



Data-Centric Framework for Digital Twin Development of an Aircraft System

Sumit Singh

1. RESEARCH MOTIVATION

- With the rapid digitalisation in commercial aircraft industries, emergence of Digital Twin (DT) is significant as it can fulfil the urgent need of data-driven optimisations in existing products, operations and services
- Considering the complexity of the systems and multidisciplinary data in an aircraft, development and implementation of DT is challenging
- The research is intended to develop a data-centric framework to enable the creation of a fully representative DT for aircraft system



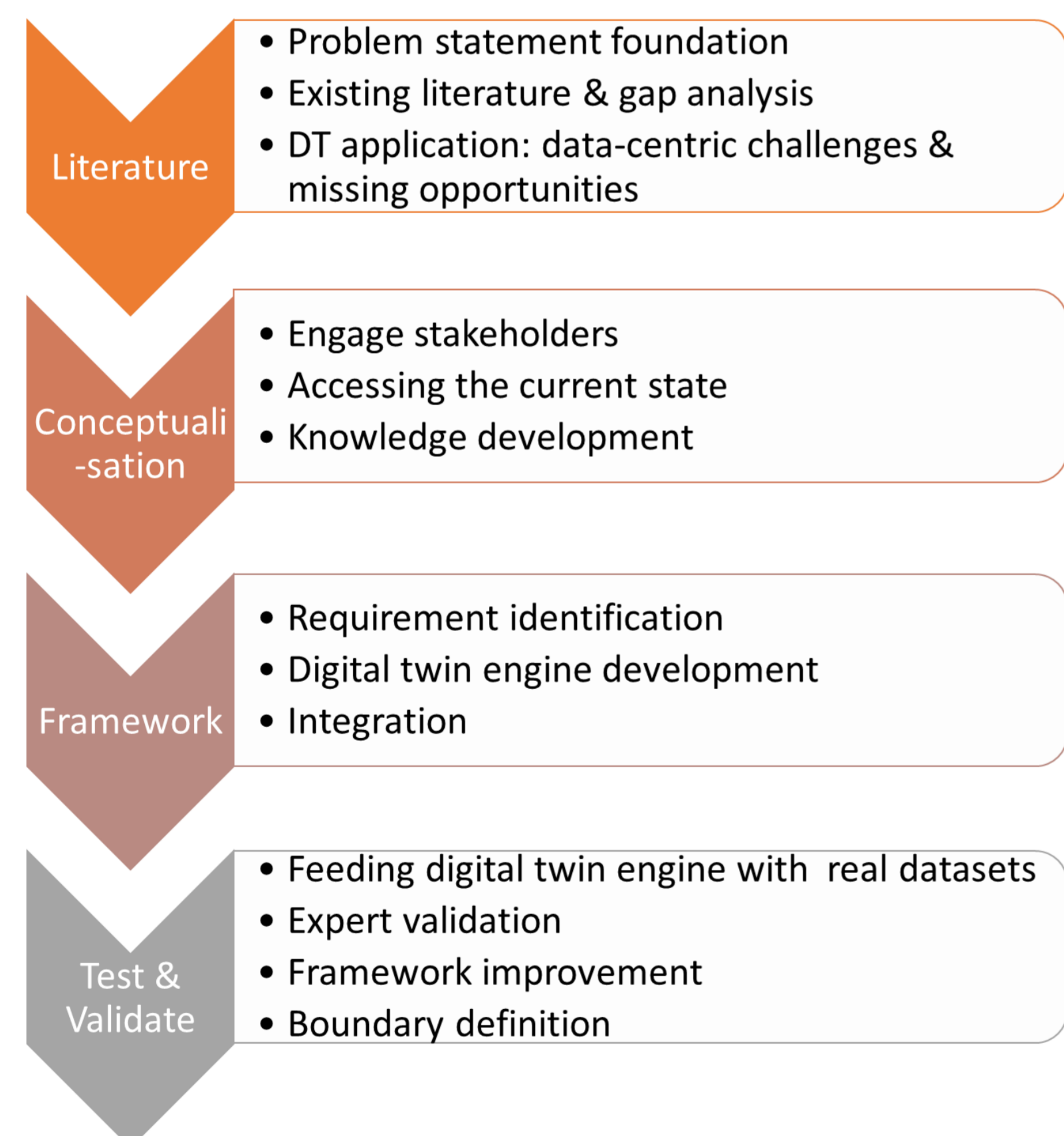
2. AIM & OBJECTIVES

To develop a data-centric framework to enable the creation of Digital Twin (DT) for aircraft system

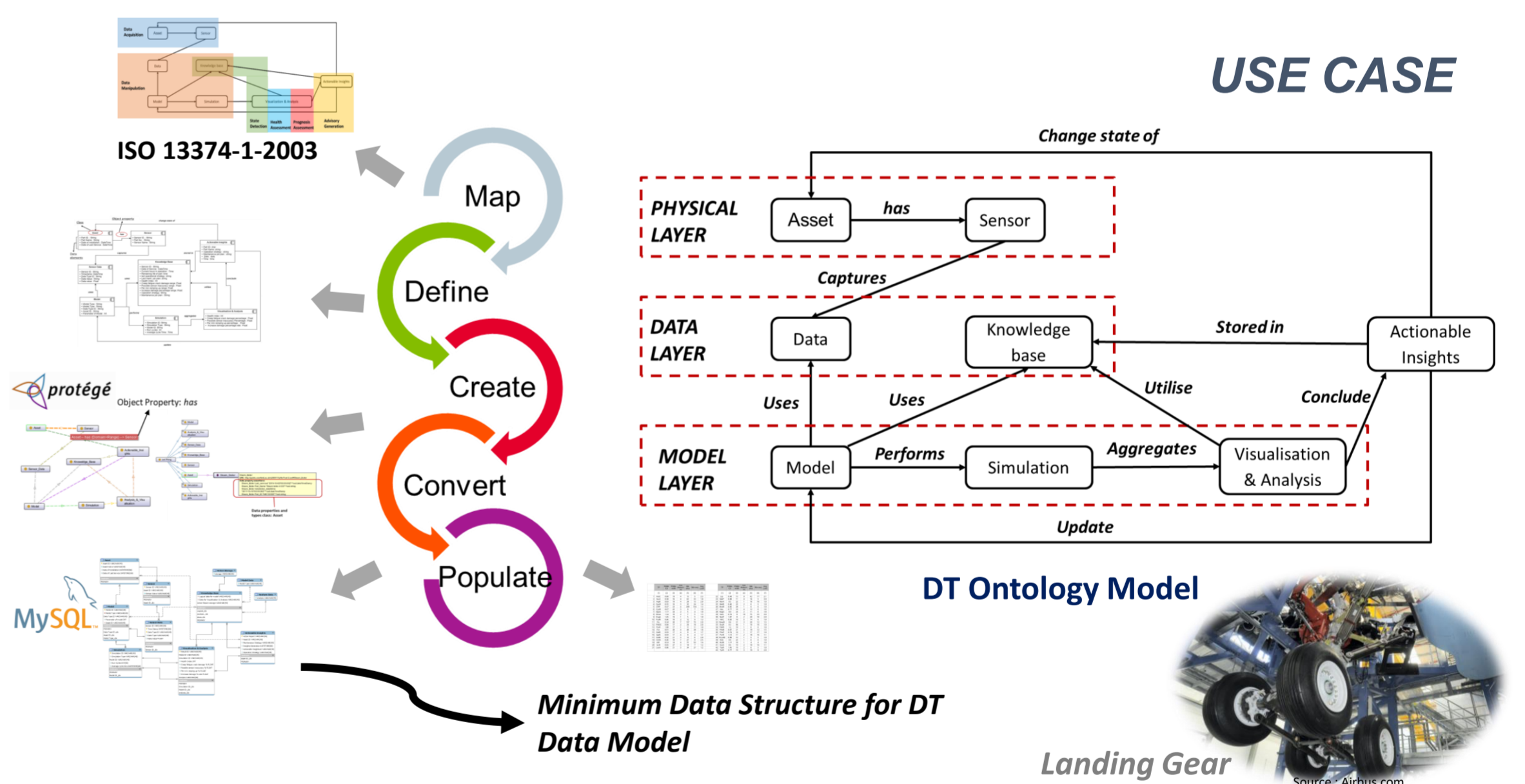
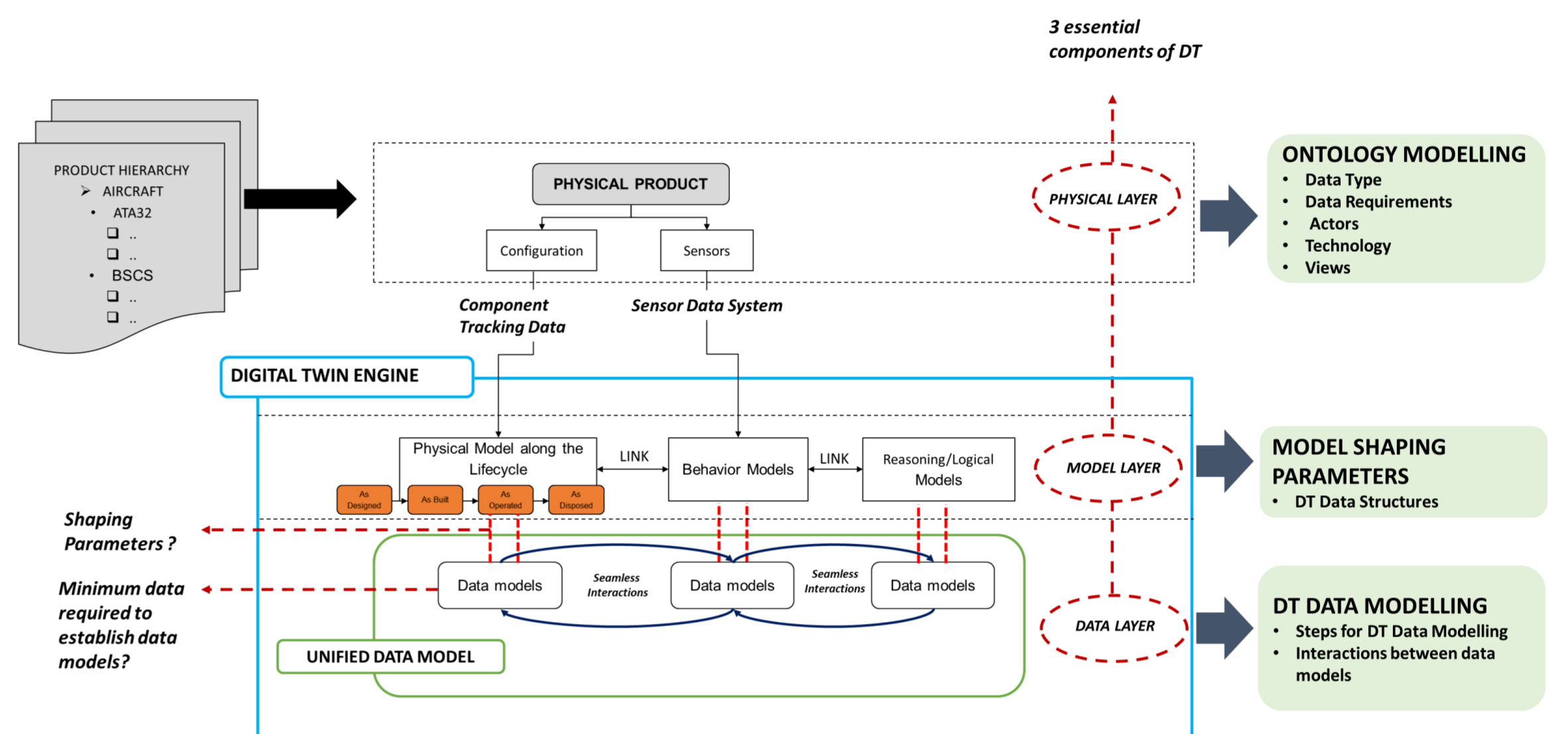
Objectives:

- Understand the current practices and state-of-the-art in managing DT
- Clarify the concept of DT within the scope of the commercial aircraft industry
- Identify the key phases and data elements for DT in commercial aircraft industry
- Develop a Framework to optimise data management for DT for an aircraft system
- Validate the framework with real life case studies and expert opinions

3. METHODOLOGY



4. FRAMEWORK



5. NOVELTY & CONCLUSION

Roadmap for Digital Twin

Attain & Adopt

Data Centric Approach

Data complexity simplification

- Data modelling for DT can bridge the gap of multidisciplinary data and present IM infrastructure.
- A minimum data structure is essential for highly scalable DT data modelling

- Semantics is a significant element for DT data management
- Metadata is as important as real data for DT

Conclusion

- Prof Essam Shehab / e.shehab@cranfield.ac.uk
- Dr John A. Erkoyuncu j.a.erkoyuncu@cranfield.ac.uk
- AIRBUS: Mr Nigel Higgins, Mr Kevin Fowler, Mr Peter Gadd

