FUTure PRopulsion and INTegration
towards a hybrid-electric 50-seat regional aircraft

Deriving a Year 2040 Reference Aircraft from a Modern Turboprop, Implemented and Calibrated in SUAVE

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FUTPRINT50

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European Commission

The hybrid aircraft design is better than …?

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Design Purpose

	ATR 42-500	FUTPRINT50 Hybrid
Technology level	1990-1995	2035-2040
Passengers	46-50	50
Design range	840 NM	430 NM

Not a convincing comparison to show the impact of hybrid electric components

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Passengers	46-50	50	50
Design range	840 NM	840 NM	430 NM

Goal: Valid benchmark aircraft for 2040

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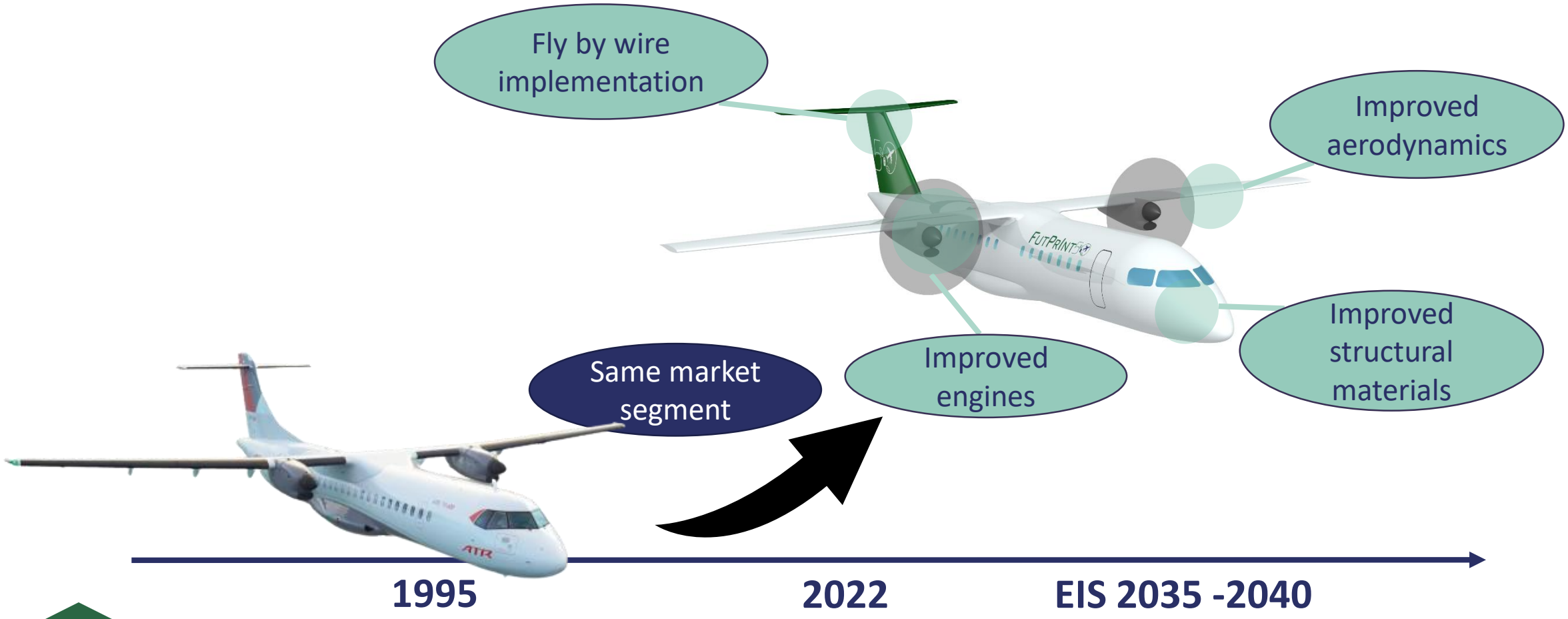
Conventional Reference Aircraft for 2040



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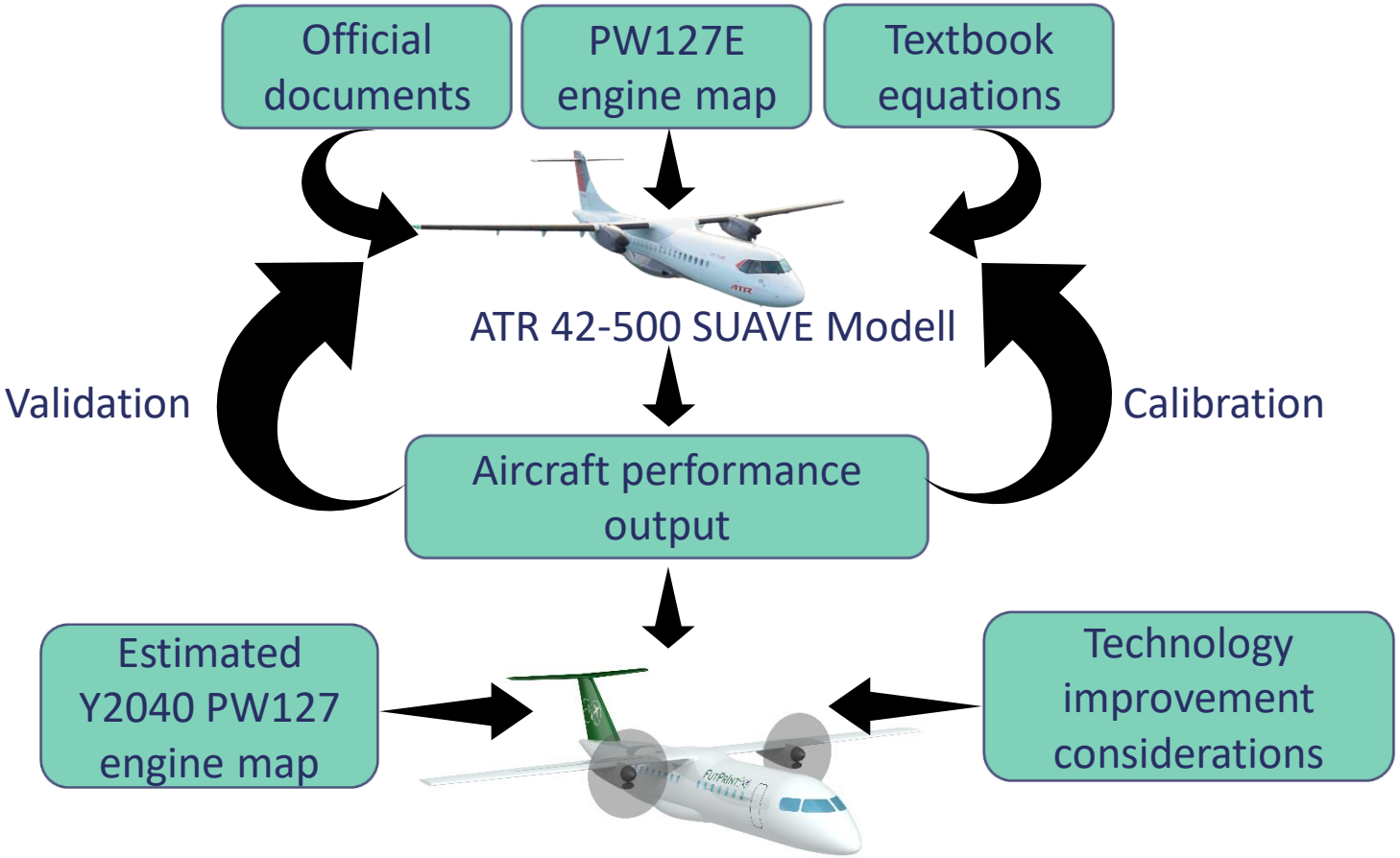
Development Process



Conventional Reference Aircraft 2040

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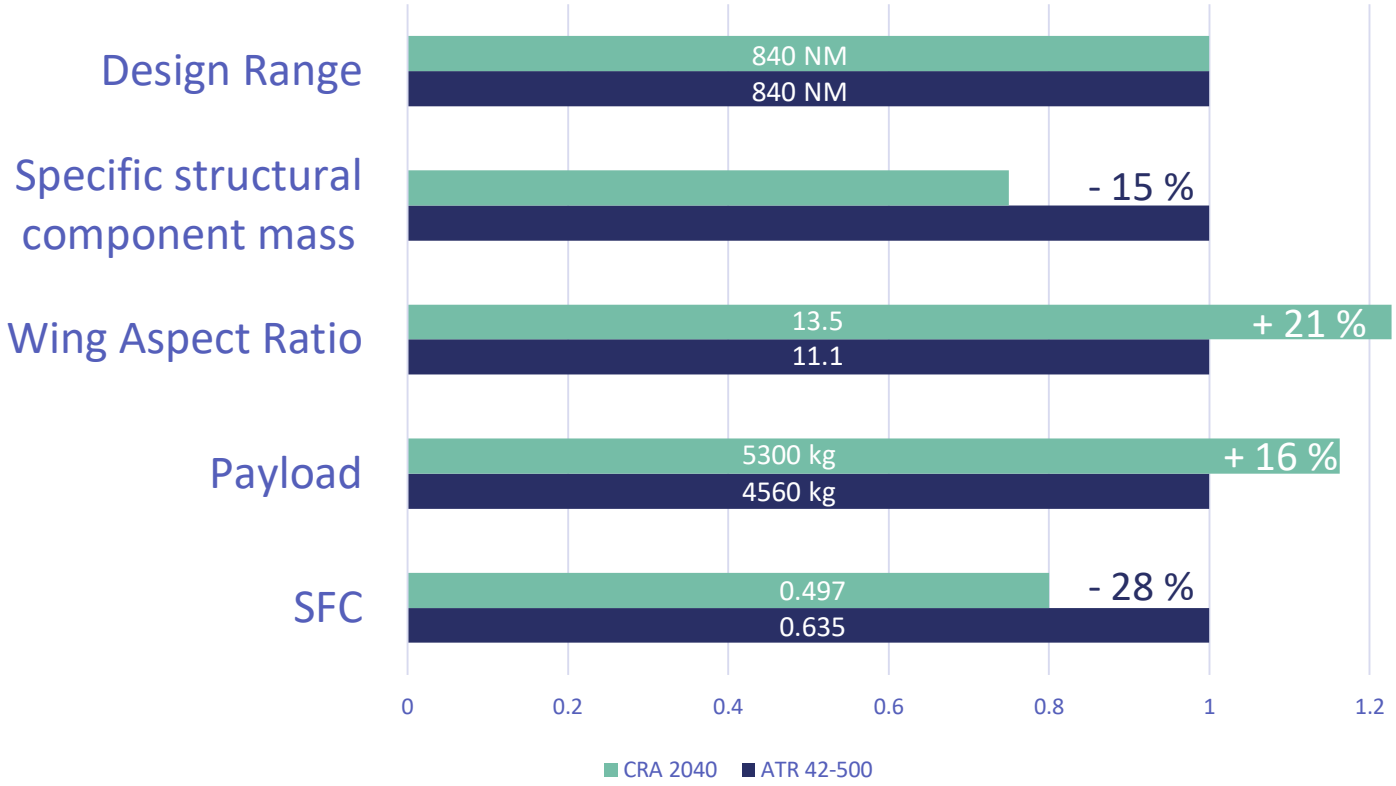
CRA 2040 Technology Improvements



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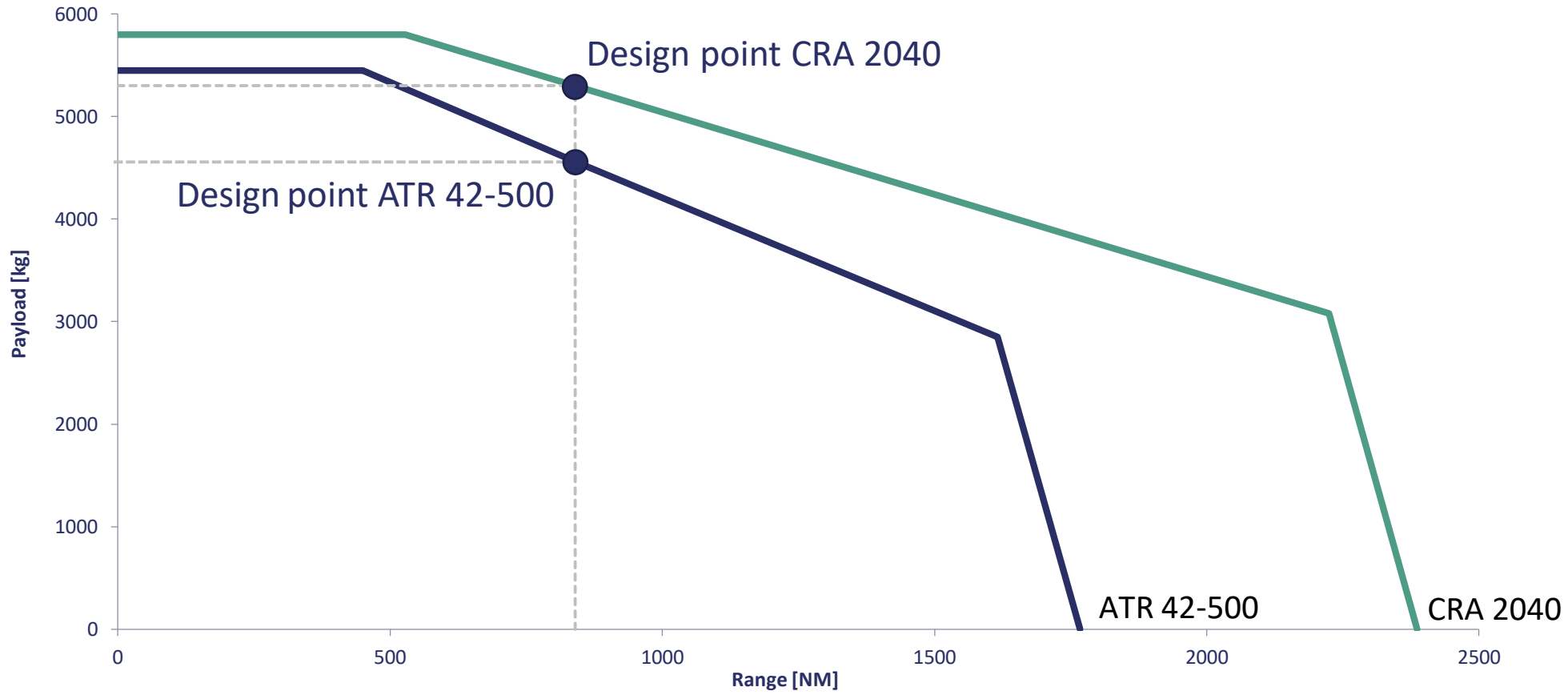
Performance Comparison



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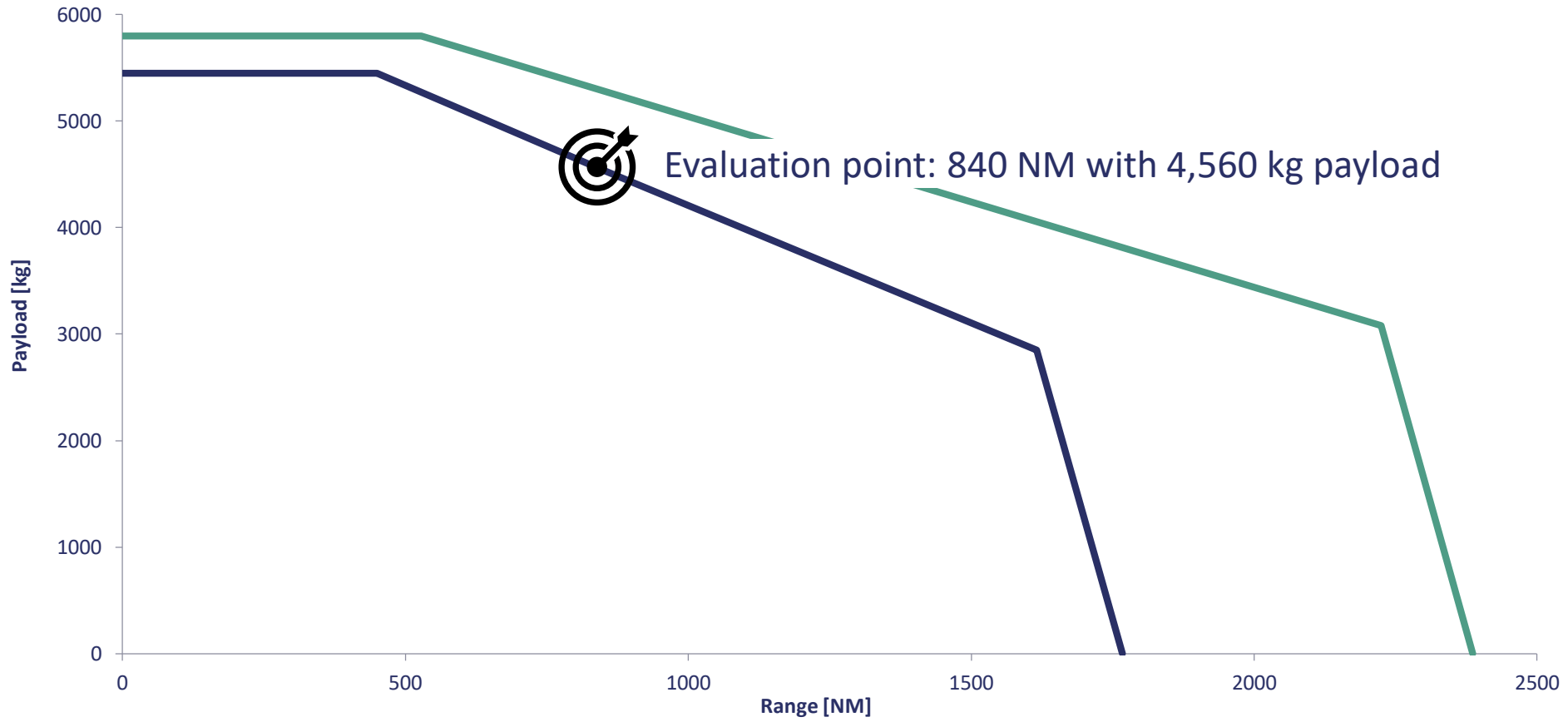

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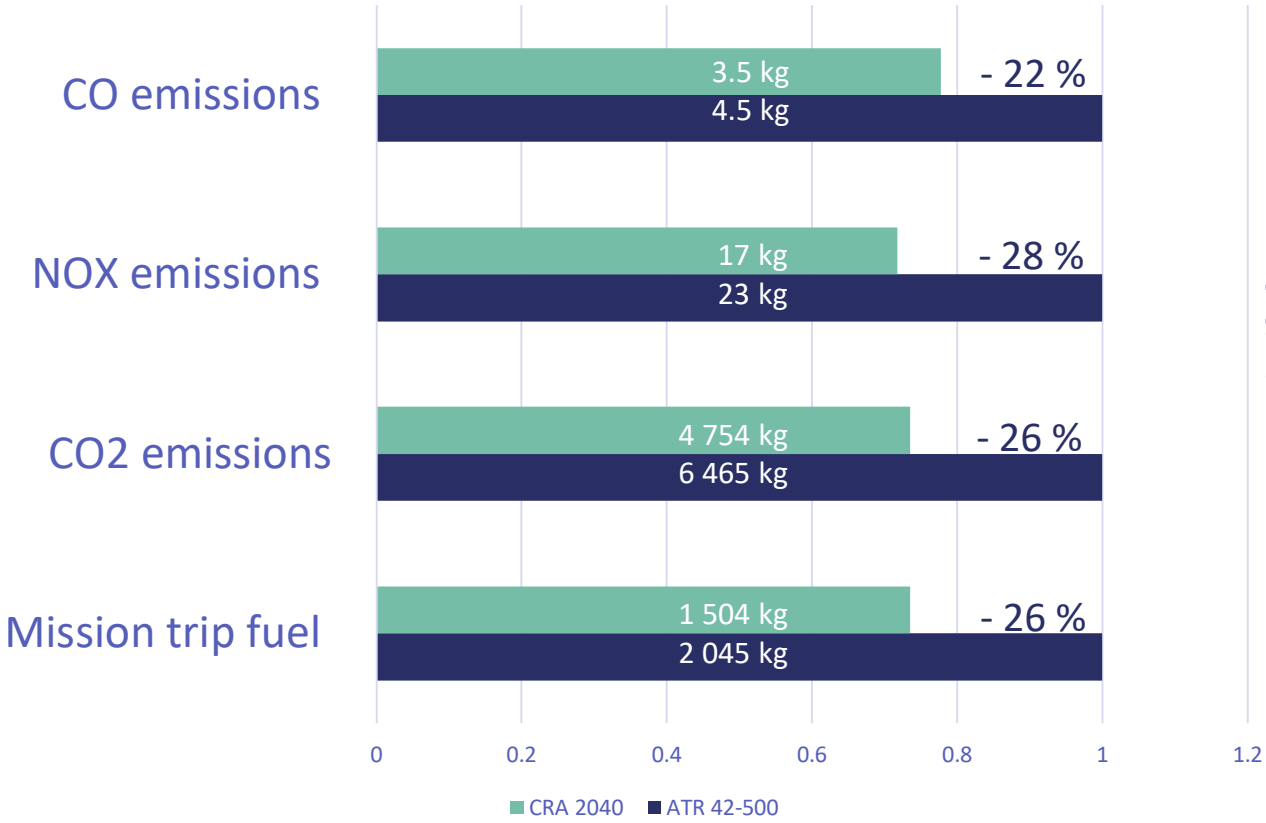

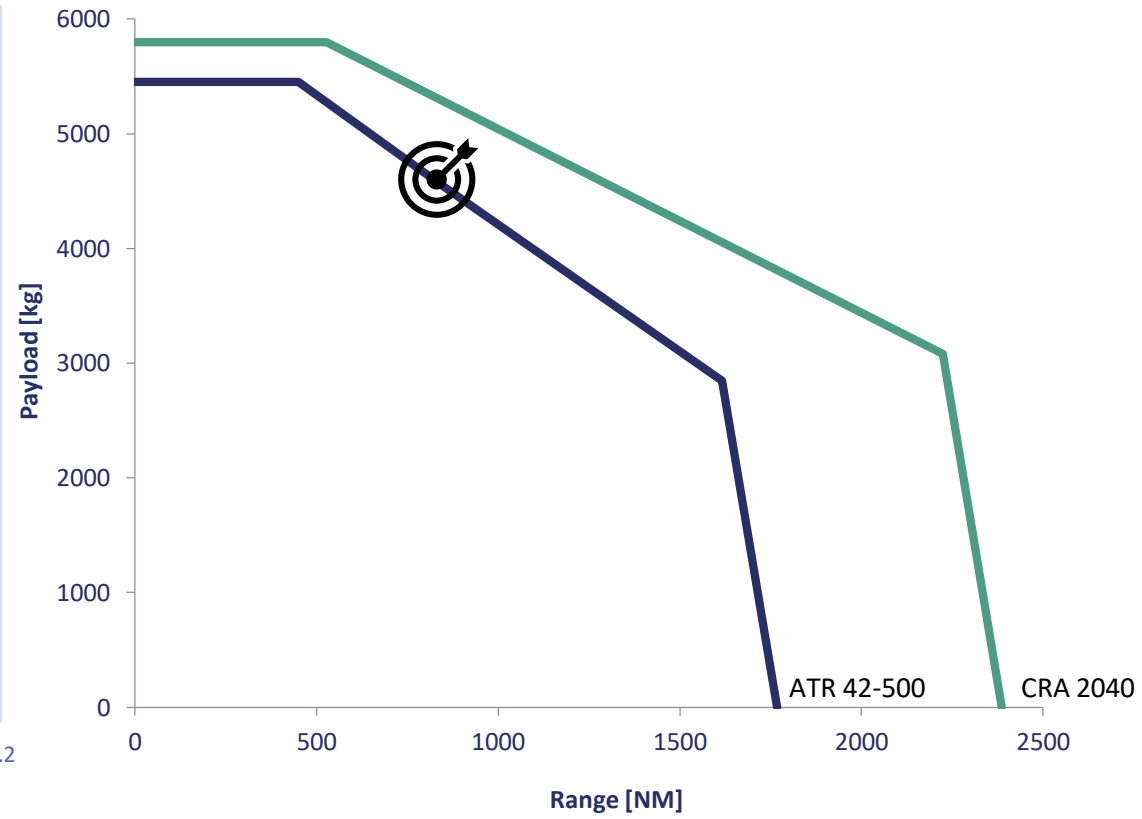

Evaluation point: 840 NM with 4,560 kg payload

Conclusion: Conventional Technologies are not Sufficient

EU Flightpath 2050	CRA 2040
- 75 % CO_2	- 26 % CO_2
- 90 % NO_X	- 28 % NO_X

2050 Goals cannot be achieved with conventional aircraft using fossil JET A1

THANK YOU!

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