

Implementing SysML to Reduce Ambiguity in the Life Cycle Management of Unmanned Aerial Vehicles

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Overview

The purpose of this project is to utilize Model-Based Systems Engineering (MBSE) and SysML to create a consistent, accurate, broad, and flexible systems model of a fixed-wing Unmanned Aerial Vehicle (UAV), which includes structural, behavioral, parametric, and requirements diagrams, to reduce costs throughout the life cycle and clearly communicate system design.

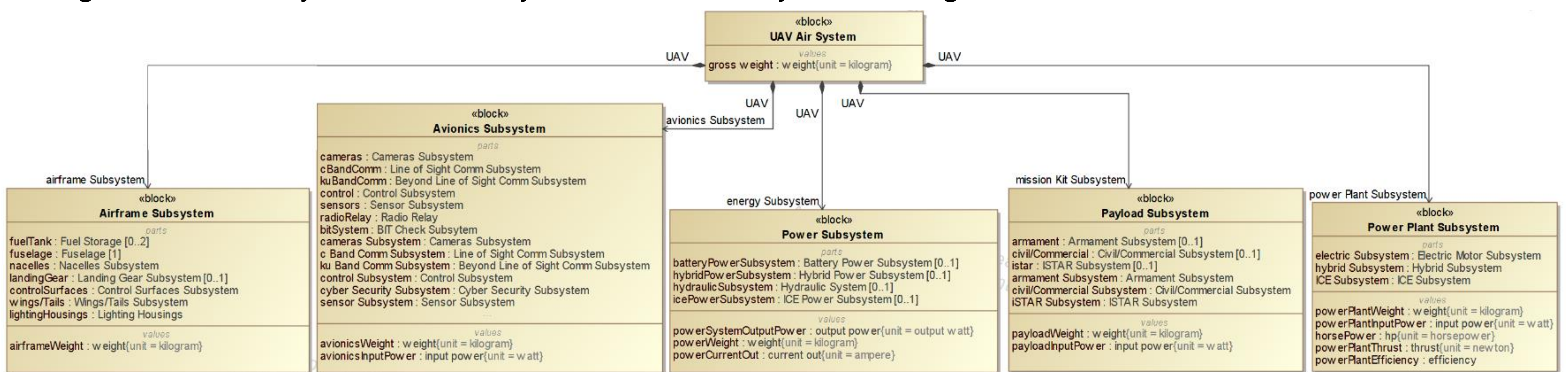


Figure 1: UAV air system BDD

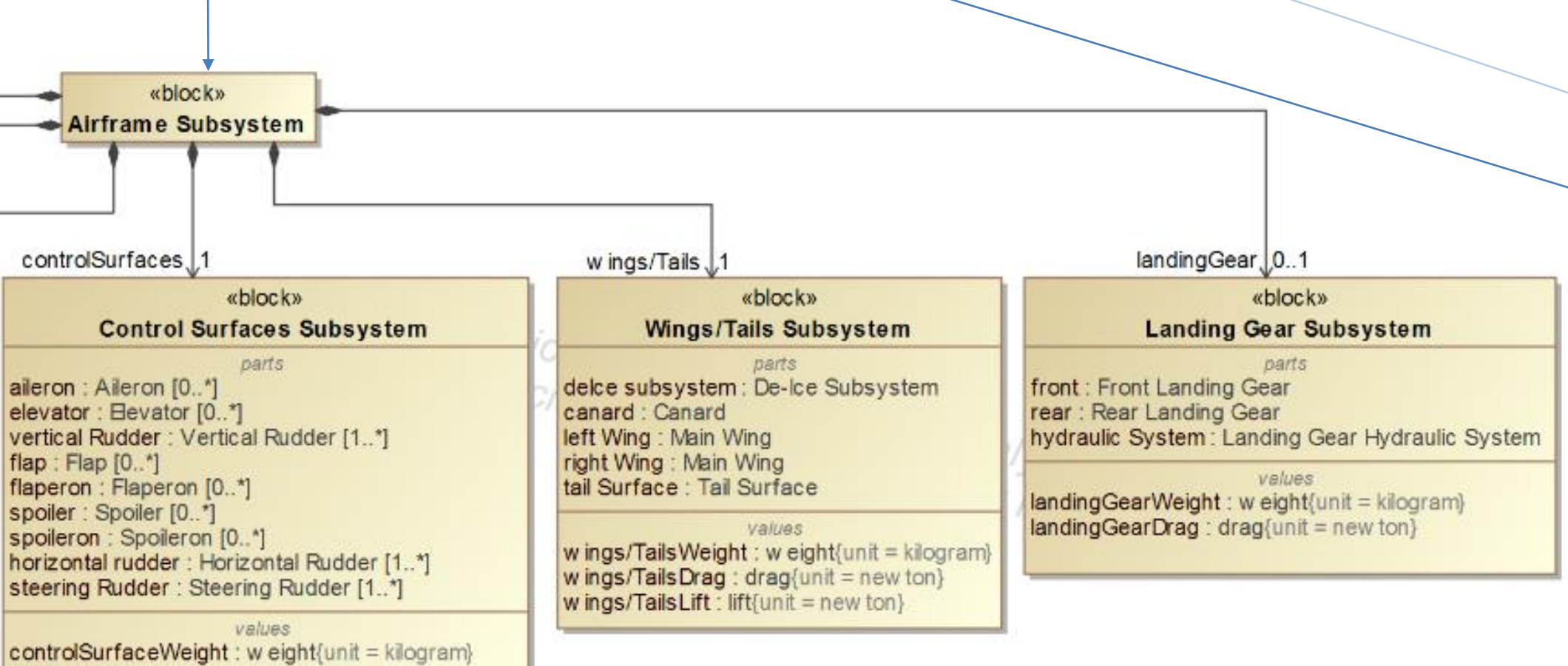


Figure 2: Airframe subsystem block definition diagram



Figure 4: General Atomics MQ-9 Reaper

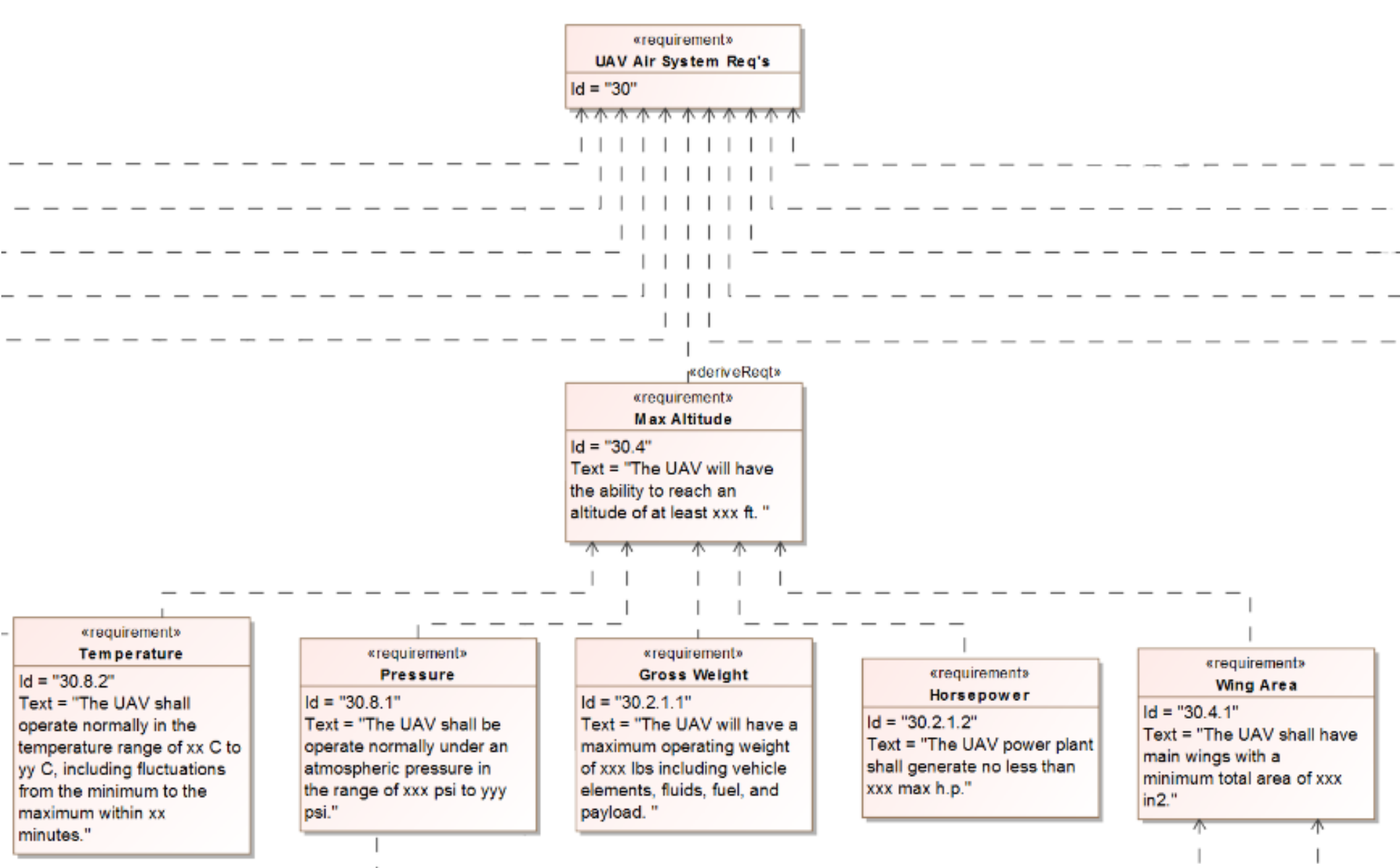


Figure 3: Requirements diagram

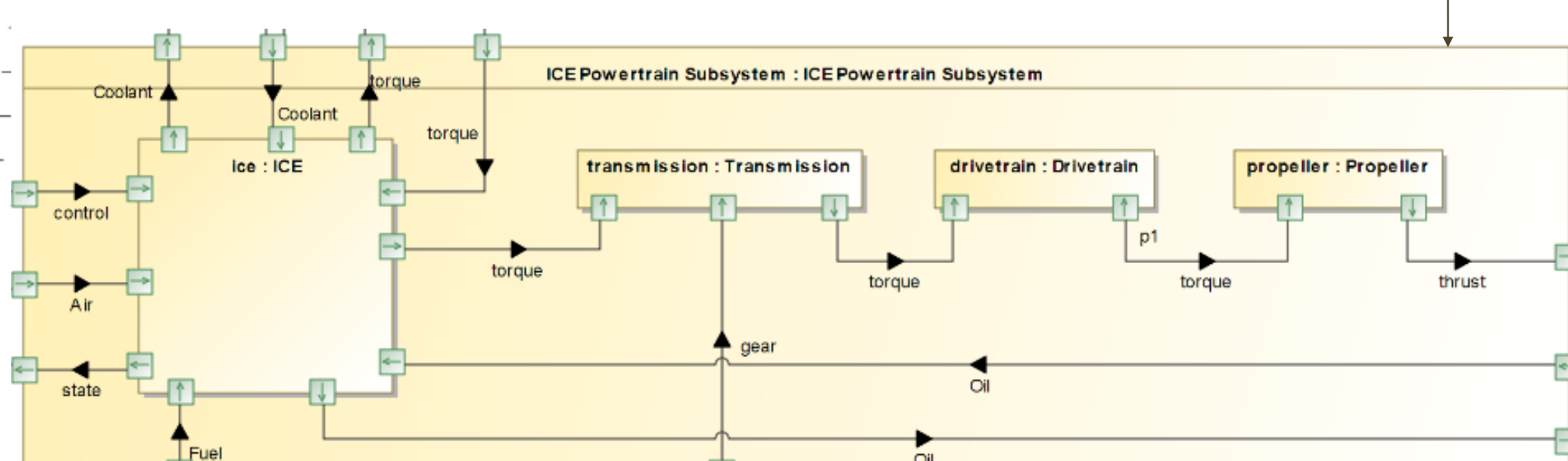


Figure 5: ICE powertrain internal block diagram

Acknowledgements

Dr. Dale Thomas, Professor, Department of Industrial and Systems Engineering

Future Work

The subsequent steps required to complete this model will include constructing behavioral diagrams to model the uses, activities, and sequences of the UAV, as well as parametric diagrams to express the constraints of the system.

References

Figure 4: <http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104470/mq-9-reaper.aspx>.