



LIGHTer
International
Conference
GOTHENBURG 20-21 NOV

10

Shorter time to market

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AGENDA

- Introduction
- Market
- Pilot project and next step





BUSINESS UNIT Aerostructures

Bringing you the future in Aerostructures

PRODUCT STRATEGY



**Movables,
High Lift Devices**

Wing Structures

**Passenger Doors, Cargo Doors,
Emergency Doors**

MARKET DEMANDS

AIRBUS A320

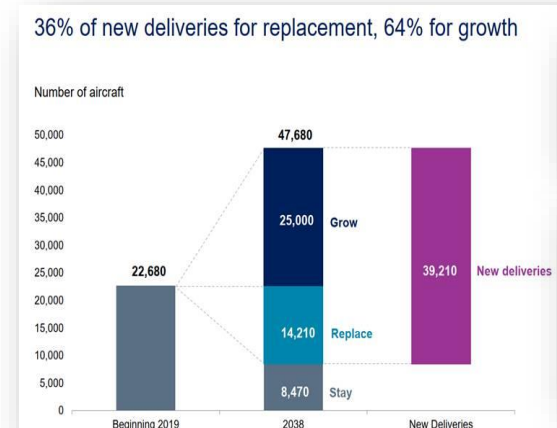
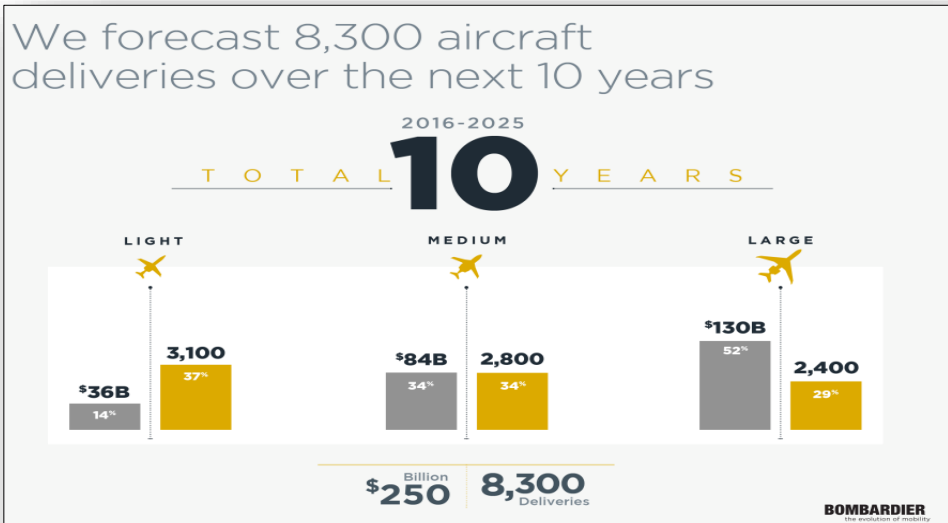
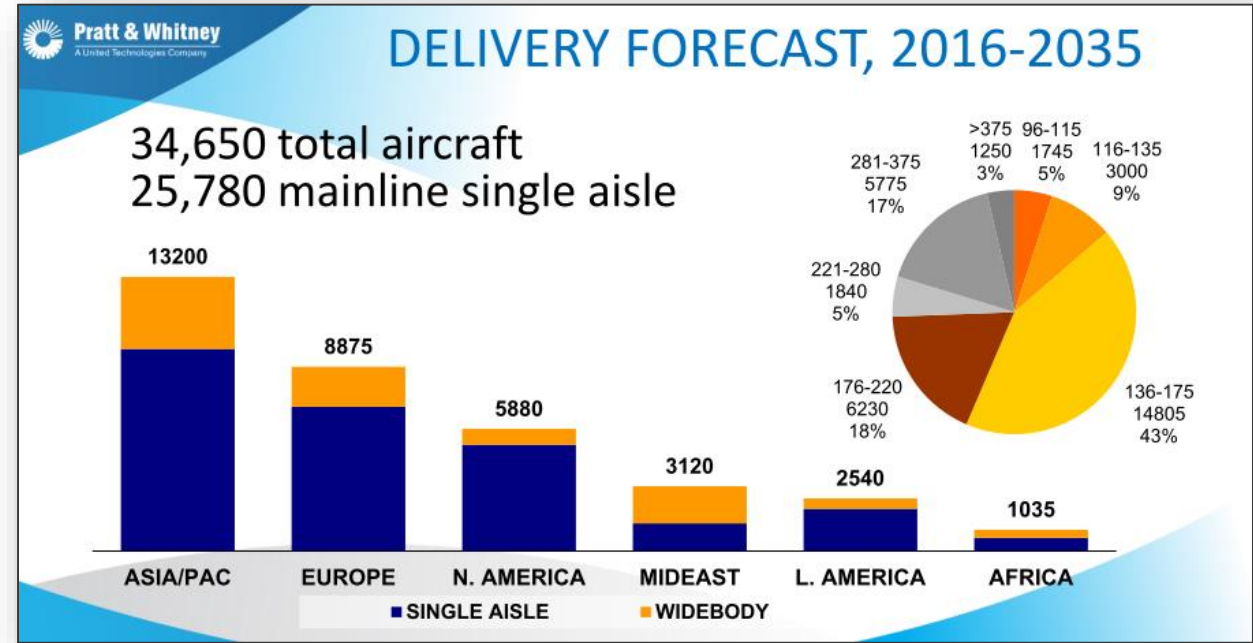
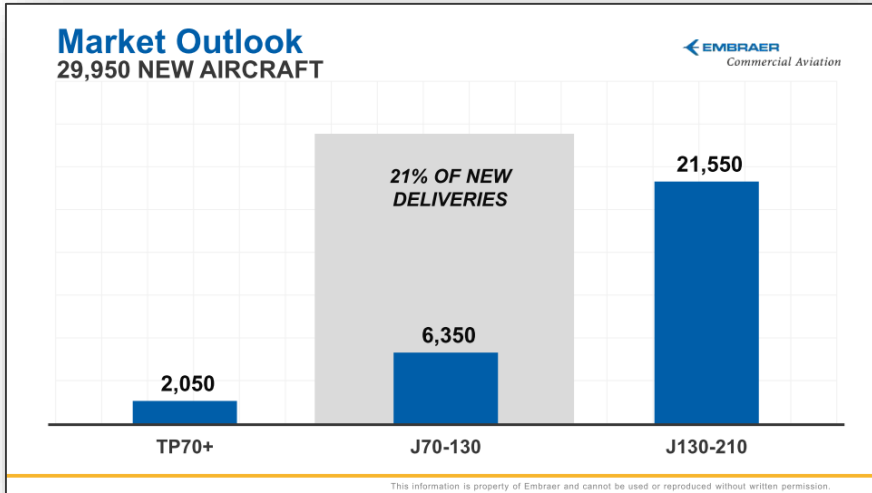
- Current rate: **63 ac/month**
- Current delivery time: **5 years!**

Challenge:

To introduce new technologies, materials and processes in the current programs



MARKET OUTLOOK

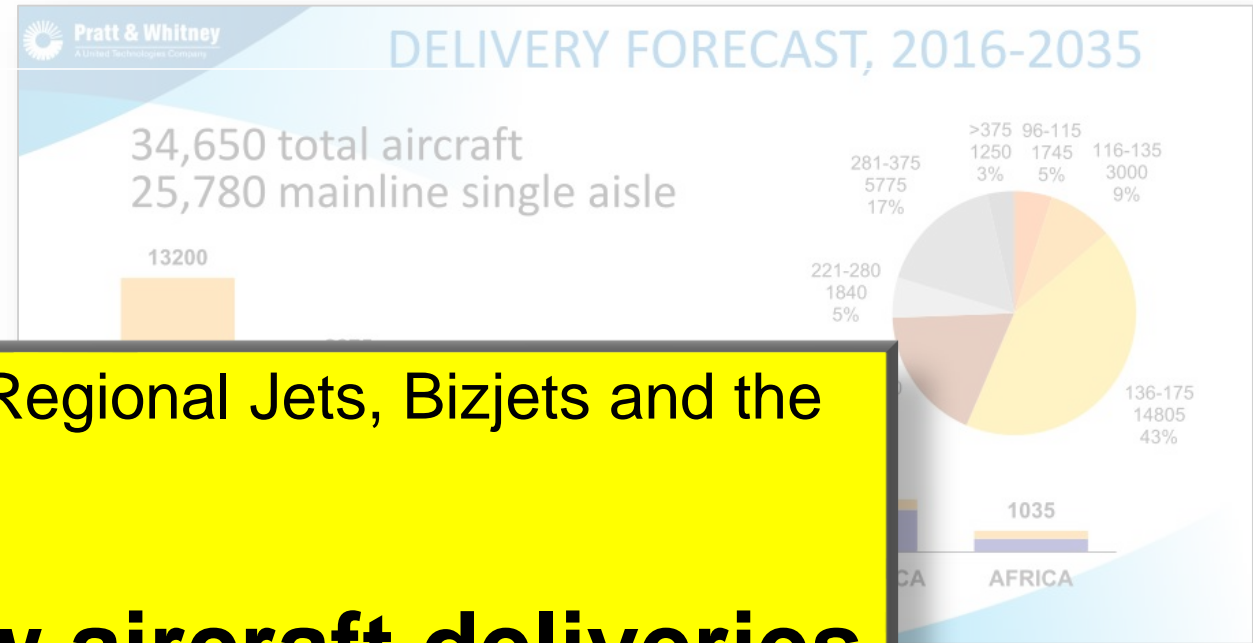
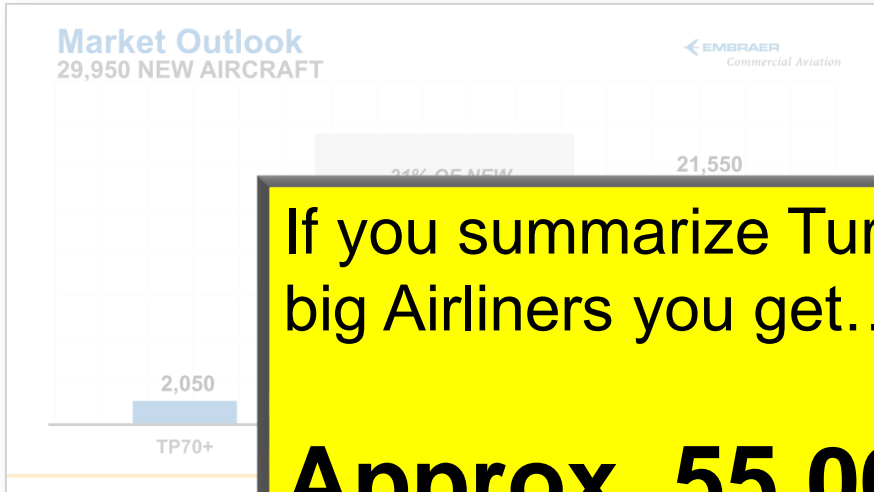


AIRBUS

SMALL	MEDIUM	LARGE
29,720 aircraft	5,370 aircraft	4,120 aircraft
76% share of total new del.	14% share of total new del.	10% share of total new del.

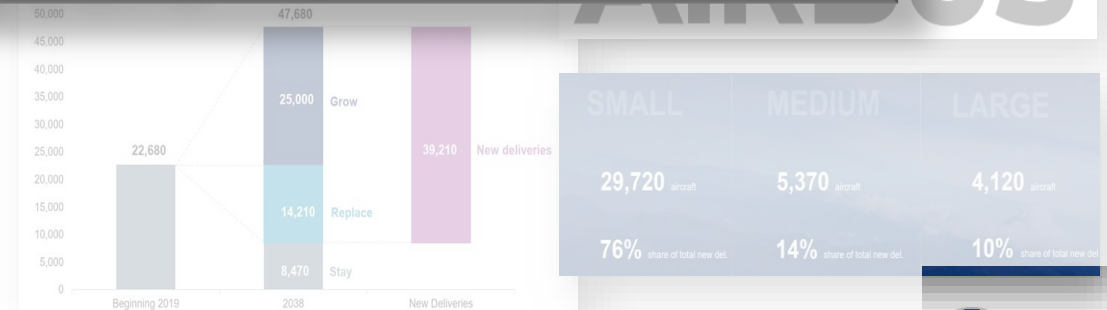
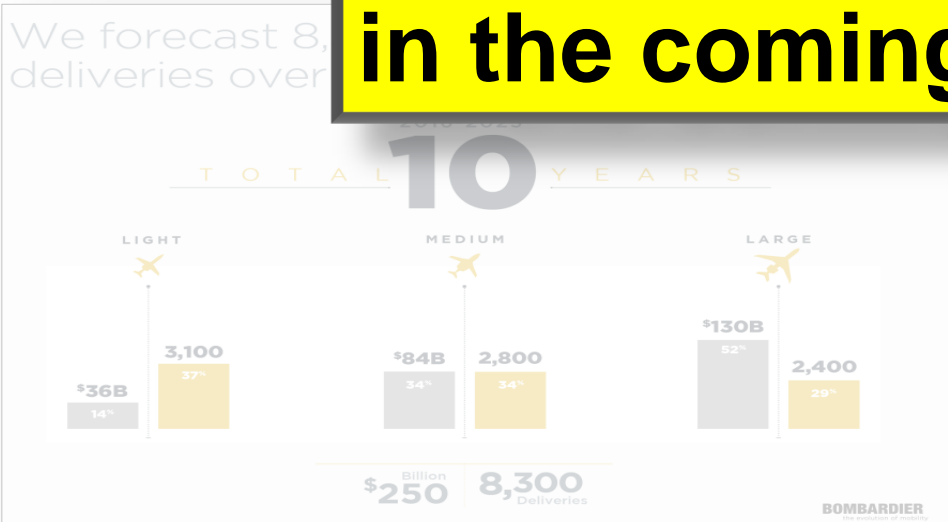


MARKET OUTLOOK

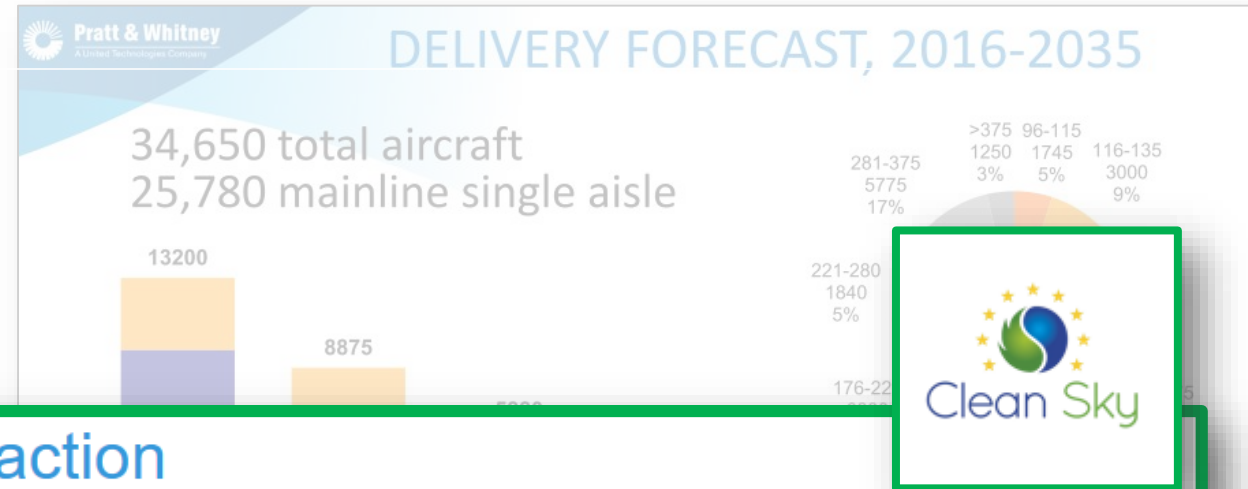


If you summarize Turboprop, Regional Jets, Bizjets and the big Airlines you get.....

Approx. 55 000 new aircraft deliveries in the coming 20 years



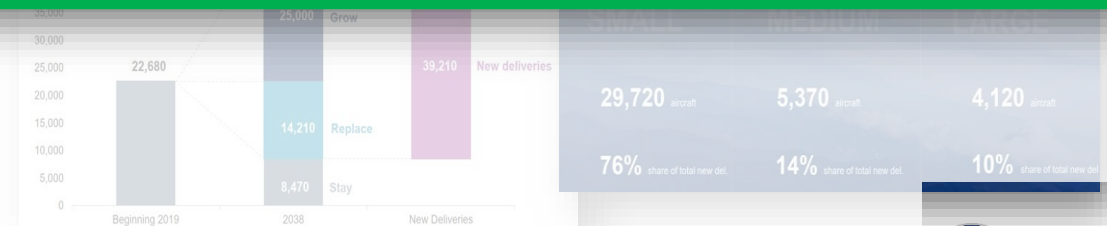
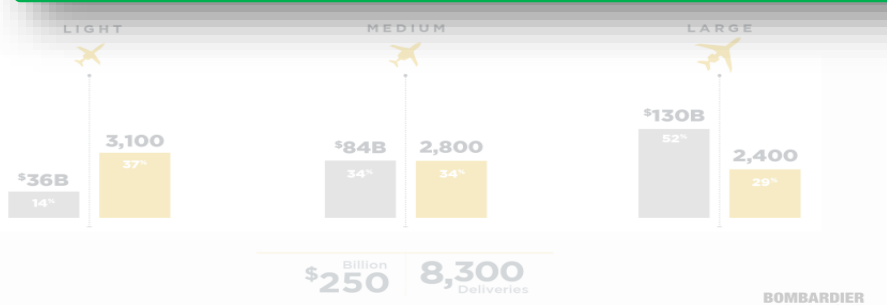
MARKET OUTLOOK



Tomorrow's challenge, today's call to action

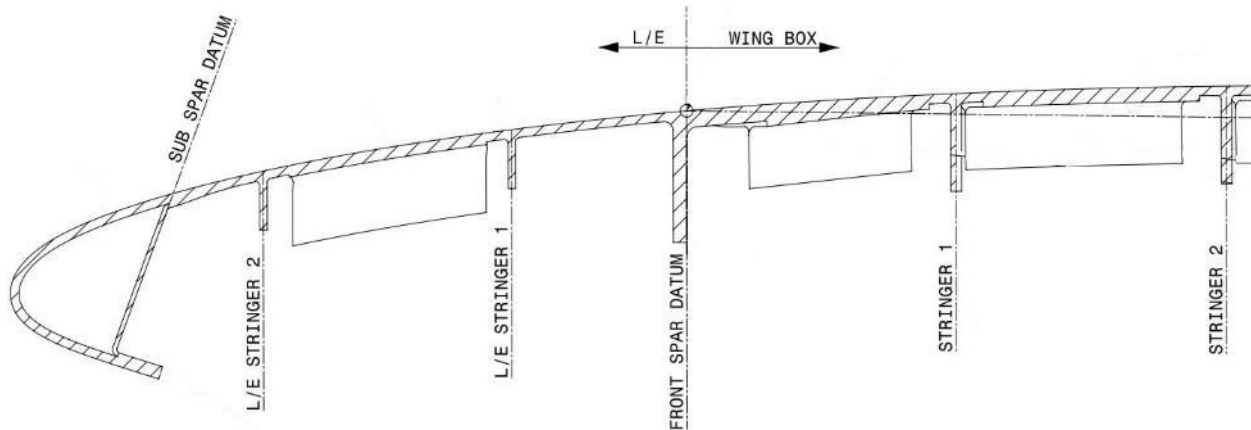
The world needs more aircraft – by the mid-2030s it will need at least twice as many as are currently flying. But tomorrow's planes need new technologies to keep pace with ever more stringent ecological requirements and to meet passenger needs in terms of the aircraft cabin environment and the cost of air travel.

Conventional airframes are reaching the limits of efficiency. Radical new directions have to be taken to bring about the dramatic weight and emissions reductions - and meet overall sustainability targets - that are needed to comply with ACARE and Flightpath 2050 Goals.



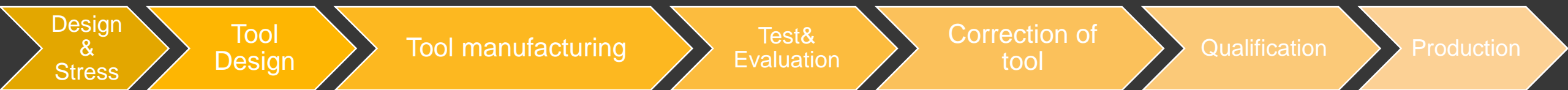
THE SAAB CONCEPT IN BLADE

- Project start: 2007
- Test panel 1 produced in 2009
- Several test panel 2 produced 2011-2014
- Final production started 2016

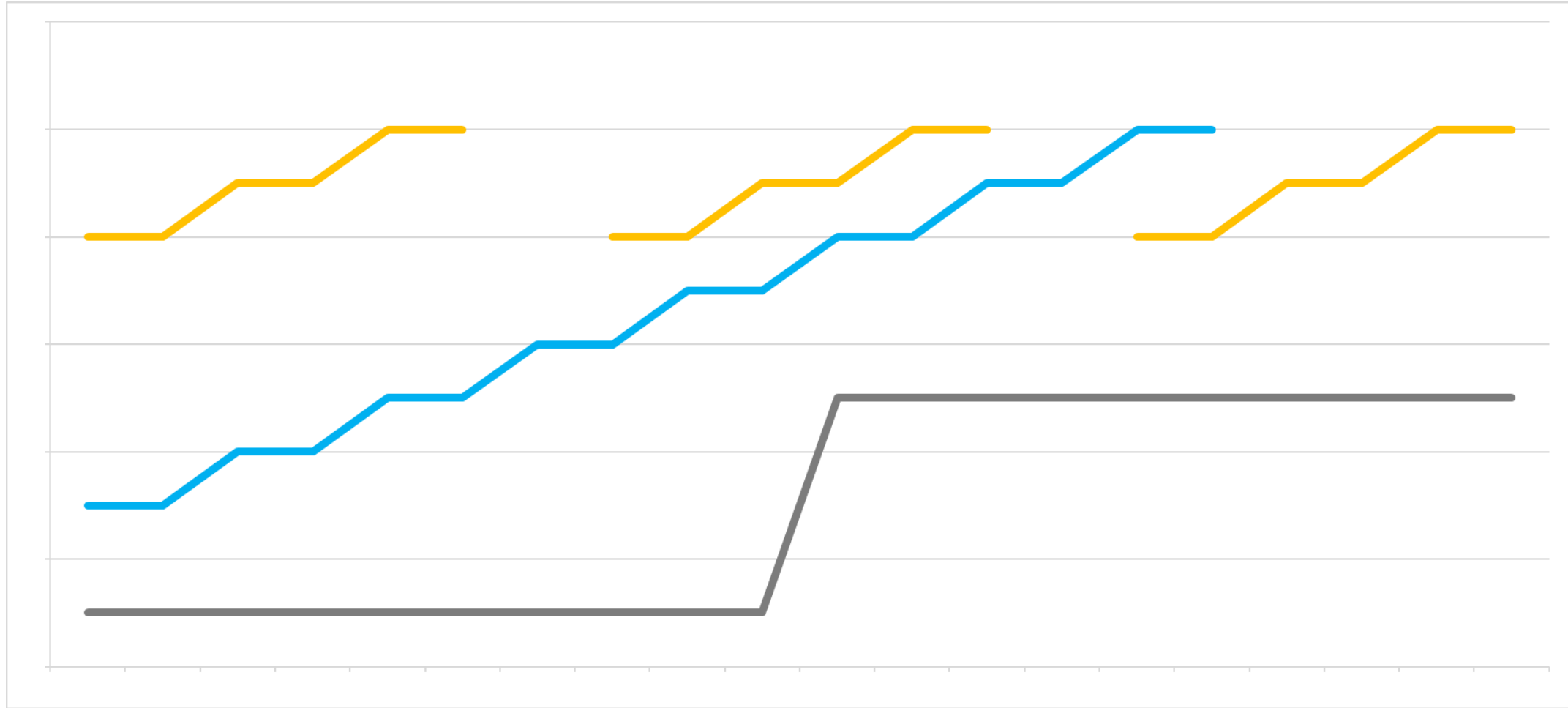


DESIGN TO BUILT PROJECT

- Usually a lead time of 1.5 – 3 years
- Tool development is always on the critical path
 - Design and manufacturing are not parallel activities
- Spring back effects may require tool modifications = increased leadtime



DEVELOPMENT LEAD TIME



NEW CONCEPT

Evaluation of a new concept for Aerospace parts

1. Design the tool and the master mould
2. Use Additive Manufacturing to produce the master mould
3. Build a composite tool on the master mould
4. Produce a part
5. Verify the characteristics for the part
6. If needed modify repeat step 1-5
7. Produce first serial parts
8. In parallel manufacture the tool for serial production

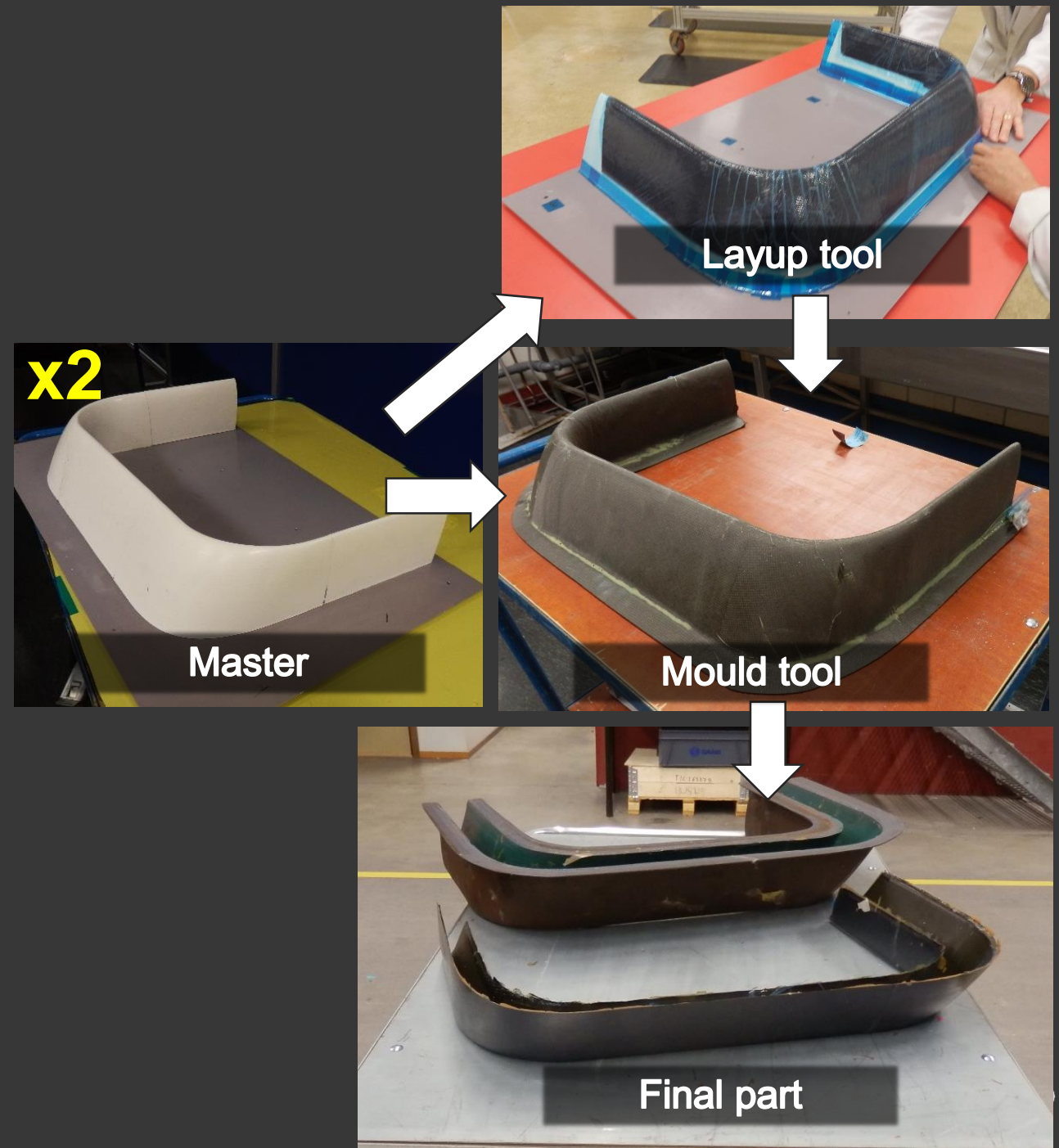


RAPID TOOLING 1

- Tooling for spring back and manufacturing
- Cured at 180°C
- Two printed layup tools was used together with a composite mould tool manufactured on a 3D-printed master

RESULT

- Managed to save **>20 weeks** lead time and **>50 000 EUR** in tool manufacturing.
- Able to **verify** tool concept
- Able to **deliver** a test part ahead of schedule

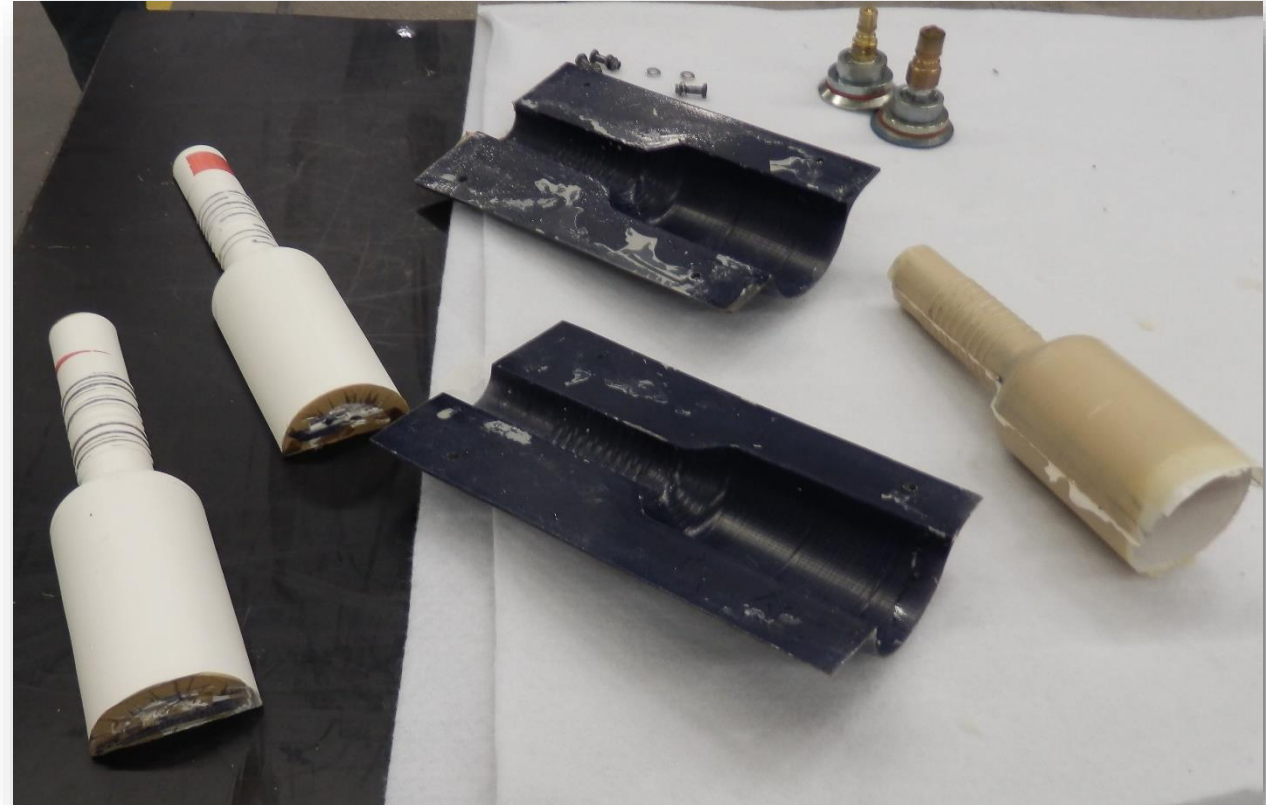


RAPID TOOLING 2

- 3D-printed parts to verify thread and size
- Tooling for part manufacturing

RESULT

- Managed to **secure delivery on time**



THINGS TO KEEP IN MIND

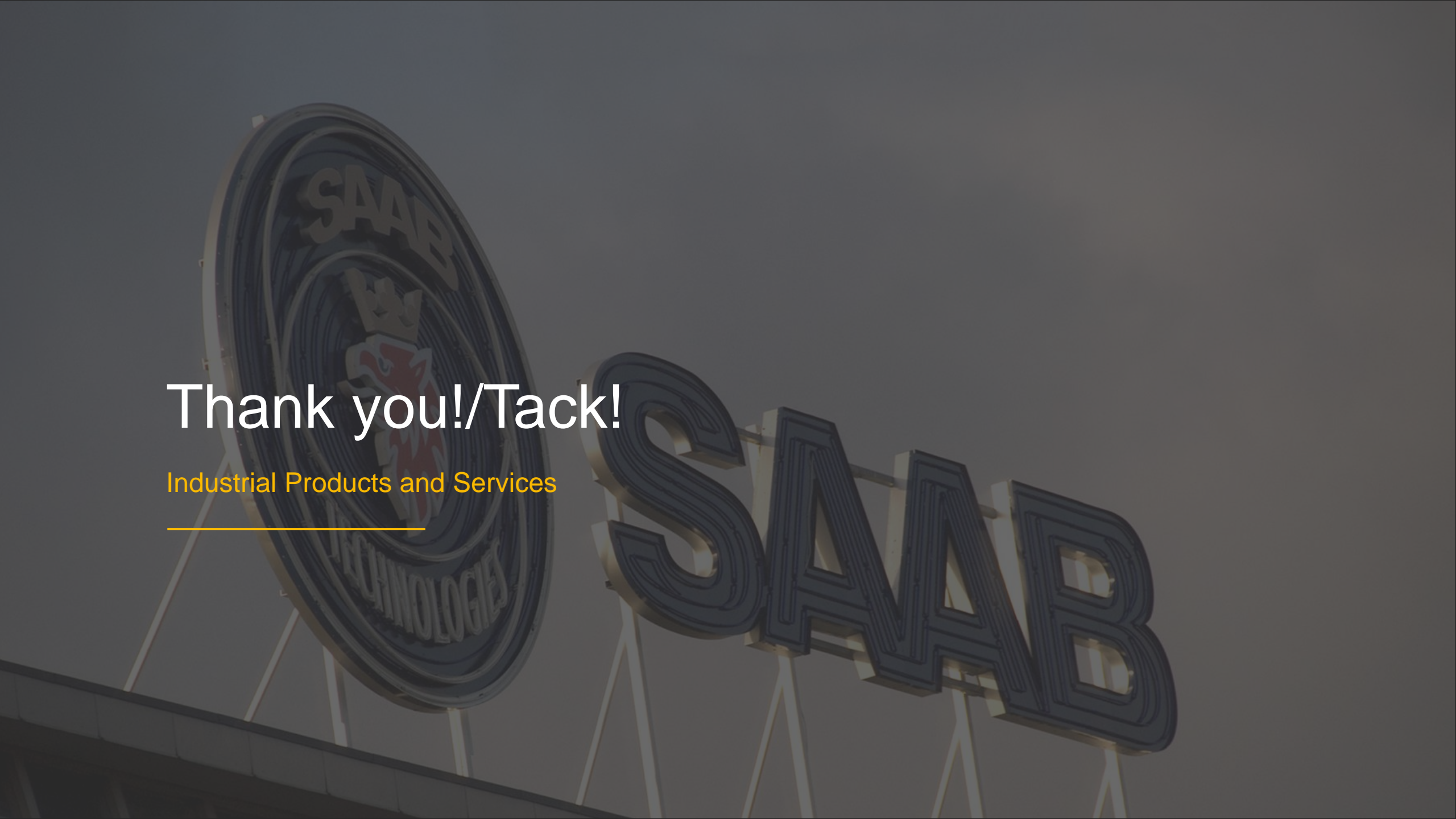
- Tooling materials needs to be selected based on the process and part design
- Scalability is always an issue
- Tolerances needs to be addressed early in the project
- Spring back analysis becomes more complex



NEXT STEP

- Evaluate new materials
- New larger and combined printers
 - AM + CNC in one machine
- Continue investigating the tool-part interaction



The background of the slide features a large, dark, semi-transparent SAAB logo on the left and a large, 3D-style SAAB sign on the right. The logo is oval-shaped with a crown and a griffin in the center, and the word 'SAAB' at the top and 'TECHNOLOGIES' at the bottom. The sign consists of the word 'SAAB' in large, bold, block letters with a double outline. The entire scene is set against a dark, overcast sky.

Thank you!/Tack!

Industrial Products and Services
