Implementing Lifecycle Standards to Automate Cost-Benefit Analysis in Aerospace Product Design

Massimo Panarotto , Ola Isaksson
Chalmers University of Technology, Gothenburg, Sweden

CHALMERS UNIVERSITY OF TECHNOLOGY

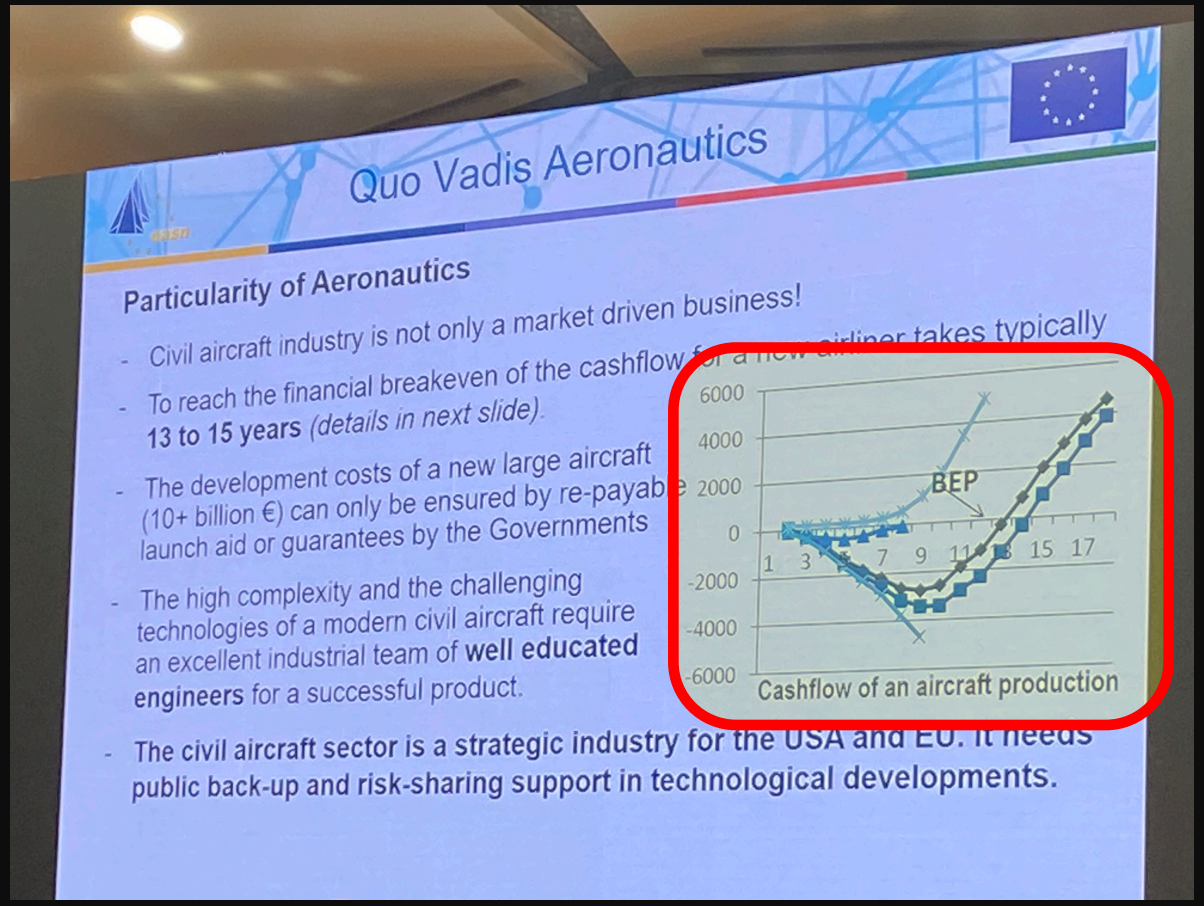
LOW CHEOPS POWER

Clean Sky 2

DEFAINE

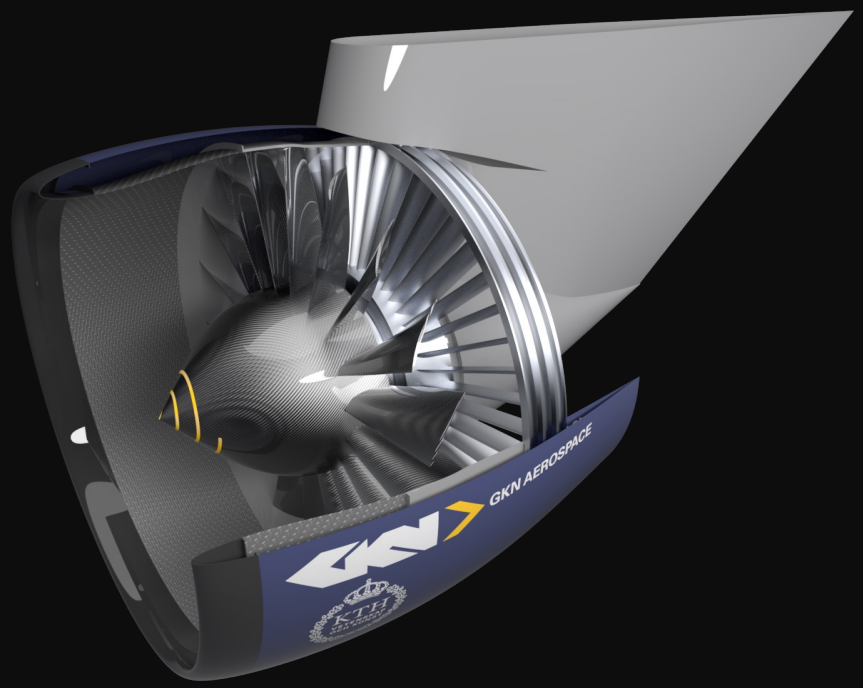
Cost-benefit analysis of new designs

BUSINESS



keynote, EASN Conference 2022

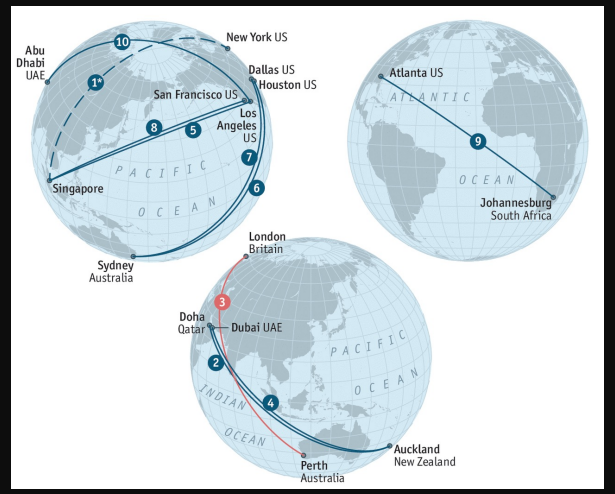
COMPONENT DESIGN



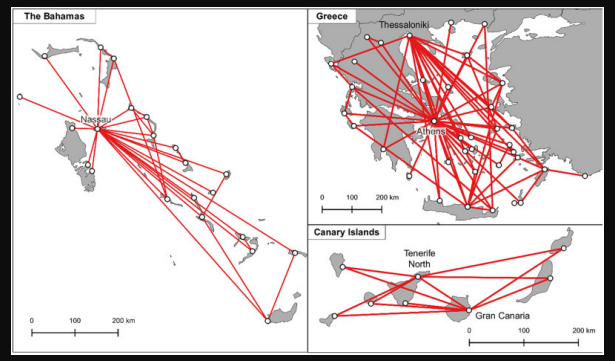
Fan Outlet Guide Vane Assembly

Challenge 1: Case specificity

BUSINESS

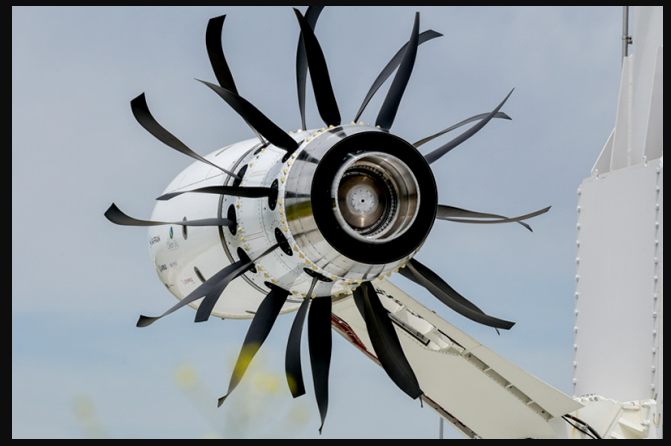


Ultra long-haul

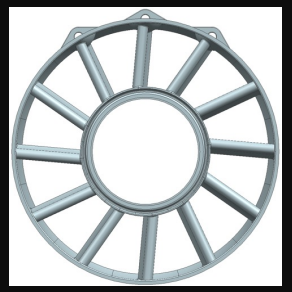


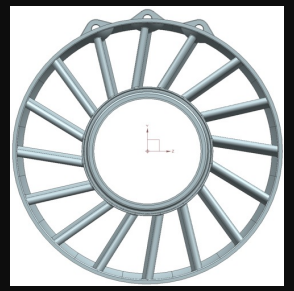
Ultra-short regional

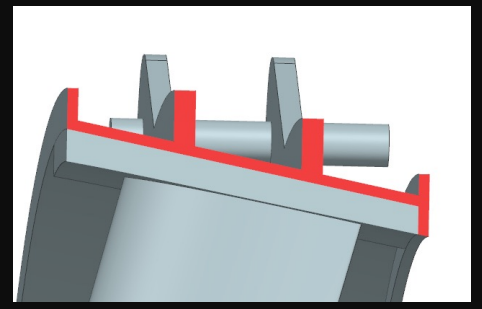
SYSTEM

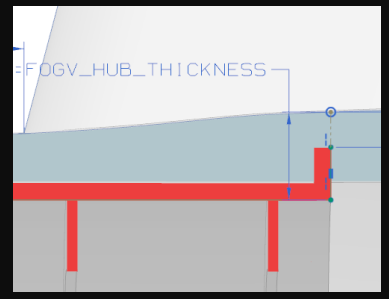


COMPONENT









Challenge 2: from “words” to money

PERFORMANCES

SUSTAINABILITY

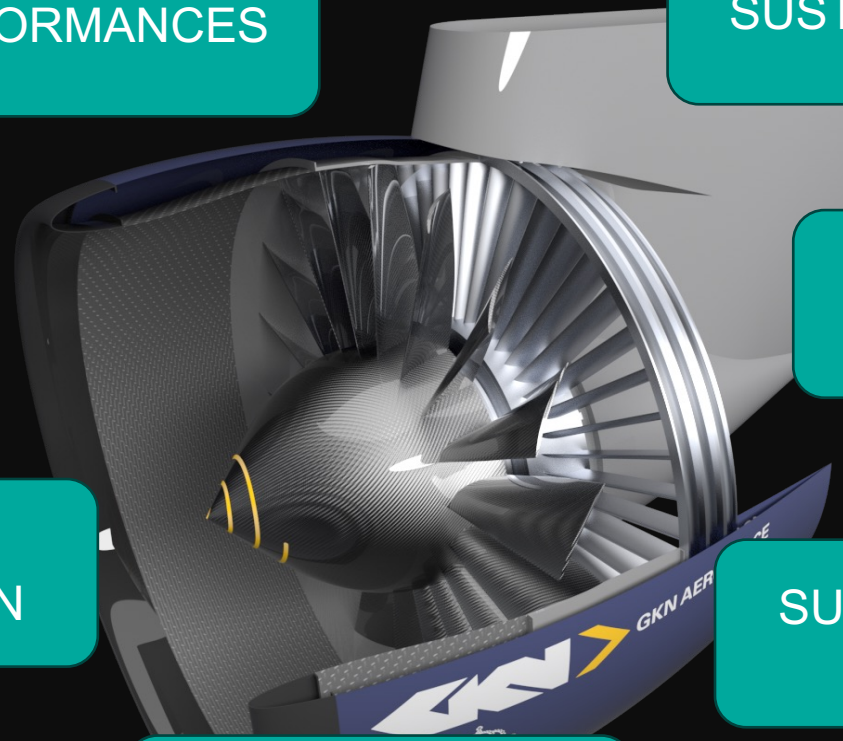
PRODUCT COST

MAINTAINABILITY

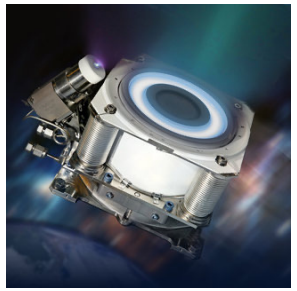
ENERGY CONSUMPTION

SUPPLIER LOCK-IN RISKS

CO2 CONSUMPTION



COST-BENEFIT SIMULATION



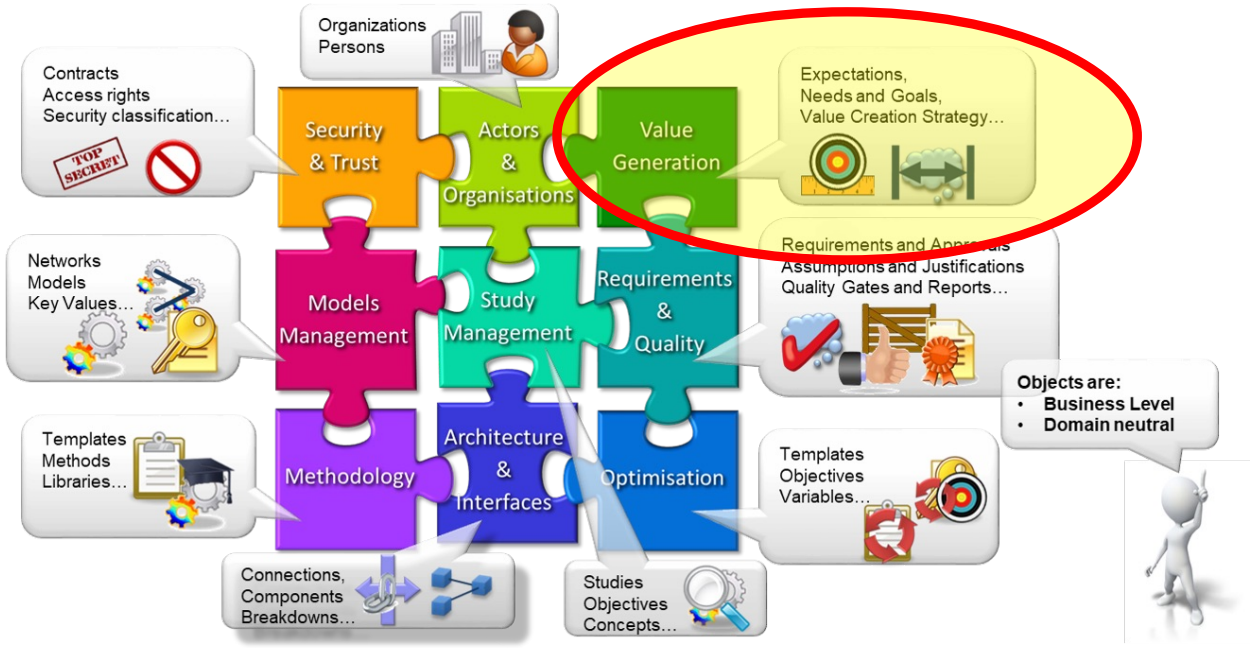
Option 3 allows to generate higher revenues due to

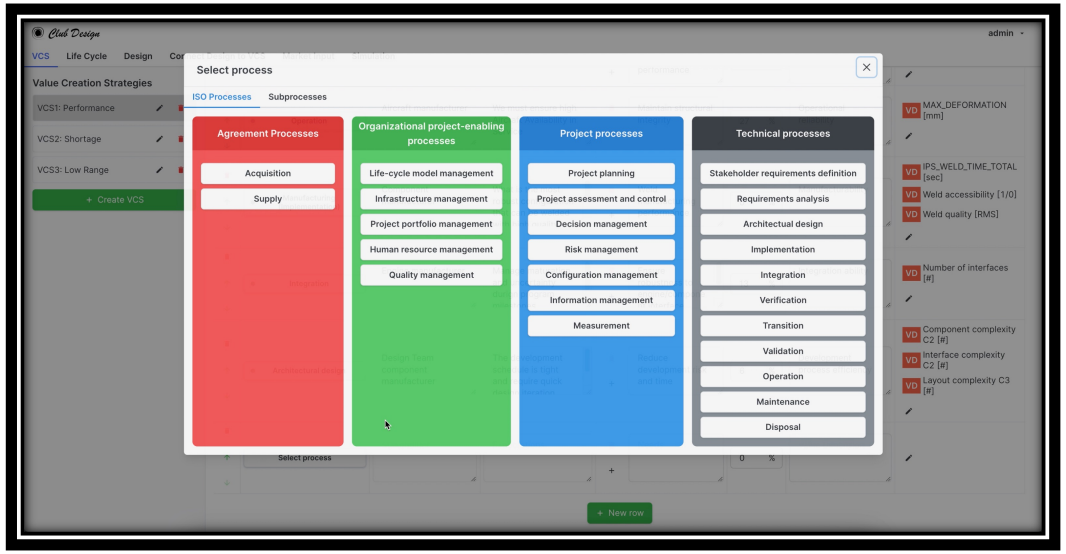
- high thrust (**earlier enter in orbit)**
- **low mass**

However, **the pay back is longer due to**

- **higher complexity** (a more innovative and risky concept)

KEY IN CLUB DESIGN: LIFECYCLE STANDARDS





ISO 10303-243 – MoSSEC*

Modelling and Simulation information in a collaborative Systems Engineering Context

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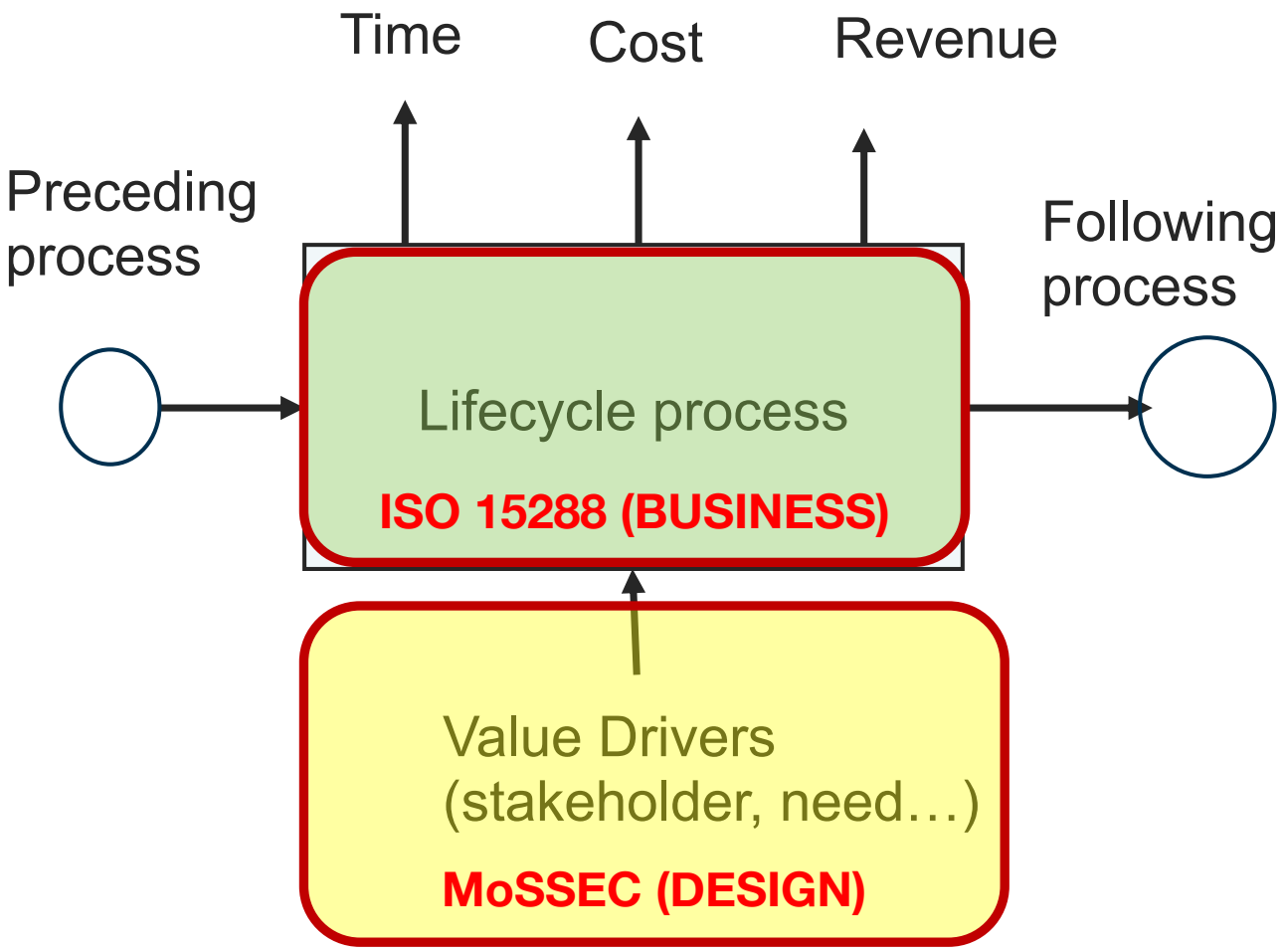
ISO/IEC/IEEE 15288:2015

Systems and software engineering — System life cycle processes

*Value Genration proposed for integration but not yet implementted

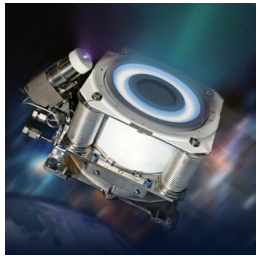
KEY IN CLUB DESIGN: LIFECYCLE STANDARDS



Allows the discrete-event simulation of cost-benefits for all designs!!!

CONCLUSION

Club Design as enabler to go from “words” to money (and from money to words!!)



ISO 10303-243 – MoSSEC*

ISO/IEC/IEEE 15288:2015

Lifecycle standards as enabler for cost-benefit automation

ACKNOWLEDGEMENTS

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CHEOPS LOW POWER: The CHEOPS LP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004331.

DEFAINE (Design Exploration Framework based on AI for froNt-loaded Engineering)

Thank you!!!

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