Airbus Engineering unlimited
performance inspired

New Beluga

AIRBUS

Airbus Oversize Air Transport - Today

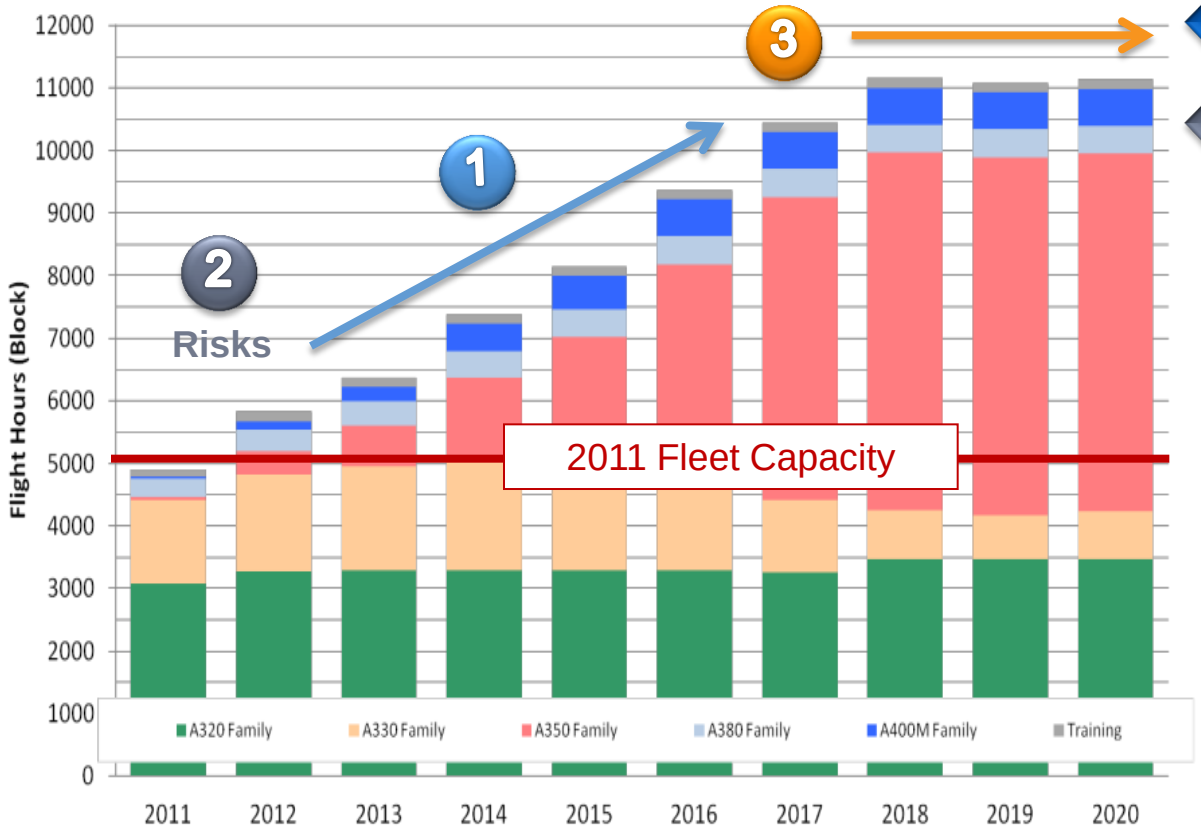
- **A fleet of 5 A300-600ST Beluga's cargo aircraft.**
- Airbus Transport International (**ATI**) is a fully owned subsidiary of AIRBUS to allow public airfreight operations
- ATI holds all the airworthiness agreements for Beluga operation
- ATI staff are under Airbus contracts

A wide network, increased risks on Operations, reduced flexibility

AIRBUS

Beluga activity forecast March 2012

Data references: SA Programme AI-D1-V-0500-BS1 (Max rate 42), LR BT Programme - AIP 127 (Max rate 11)
A380 programme Q, A350 programme F, A400M Programme L



High i.e. Additional rate increases

Low i.e. Smoother A350 ramp-up

1. Demand increase covered by Fly10000 project
2. General risks impacting capacity/flexibility – short term mitigation required
3. Demand not covered

- From 2020, Beluga availability will decrease and cost of operations will increase
- The Beluga fleet is scheduled to retire in 2025 (assuming it ages well).

AIRBUS

Fly 10000 principle

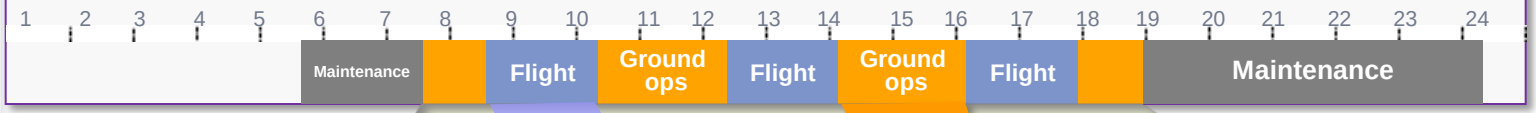
Fly 10k project objectives

- Maximize Beluga transport system capacity in order to fulfil production ramp-up requirements and allow new beluga launching decision at the latest appropriate time.
- Secure Beluga life cycle up to 2025

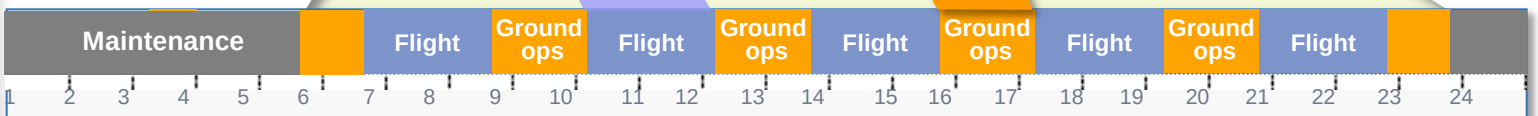
"As Is" **5000** Flight hours per year,

An average of **12** flights/day over 12 hours operation, **5** days /week

60 flights /W



Fly 10000



"To Be" **10000 FH** per year (950 FH maximum / month)

An average of **20** flights/day over **18** hours operation, **6** days /week

120 flights /W

Transport flexibility significantly reduced with extended windows of flight operations

AIRBUS

Airbus Transportation Network Critical Items

- Maximum Structural Payload
  - ***39.7t*** *=> Pair Equipped Wings, Bremen-Toulouse, 637nm ESAD*
    (A300-600ST can only transport single A350 wings)
- Length
  - ***33.69m*** *=> Pair Equipped Wings, Bremen-Toulouse, 637nm ESAD*
- Cross-section
  - ***Max considered*** *=> A350-1000 Section 15/21*
- Payload/Range
  - ~~***4880nm ESAD / 32t Payload*** *=> Toulouse – Mobile*~~

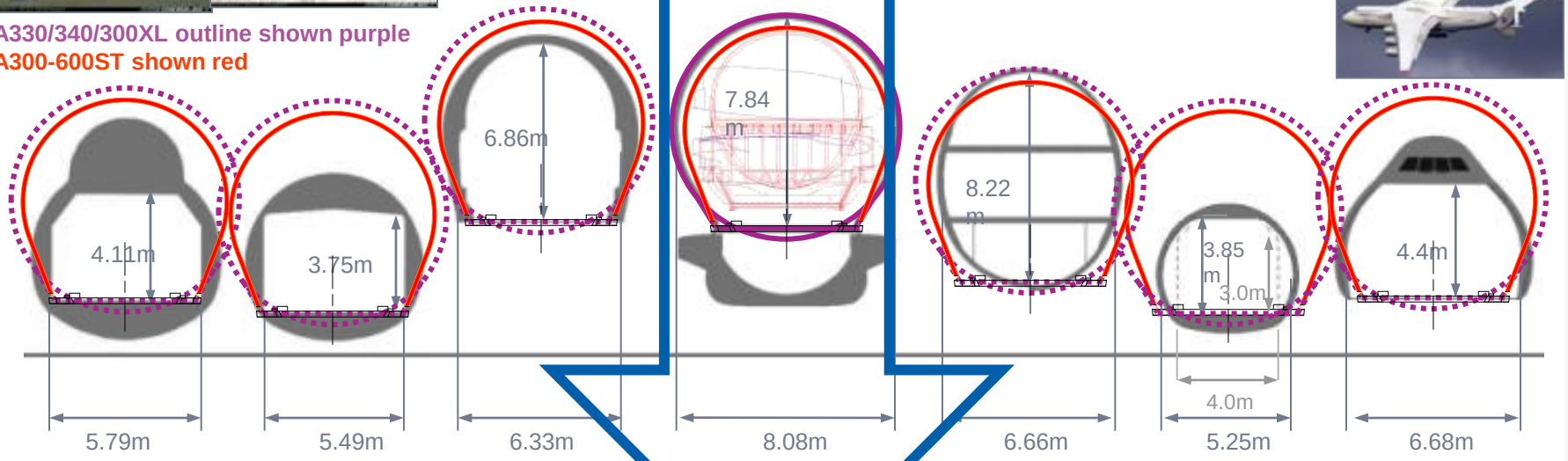
Update: European network only

- Field requirements
  - ***1663m*** *=> Broughton Runway CEG04 =>* ***Land 13.7t in wet conditions***
    (A350-1000 Outlook wing upper cover weights combined with estimated jig weight)

Comparison of large cargo aircraft x-sections

Boeing C-5 *Galaxy*	Boeing C-17 *Globemaster*	Boeing 747-400 LCF *Large Cargo Freighter*	Airbus **A300/330/340** *Beluga XL*	Airbus A380 *(passenger)*	Airbus A400M	Antonov An-124 & -225 *Ruslan & Mriya*
						

A330/340/300XL outline shown purple
A300-600ST shown red



Ground line: Note: some aircraft all have "kneeling" landing gear. Position above ground line approximates to the high/ un-kneeling position.

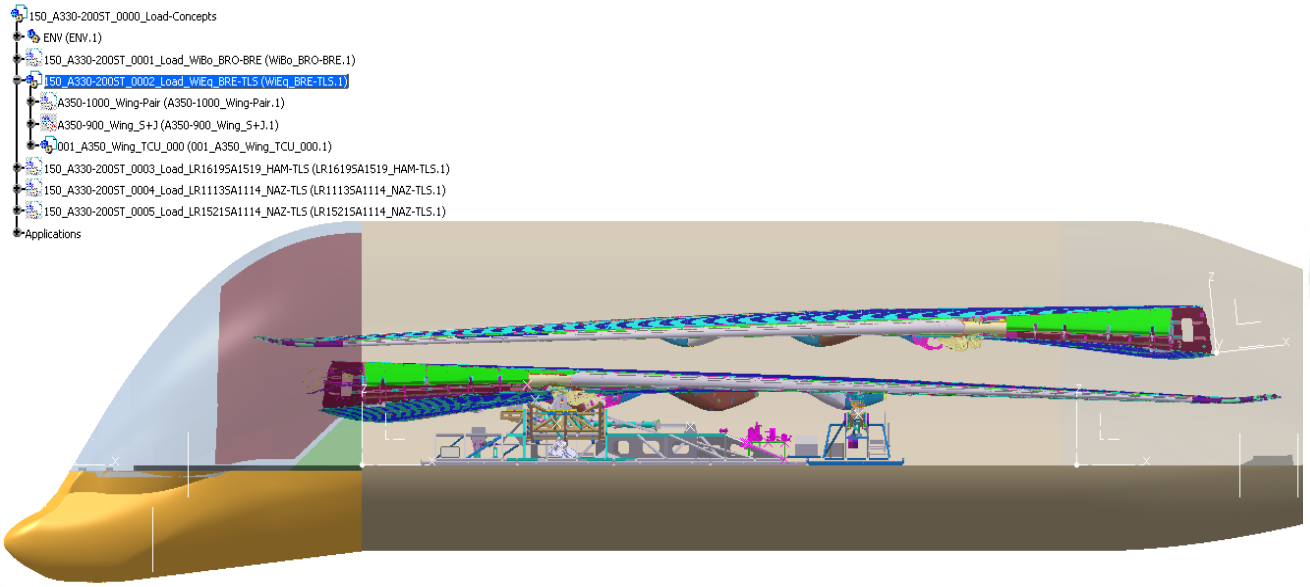
Max payloads	**122.5 t**	**77.5 t**	**59 t**	**50+t**	**n/a**	**37 t**	An-124: **150 t** An-225: **250 t**

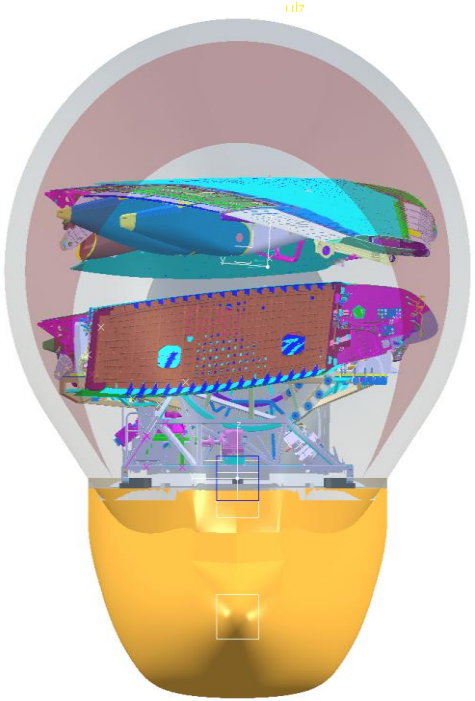
Only the A300/A330/A340 platforms deliver the volume required

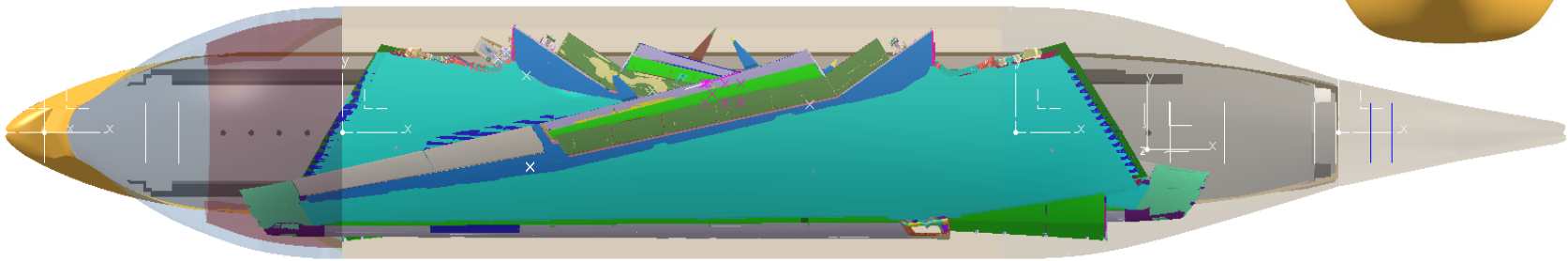
AIRBUS

TCU on A330-200BXL

A350 Wings boxes transport by pair from Bremen to Toulouse





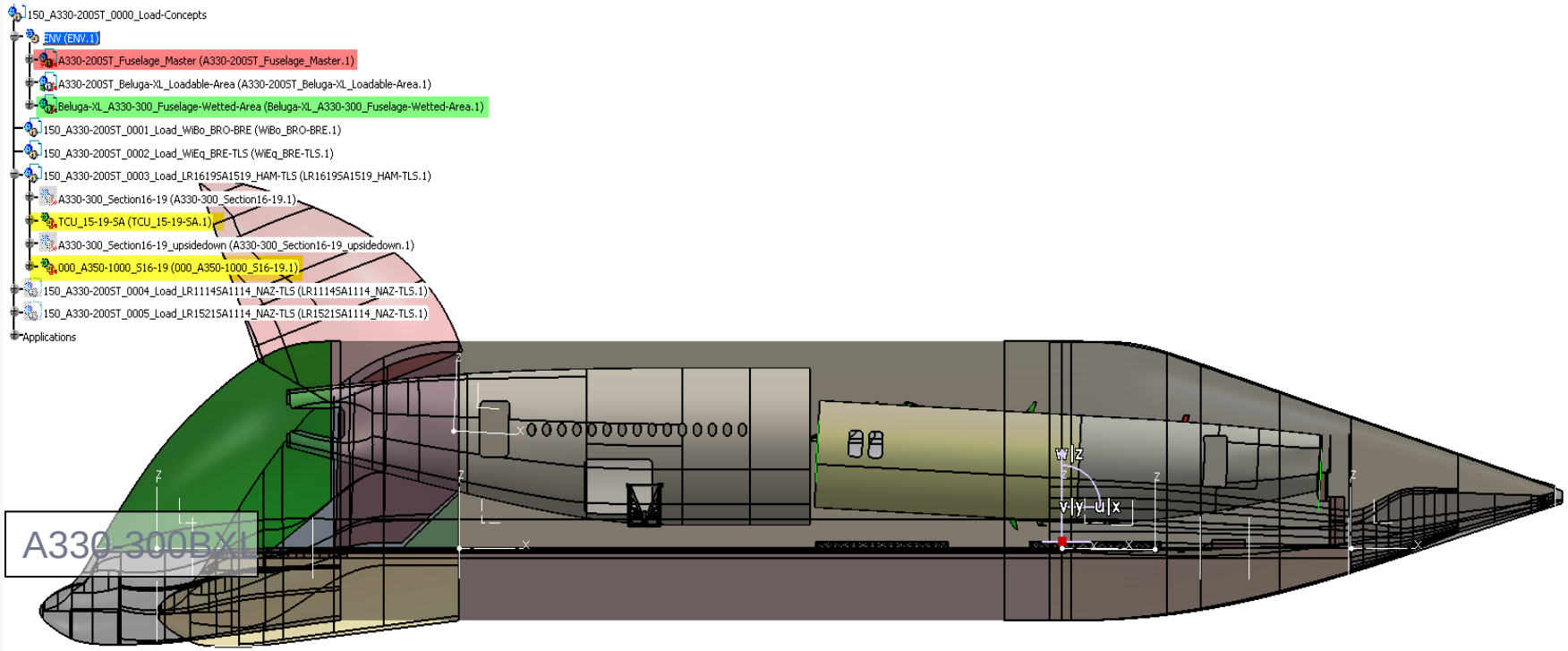


Ref.: [7]+[10]+[11]

TCU on A330 -300BXL

A350 Sec 16/19 + SA Sec 15/19 from Hamburg to Toulouse

Will fit in to a A330-300BXL



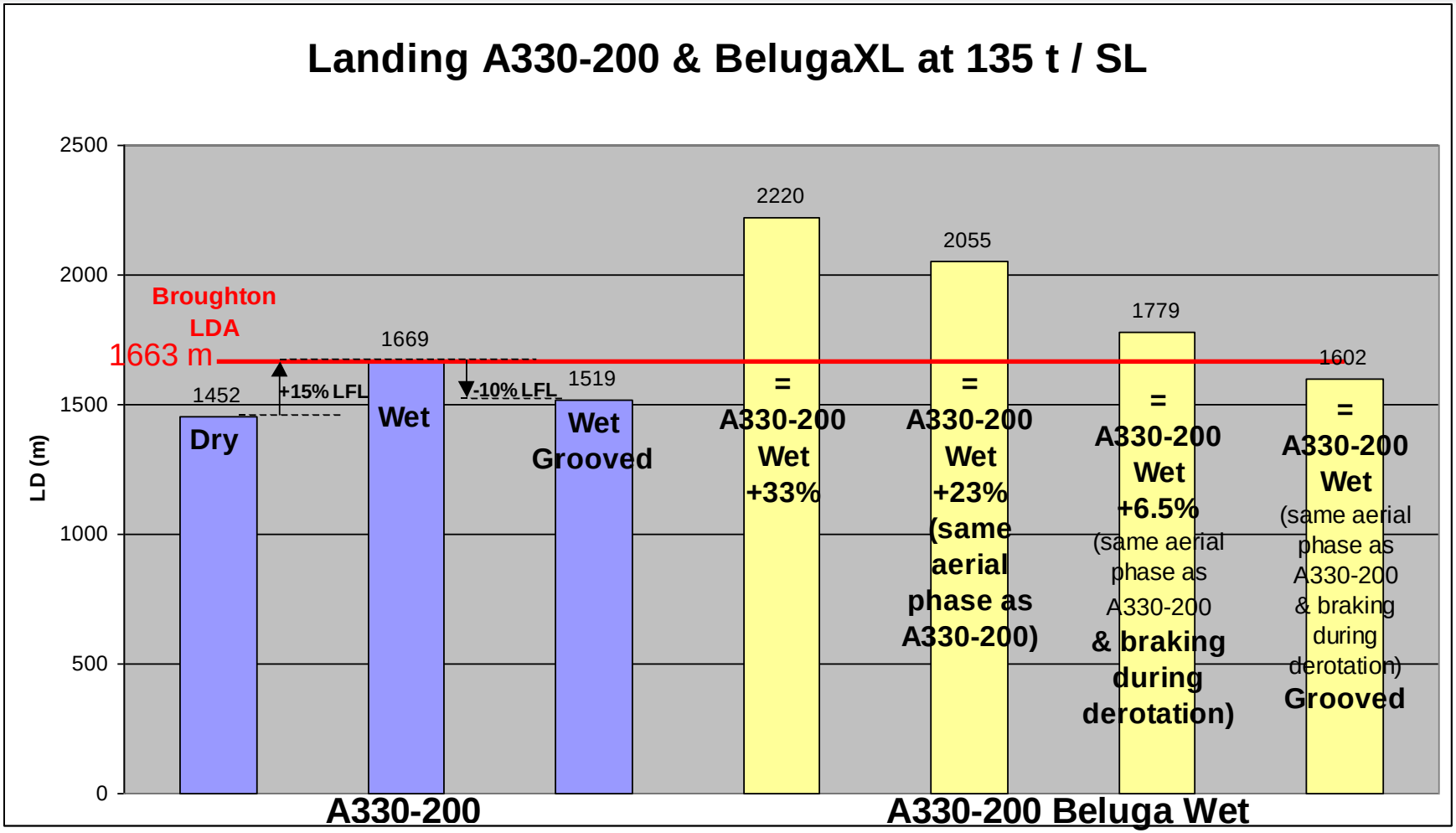
Ref.: [2]+[6]+[10]+[11]

Landing Performance Requirements

- critical requirements for Beluga replacement :
  - **<u>Land at Broughton in the wet with 13.7t payload</u>**
    - A350-1000 upper wing covers flying Hamburg – Broughton
  - Shall meet or exceed A300-600ST landing payload capability at Broughton
- With A330-200 as baseline, knowing OWE and reserves,

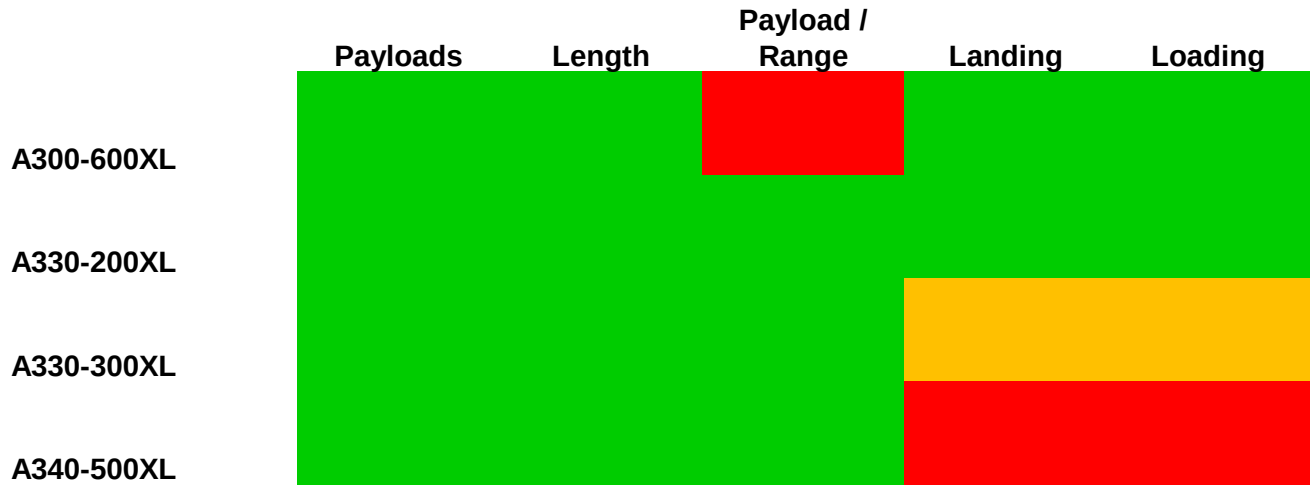
  we can deduce the minimum required Landing Weight:
  - ~4 t reserves (13.7t payload, Range 519 NM,101NM diversion to Manchester)
  - **<u>Weight to land in Broughton: 135t</u>**
- We have to be cautious with weights, **having uncertainties on OWE**

Possible gains with same approach speed as A330-200

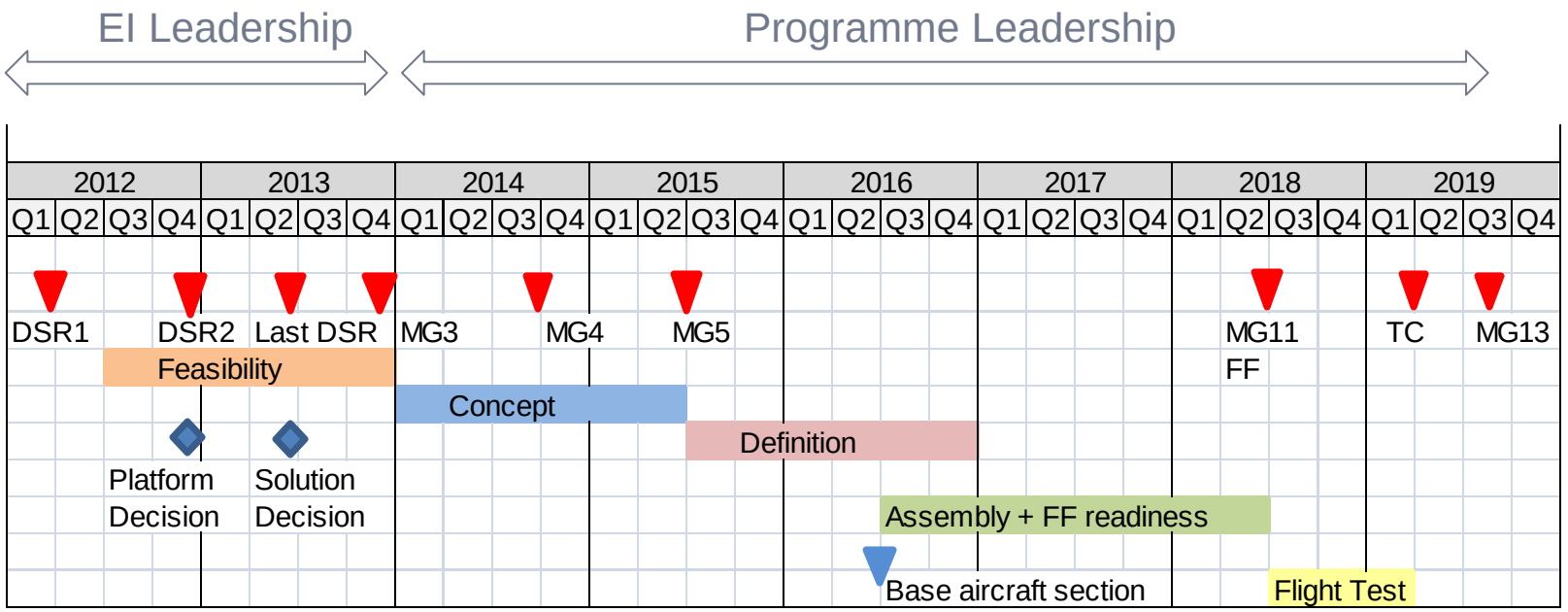


EC Dossier - Conclusions

- A300-600XL, A330-200XL, A330-300XL and A340-500XL are geometrically and structurally capable of carrying all (single) foreseen Airbus TCUs with margins.
- Only A330-200XL, A330-300XL and A340-500XL are capable of meeting the Payload/Range requirements.
- A300-600XL and A330-200XL could be made capable of meeting Broughton wet landing requirement. The requirement is too challenging for A340-500XL.
- A340-500XL deck height and length not compatible with FLY10000 Facilities upgrades
- The A330-200XL appears to be the only solution anticipated to meet all operational requirements.



Level 0 Planning (Draft)



- DSR2 (Decision Solution Ranking) : down-select platform
- MG3 / Entry Into Concept : validate the aircraft concept feasibility and authorize to put in place the Program central plateau organization.