AN OMG STANDARD
CSRM
CubeSat System Reference Model
INCOSE

Orbital Transports Mission Cloud

- Cloud-based, integrated digital engineering system
- Simplifies and accelerates SmallSat mission life cycle
- Rapidly select and develop mission models
- Mission Design Tool: web-based front end
- Access to OT SmallSat Catalog of partner products and services
- Perform trade analyses and price comparisons

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OT Work is built upon CSRM but extends CSRM significantly

Primary Model Elements Provided by Mission Template Models

- Stakeholders
- Technical Measures
- Use Cases
- Requirements
- Logical Architecture
- Validation and Verification
- Physical Design
- Project Plan and Schedule

} CSRM

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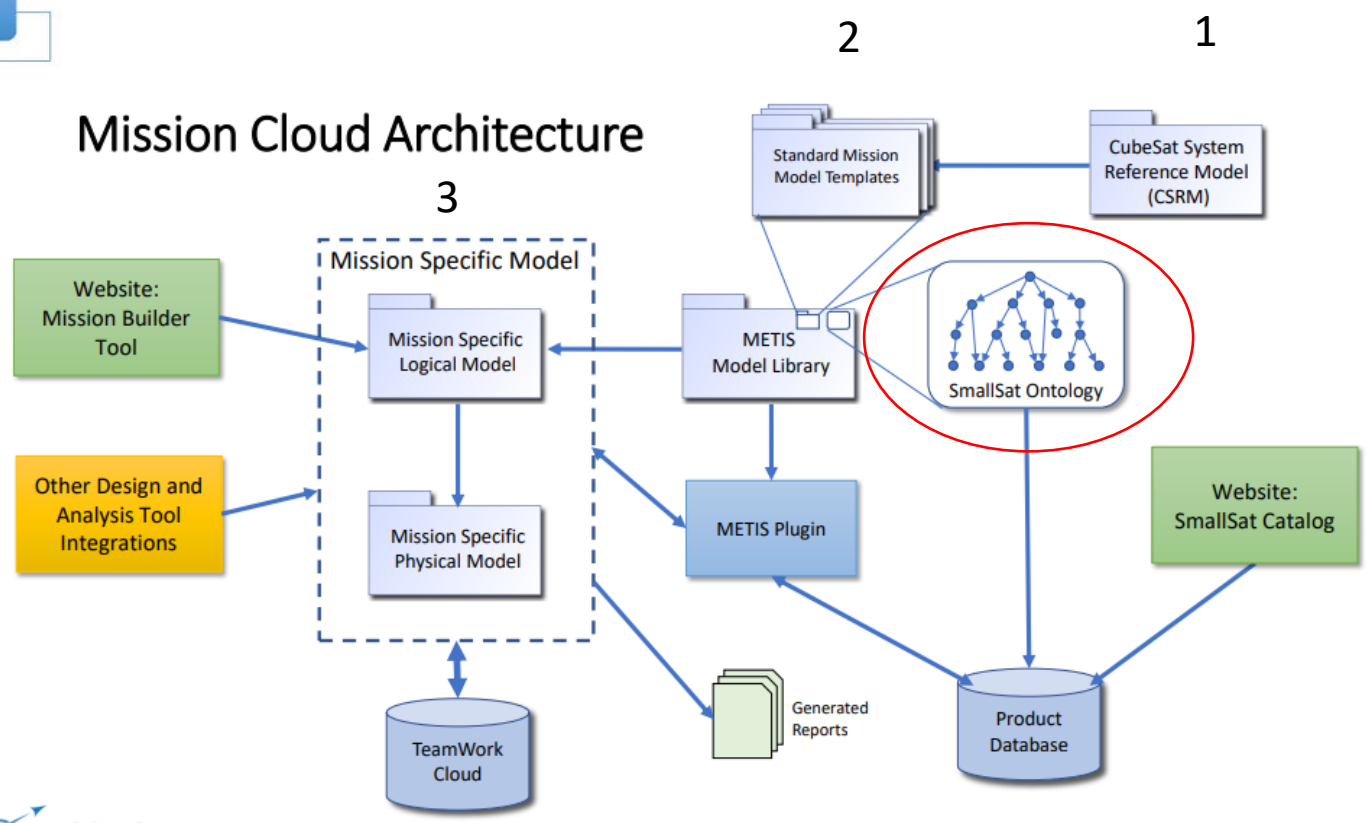
Mission Cloud Architecture



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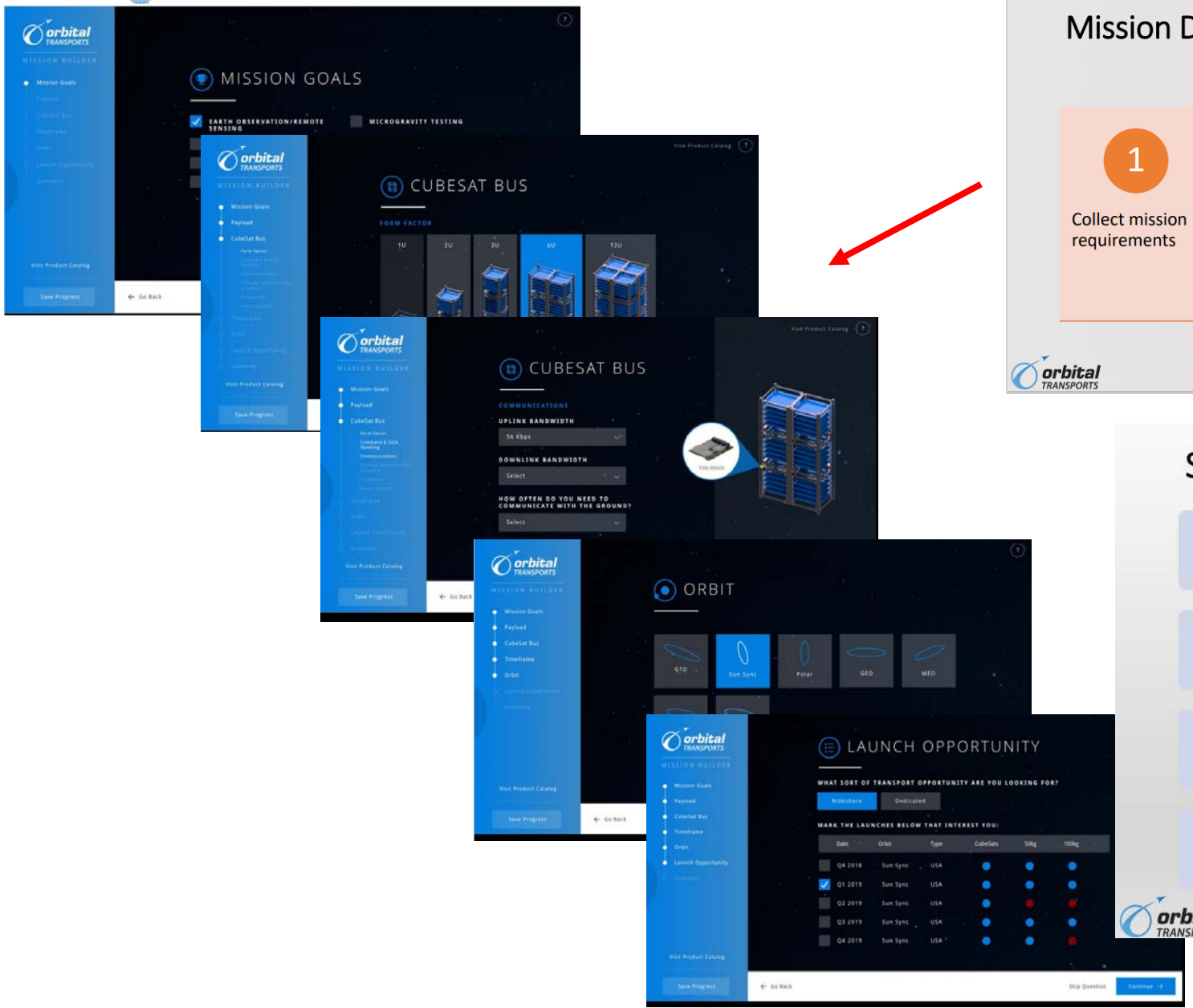
Orbital Transportation – Mission Cloud Concept – Transitioning from Logical to Physical Architecture



Mission Design Tool

1. Collect mission requirements
2. Select and configure smallsat components
3. Compare pricing
4. Find launch options

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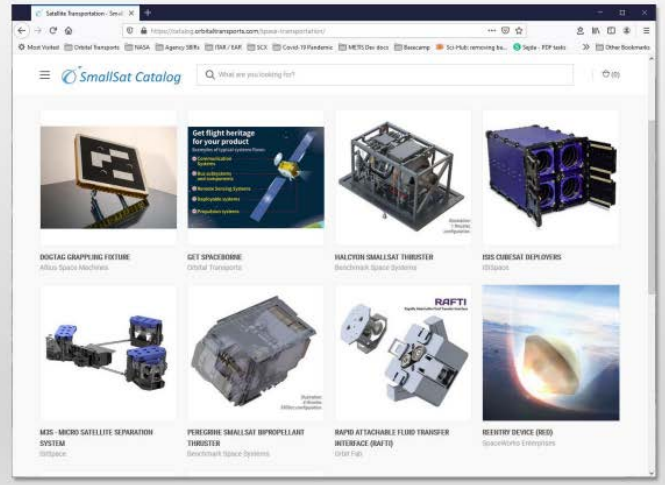
SmallSat Catalog

- Bringing the smallsat supply chain online
- One-stop shop for all your smallsat mission needs
- Hardware, software, services and engineering expertise
- Convenient go-to resource to check out the latest and greatest



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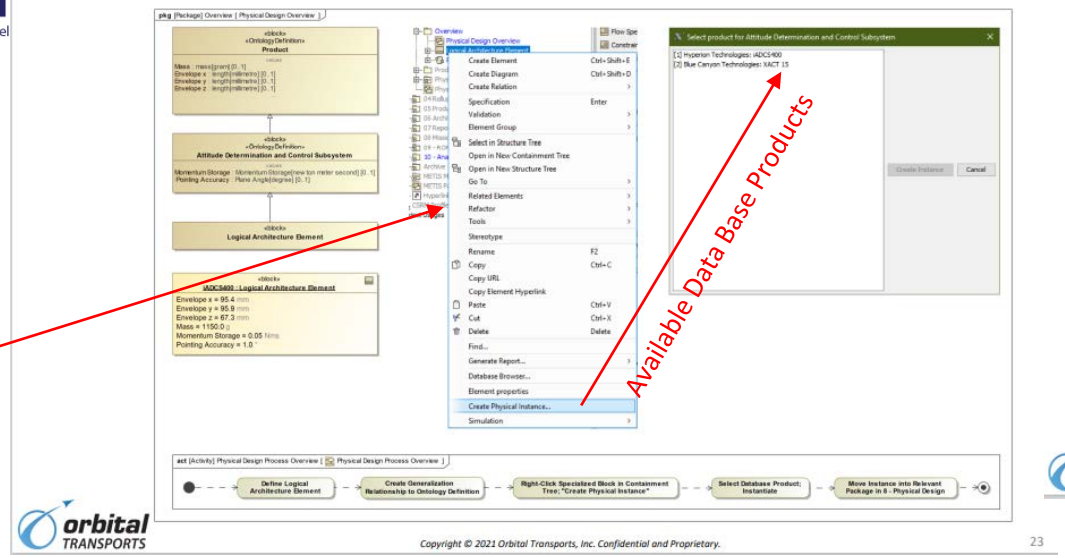
Logical Architecture to Physical Design Process



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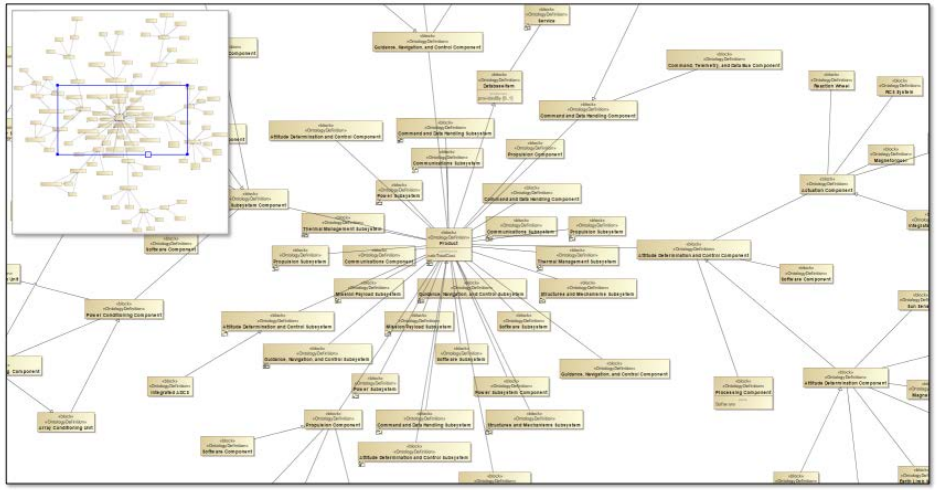
Product Ontology



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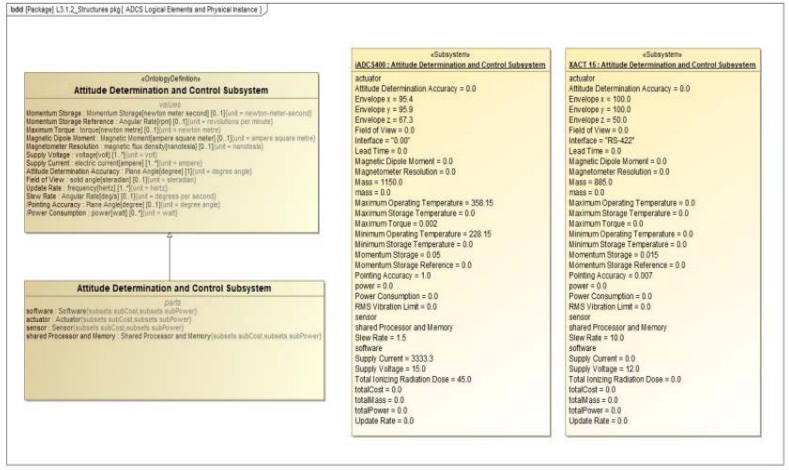
Logical Elements and Physical Instances



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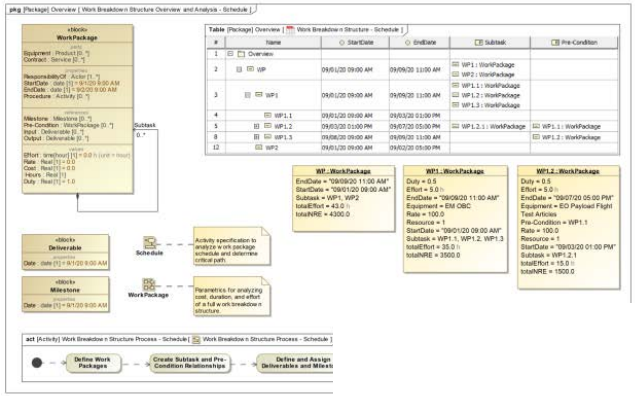
What is the story here ?

- The logical architecture defines logical elements corresponding to an abstract architecture.
- The block elements describe relatively generic subsystems and components (e.g. OBC, ADCS, etc.). These items are linked by generalization relationships to corresponding definitions in the Ontology, so they inherit the attributes and properties from the Ontology definitions.
- Physical instances are created from the logical elements to represent a specific physical implementation (e.g. Hyperion iADCS 400). The instance properties are defined by the ontology definitions and their values are populated with data retrieved from the product database.
- The Logical Architecture to Physical Design slide is representative of the process of selecting an element from the Logical Architecture, choosing a product from the product database corresponding to the selected architecture element, and automatically creating the physical instance using the product data retrieved from the database.
- The Logical Elements and Physical Instances slide shows the ontology and logical architecture block defining the ADCS subsystem and two physical instances with the property values populated for two different products.

The Model is the Source of Truth

Project Planning and Scheduling
Schedule Estimation



Once the previous SE steps are completed, then cost & schedule are estimated, Document Generation is printed for review

OT's Mission Model Drives the Documents
(Docs do NOT Drive the Process)

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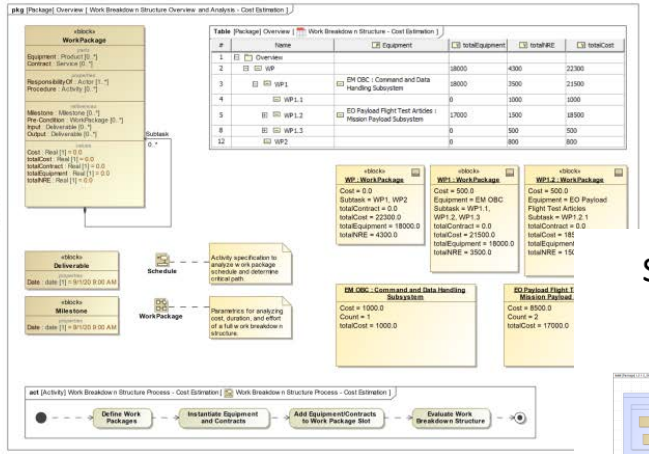
Project Planning and Scheduling
Cost Estimation



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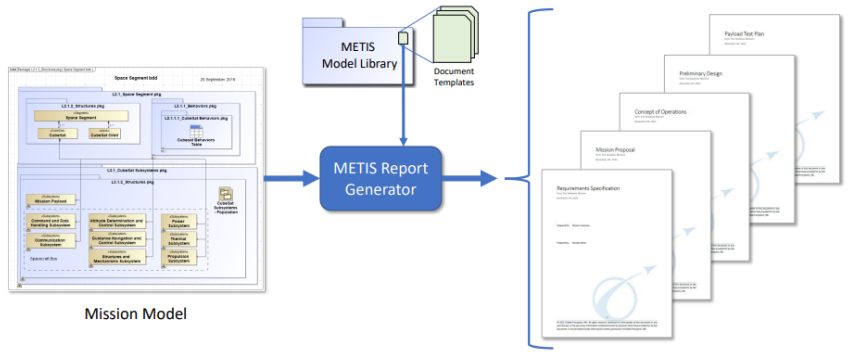
Systems Engineering Document Generation



Mission Model

Generated Documents

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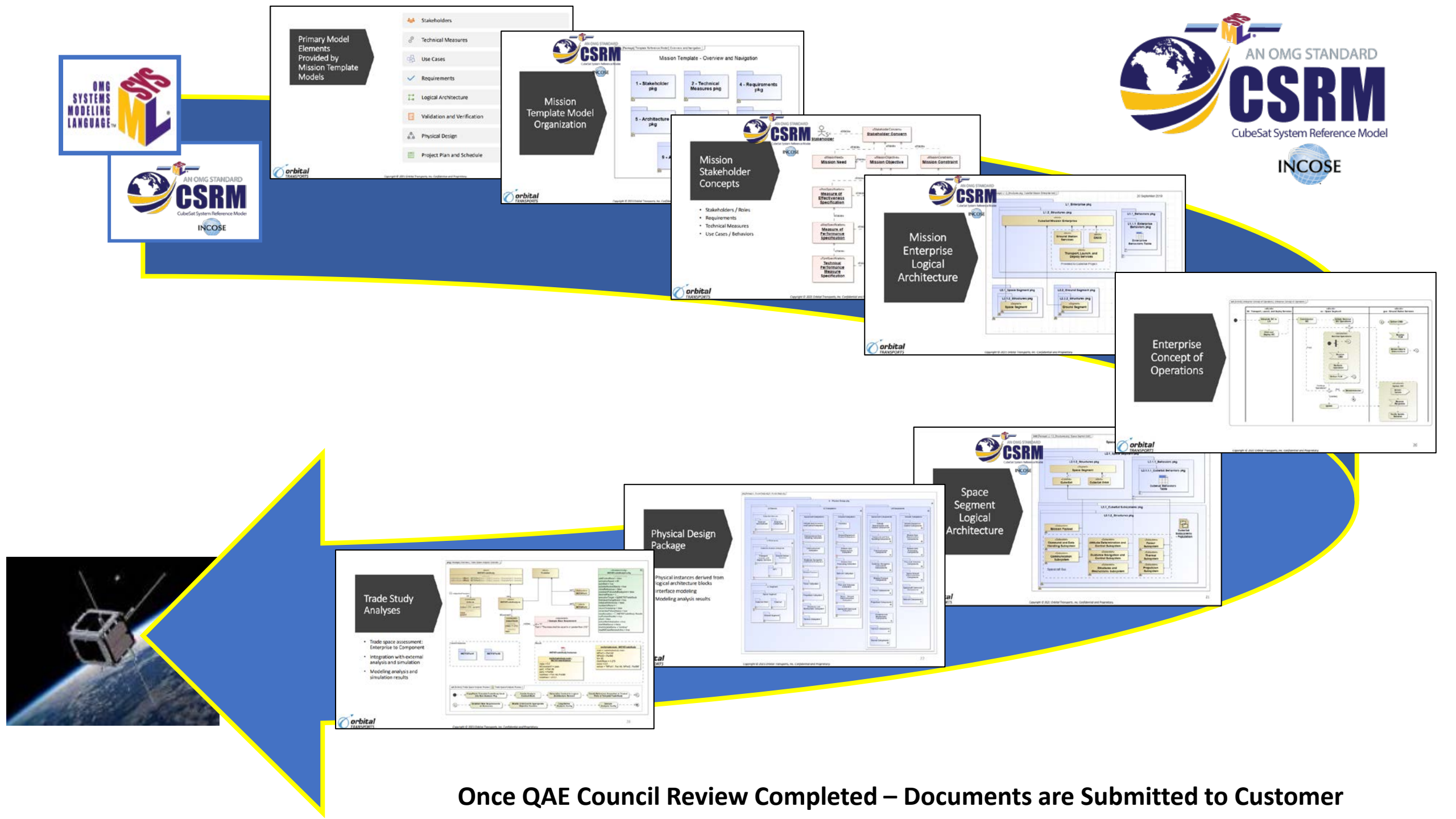

Once QAE Council Review Completed – Documents are Submitted to Customer