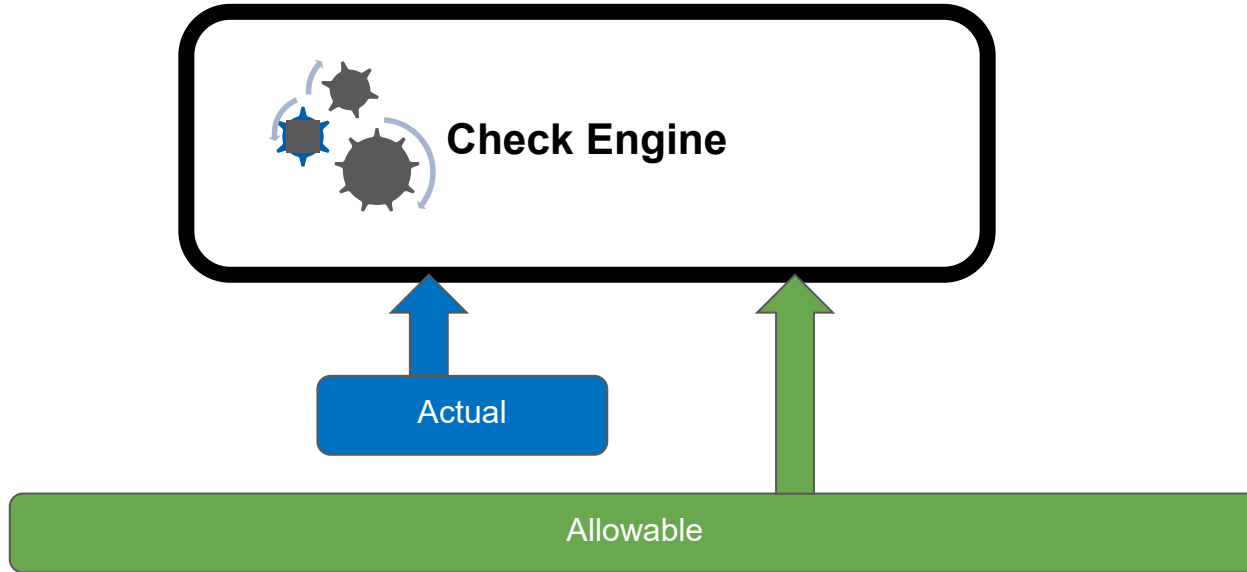
ATA Spec 2400 offers a data exchange standard to support automatic configuration validation



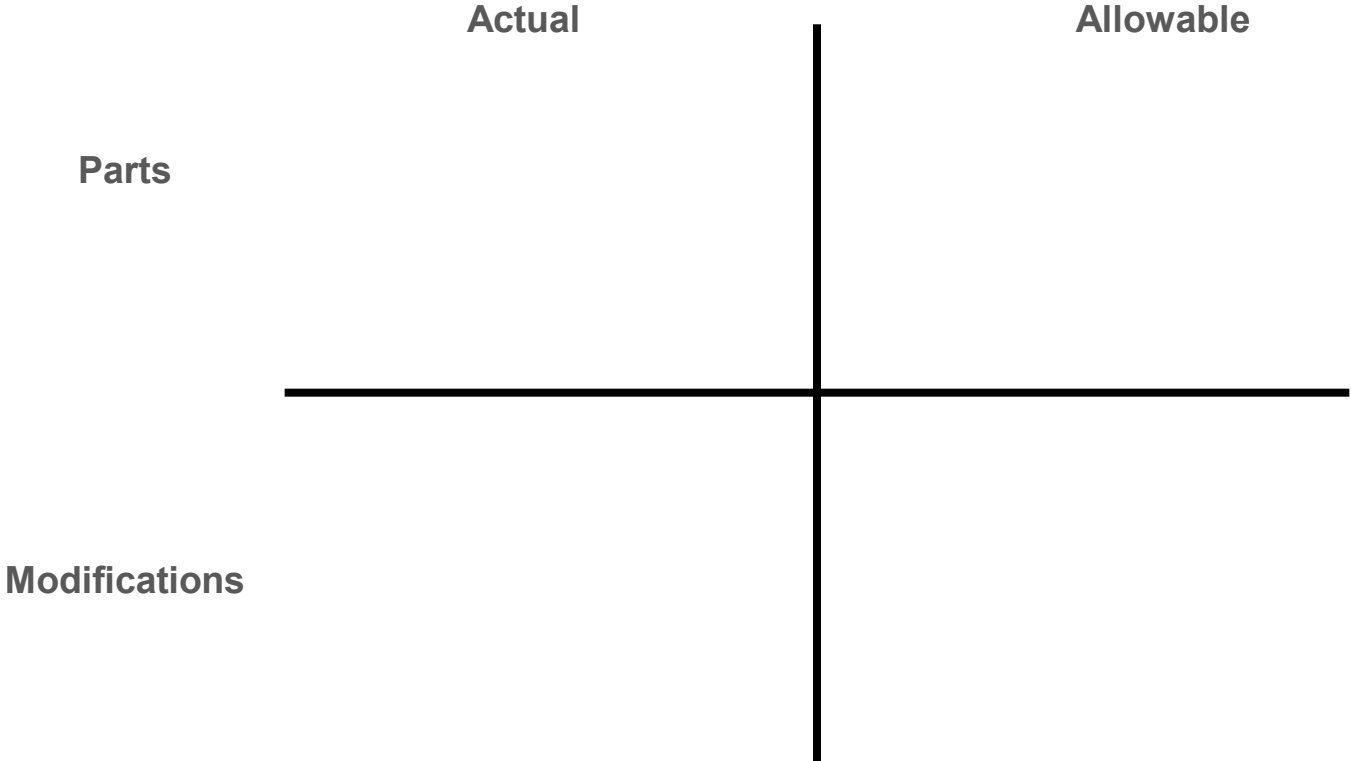
Evolution of SW FIN number on A320 family



# Configuration Check - The Basics



# Actual vs. Allowable, Configuration in Parts vs. in Modifications



# What is Configuration in Parts?

**Consider the aircraft as a set of parts installed in specific positions**

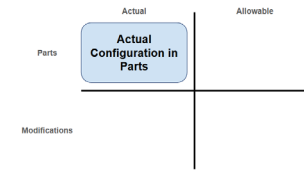
Seen in a logbook in a flight club:  
Pilot: "There is something loose in the cockpit"  
Mechanic: "There is something tightened in the cockpit"

## **Function-Position:**

A specific logical position on the next higher assembly into which one software or hardware part is, or may be, installed.

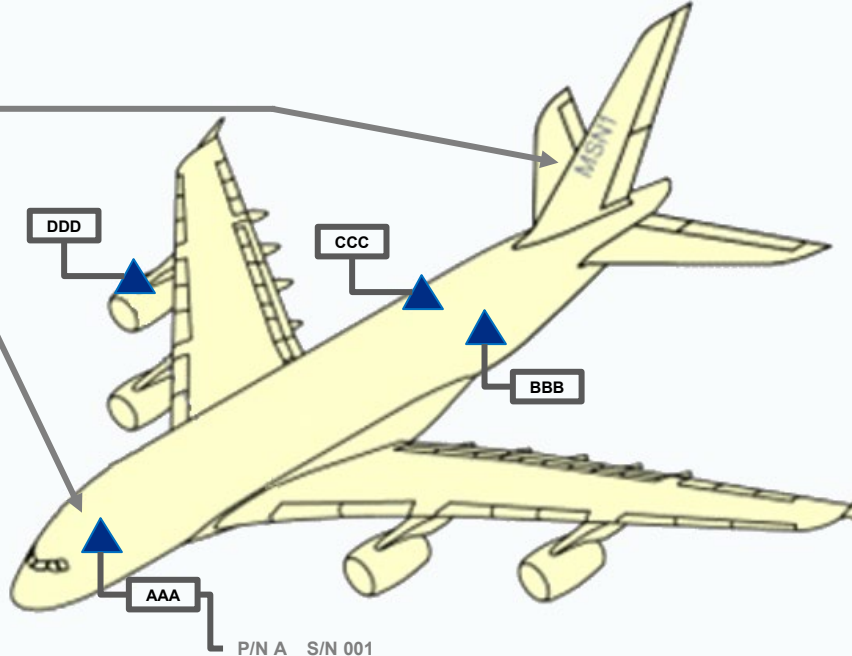
**Parts Numbers (P/N)**

**Serial Numbers (S/N)**



# Actual Configuration in Parts

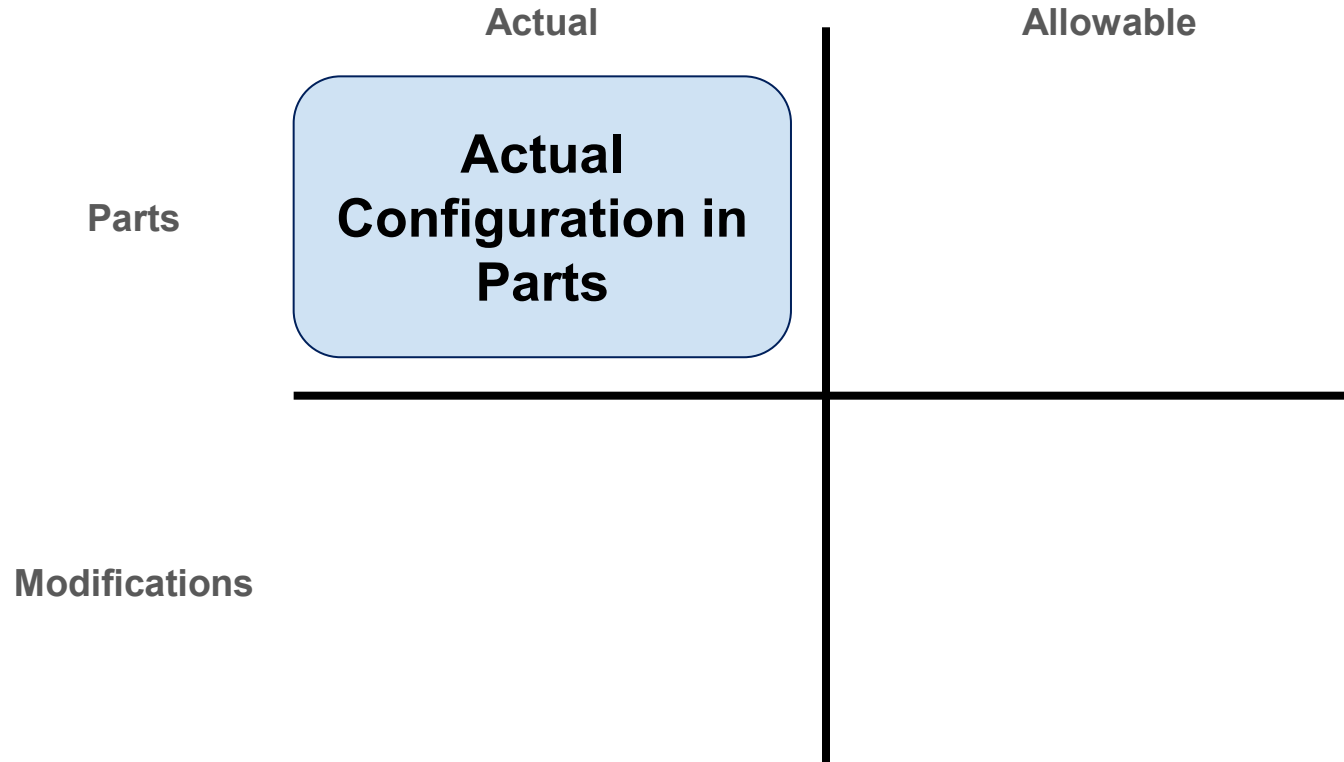
Which Part Instance is installed on a given aircraft at a given **Function Position** ?



Possible Source:

- Maintenance Information System
- ATA Spec 2500 InstalledPart record
- Aircraft Configuration Report

# Actual Configuration in Parts

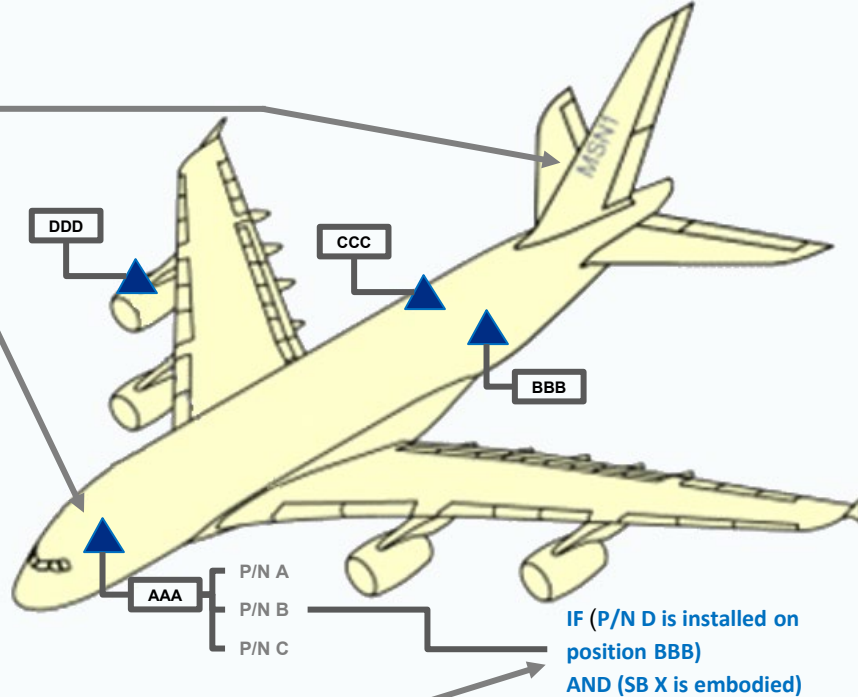


	Actual	Allowable
Parts		Allowed Configuration in Parts
Modifications		

# Allowable Configuration in Parts

Which Parts can be installed  
on a given **aircraft** at a given  
**Function Position ?**

And under which  
**conditions ?**



Possible Source:

- Airframe OEM
- Equipment OEM

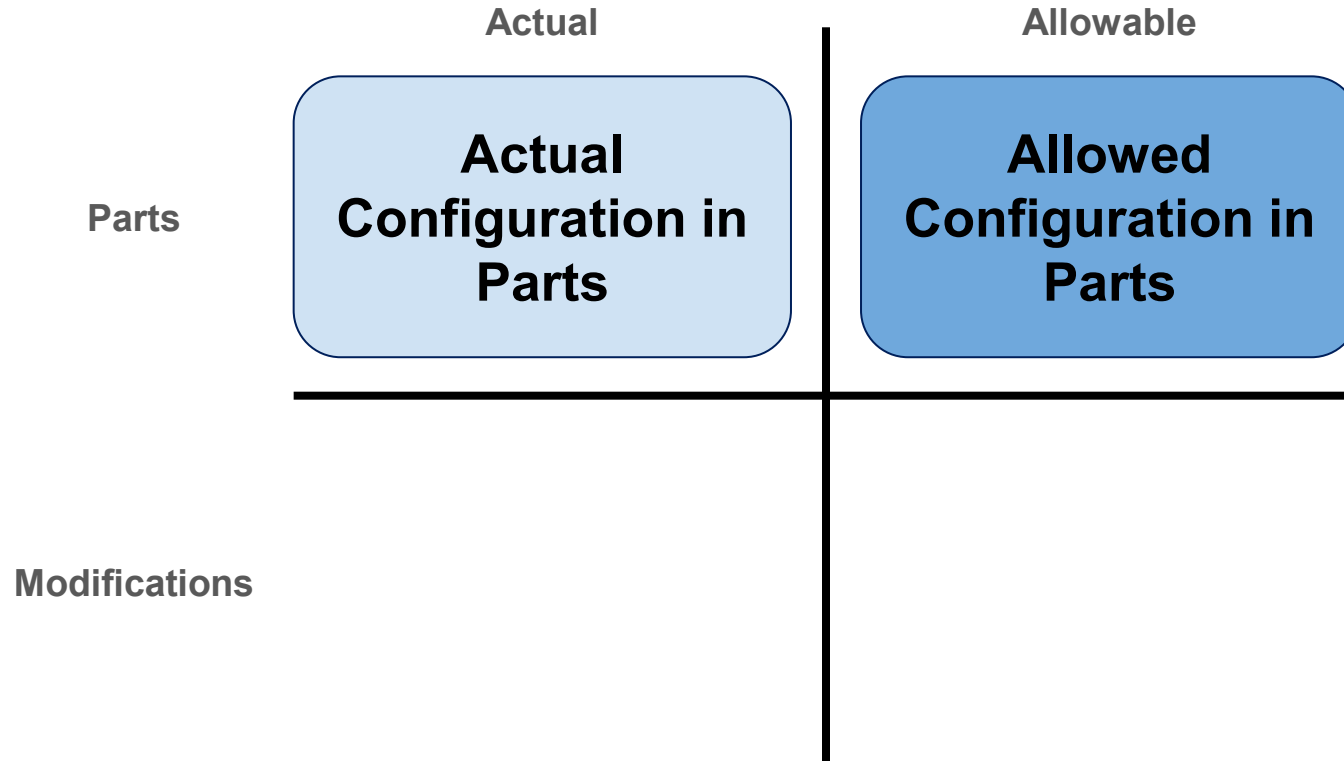
=> Socket mechanism to easily merge the information

Condition types can be:

- SB Embodiment
- Part installed on position
- Operational
- Textual



# Allowable Configuration in Parts

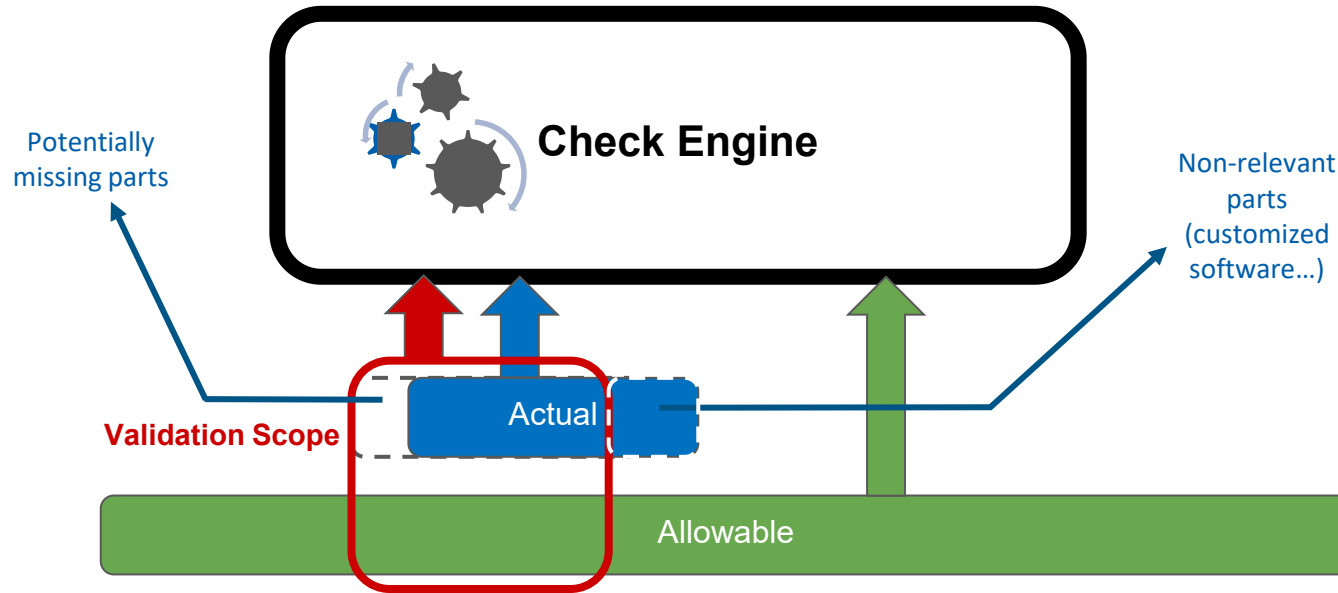


	Actual	Allowable
Parts	Actual Configuration in Parts	Allowed Configuration in Parts
Modifications		

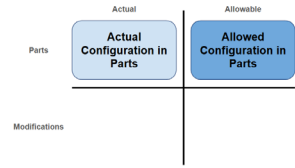
# Configuration Check in Parts - Scope

Actual volumetry: 500-3000 positions followed-up in MIS

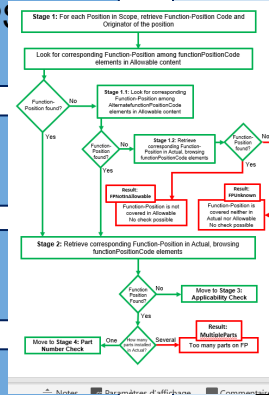
Allowable Volumetry: 100 000-150 000 positions in IPC



# Configuration Validation in Parts: short example



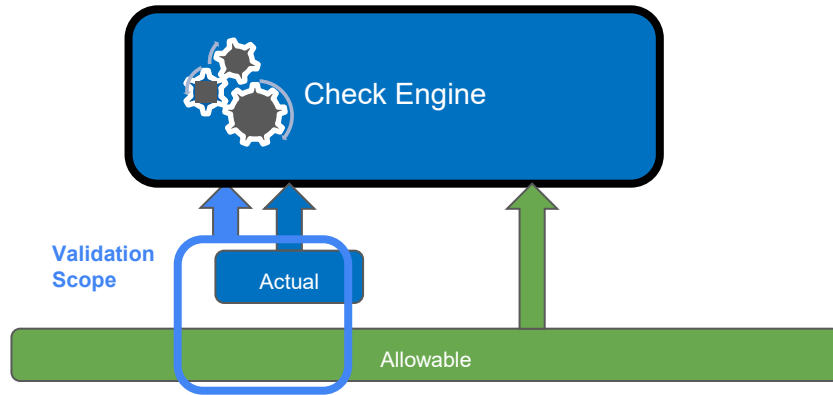
Position	Scope	Allowable	Actual	Result
AAA	X	P/N A P/N B if non-ETOP P/N C	P/N B	Manual Check Needed
BBB	X	P/N D P/N E	P/N D	Part Allowed
CCC	X	P/N F	P/N H	Part Not Allowed
DDD		P/N G	P/N Z	



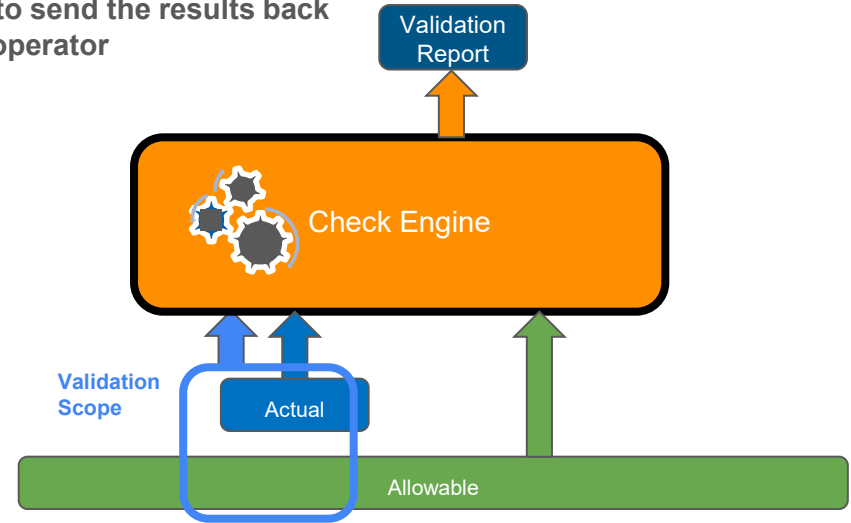
	Actual	Allowable
Parts	Actual Configuration in Parts	Allowed Configuration in Parts
Modifications		

# Configuration Check - Two Philosophies

Need for a standard validation report to send the results back to the operator



Checker Tool in Operator's IT system



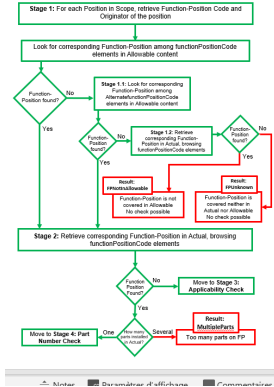
Checker Tool in Service Provider's IT system

# ATA Spec 2400 Coverage for Part

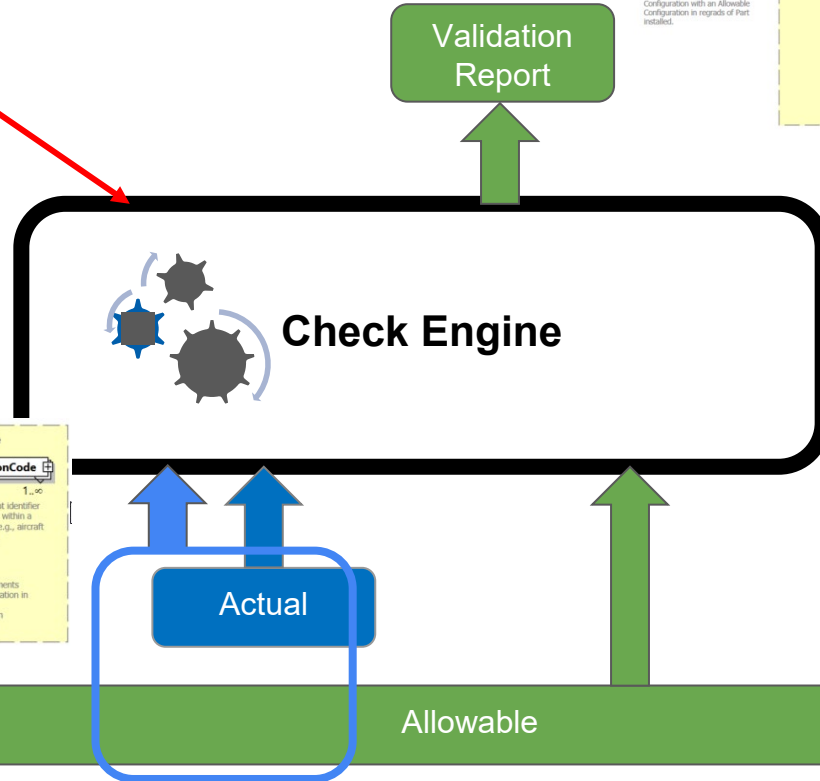
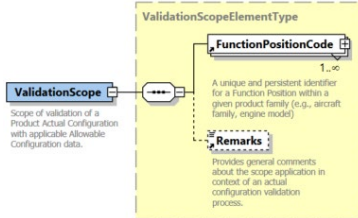
## Guidelines for Configuration Check :

- Validation Algorithm
- Mapping with Actual standards (Spec 2500, ARINC 843)

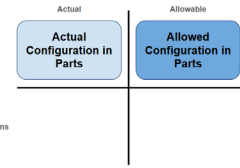
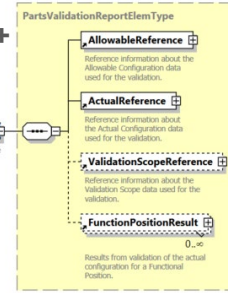
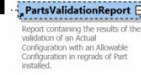
Rev. 2021, Upd. 2025



Rev. 2025

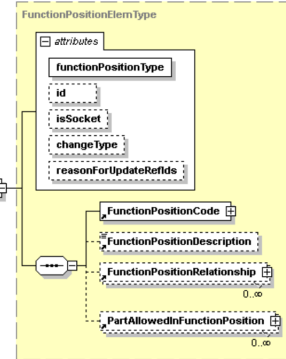


Rev. 2026+



Rev. 2018

Figure 57: FunctionPosition content model



# What is Configuration in Modifications?

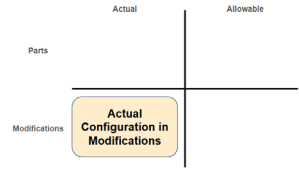
**Consider the aircraft as a stack of modifications**

**MOD**

**Service Bulletins under  
Type Certificate (SB)**

**Service Bulletins under  
Supplemental Type  
Certificate (STC)**

# Actual in Modifications



On a given **aircraft**,  
Which **Modification** is  
installed

Aircraft - MSN 2 – registration number XXX				
Modification number	Type	Description	Status	Accomplishment date
46-1011	SB	...	Embodied	10/12/2016
31-1057	SB	...	Embodied	01/08/2016
46-1027	SB	...	Scheduled	
ST324590	STC	...	Embodied	16/03/2014

Possible Source:

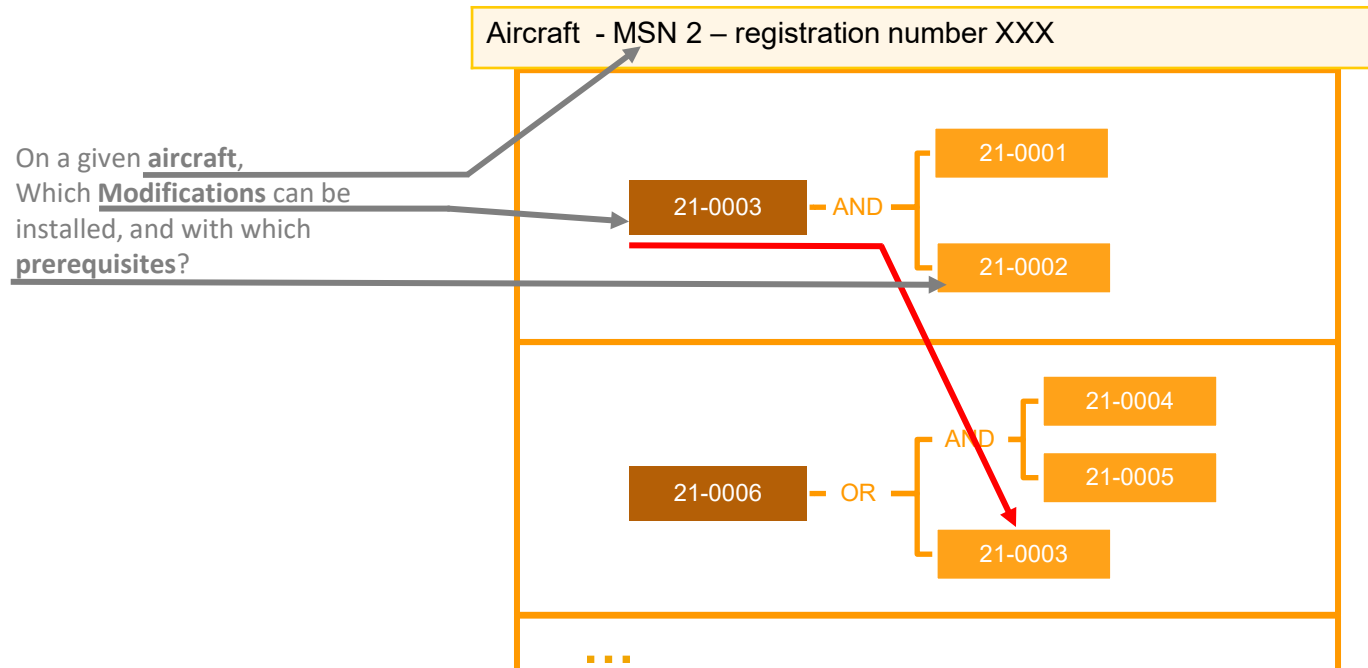
- Maintenance Information System
- ATA Spec 2500 SB/MOD/STC record

# Allowable Configuration in Modifications

	Actual	Allowable
Parts	<b>Actual Configuration in Parts</b>	<b>Allowed Configuration in Parts</b>
Modifications	<b>Actual Configuration in Modifications</b>	



# Allowable in Modifications

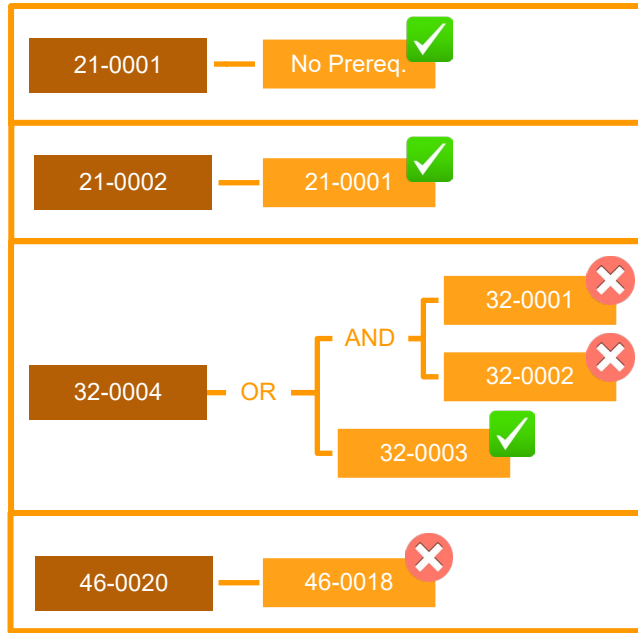


# Allowable Configuration in Modifications

	Actual	Allowable
Parts	<b>Actual Configuration in Parts</b>	<b>Allowed Configuration in Parts</b>
Modifications	<b>Actual Configuration in Modifications</b>	<b>Allowable Configuration in Modifications</b>

# Configuration Validation in Modifications: short example

## Allowable



## Actual

32-0003	Embodied
46-0018	Scheduled
21-0001	Embodied
21-0002	Embodied
32-0004	Embodied
46-0020	Embodied

...

...

**Mod. Allowed**

**Mod. Allowed**

**Mod. Allowed**

**Mod. Not Allowed**

## Result

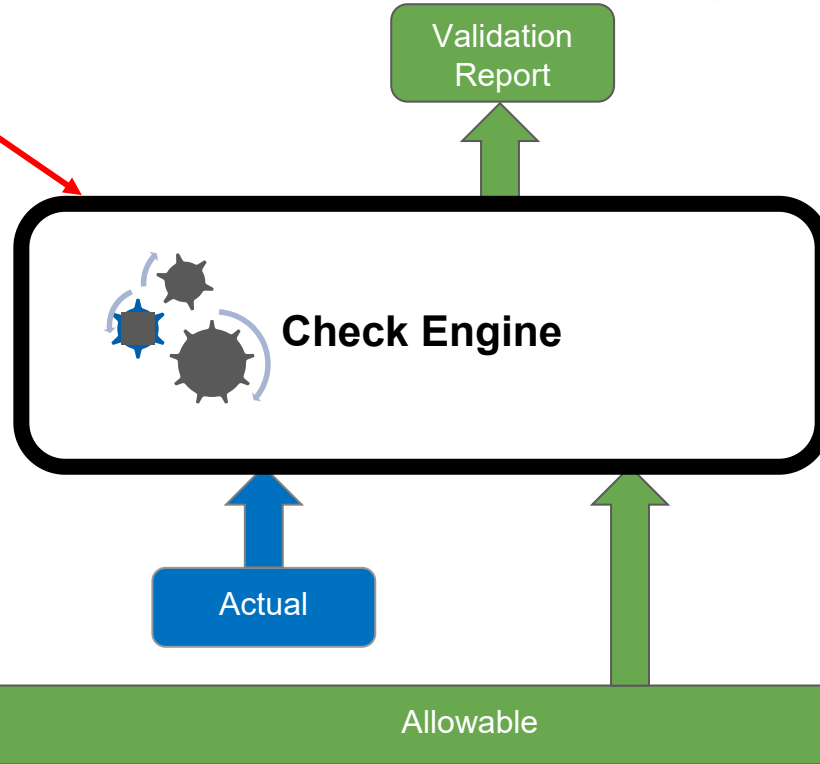
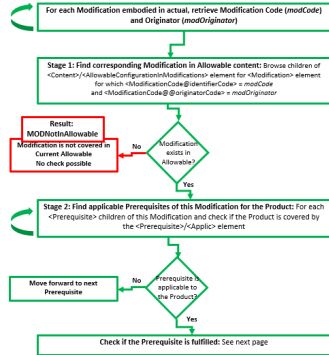
Parts	Actual	Allowable
	Actual Configuration in Modifications	Allowable Configuration in Modifications

# ATA Spec 2400 Coverage for Modif

## Guidelines for Configuration Check :

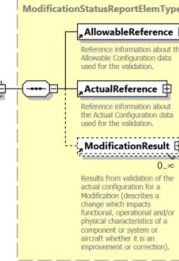
- Validation Algorithm
- Mapping with Actual standards (Spec 2500)

Rev. 2021,  
Upd. 2025



Rev. 2026+

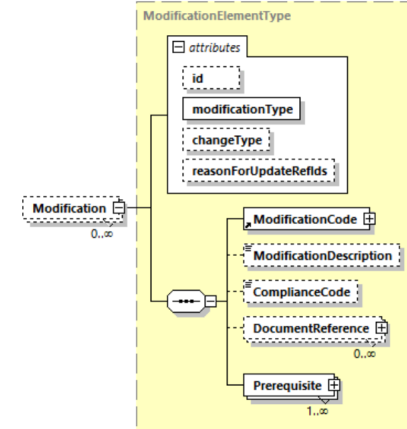
**ModificationStatusReport**  
Report containing the results of the validation of an Actual Configuration with an Allowable Configuration in regards of Modifications embodied.



Actual	Allowable
Actual Configuration in Modifications	Allowable Configuration in Modifications

Rev. 2021

Figure 79: Modification content model



# Relationship between Check in Parts and Check in Modifications

**Configuration in Parts is a consequence of Configuration in Modifications**

	Actual	Allowable
Parts	Actual Configuration in Parts	Allowed Configuration in Parts
Modifications	Actual Configuration in Modifications	Allowable Configuration in Modifications

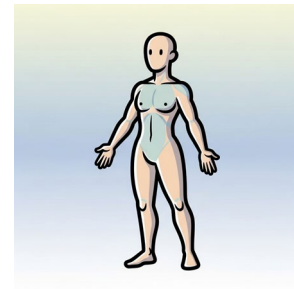
Actual Configuration  
in Modifications



Actual Configuration  
in Parts



**Must check both at  
the same time to  
ensure consistency**



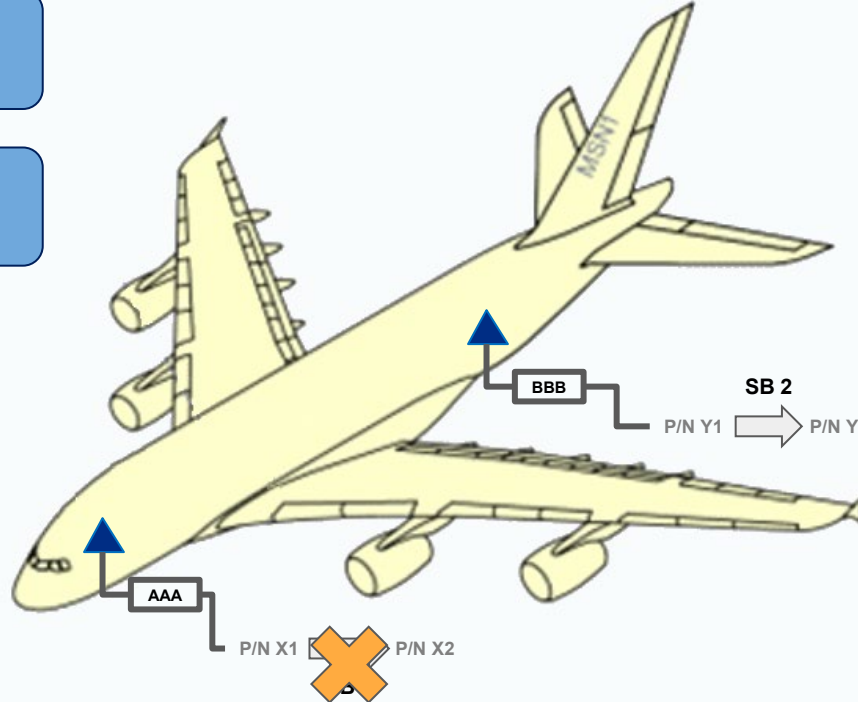
# Relationship between Check in Parts and Check in Modifications

SB 1 replaces X1 with X2 on position AAA

SB 2 replaces Y1 with Y2 on position BBB

AAA	P/N X1	P/N X1	✓
BBB	P/N Y2	P/N Y2	✓

SB 2 — SB 1



	Actual	Allowable
Parts	Actual Configuration in Parts	Allowed Configuration in Parts
Modifications	Actual Configuration in Modifications	Allowable Configuration in Modifications

SB 1 is a prerequisite for SB 2

SB 2 has been installed without SB 1

# Conclusion

