MBSE Model Management

Full Lifecycle Configuration Management of MBSE Models

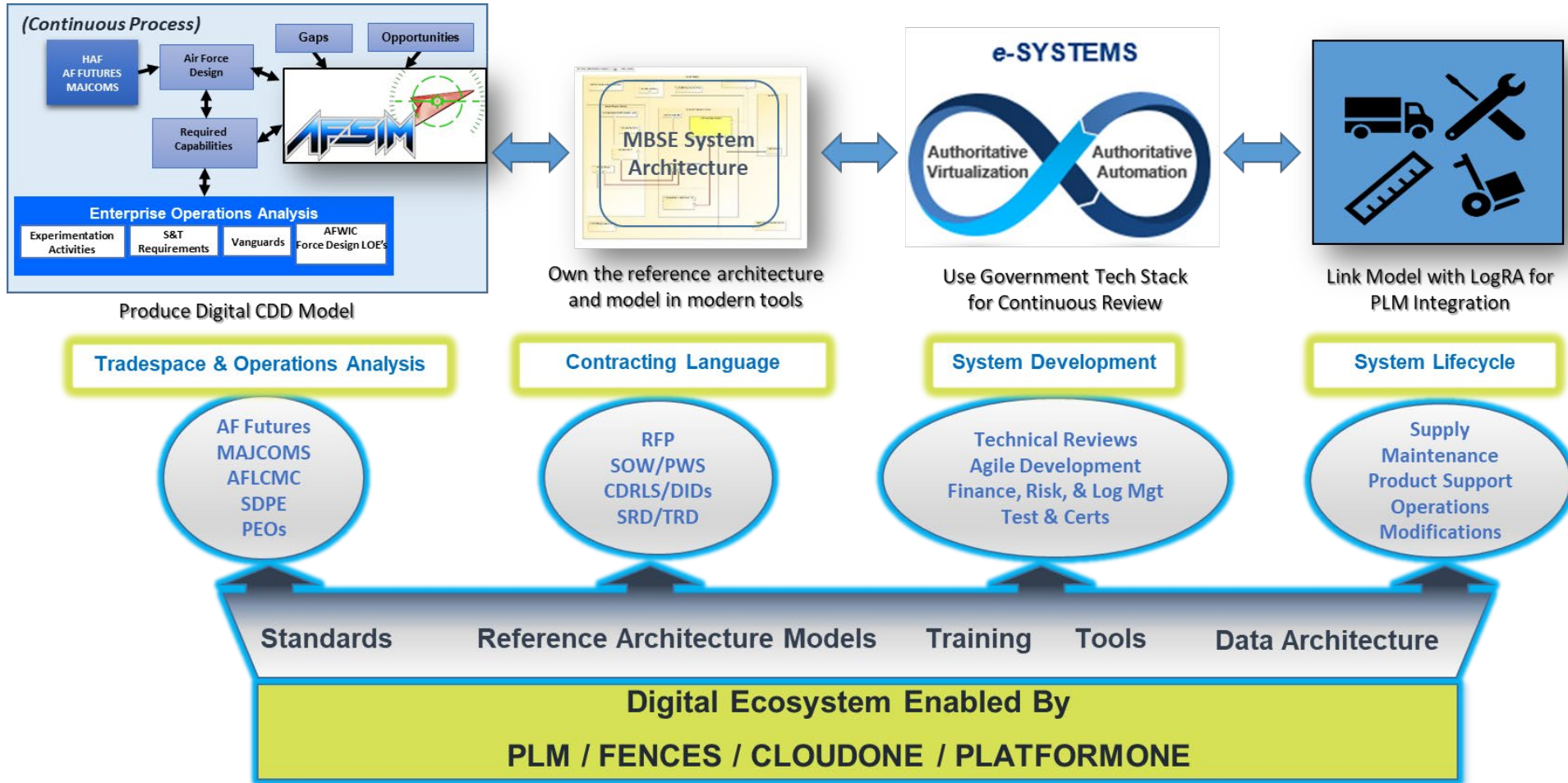**Chris Garrett, SL**
Systems Engineering

Overview

- **BLUF:**
  - **System Model Configuration and Release Management is basically like Software Configuration and Release Management**

- **Key point is that Software Configuration Management (SCM) tools allow us to manage multiple configuration baselines**
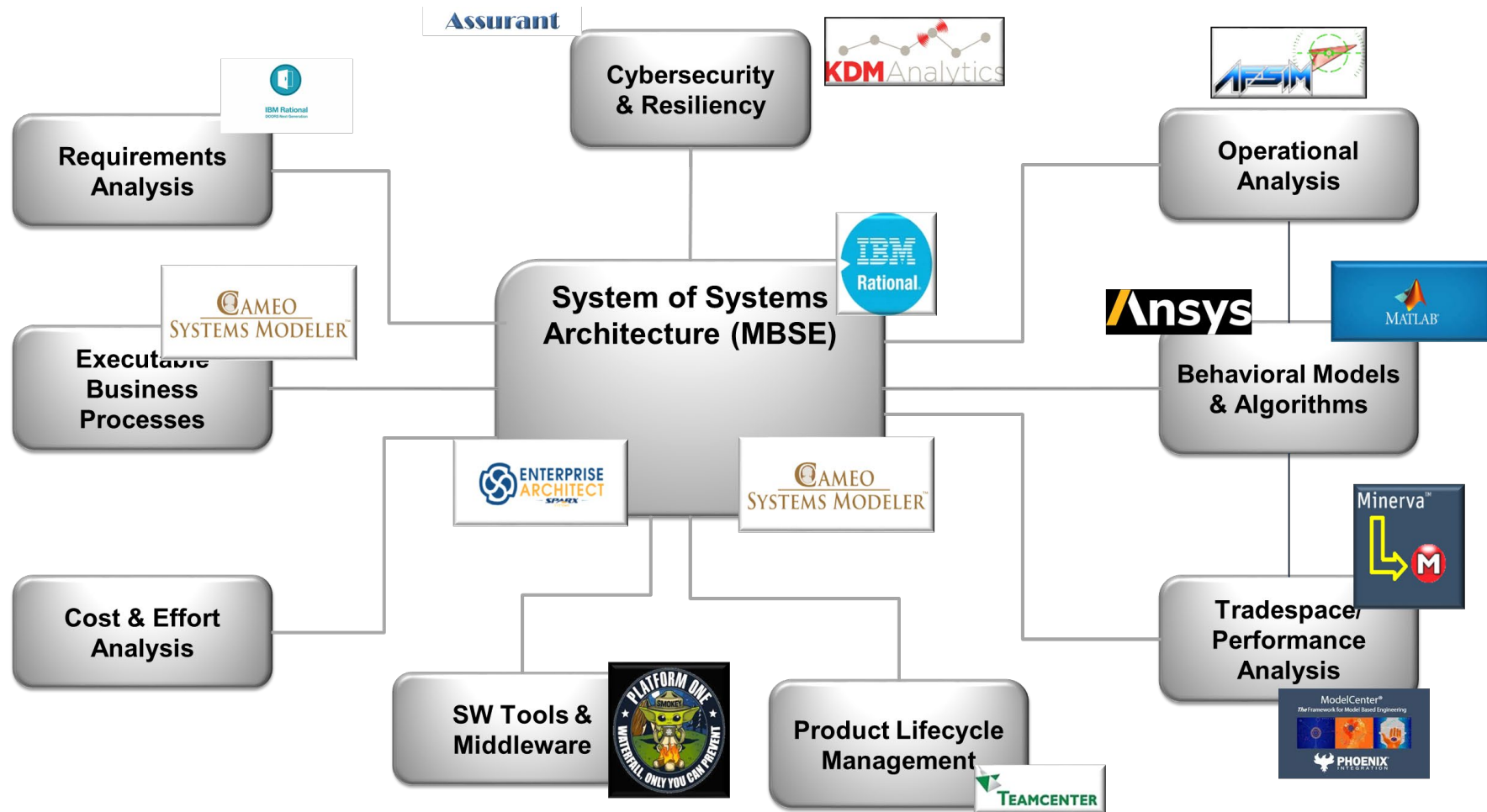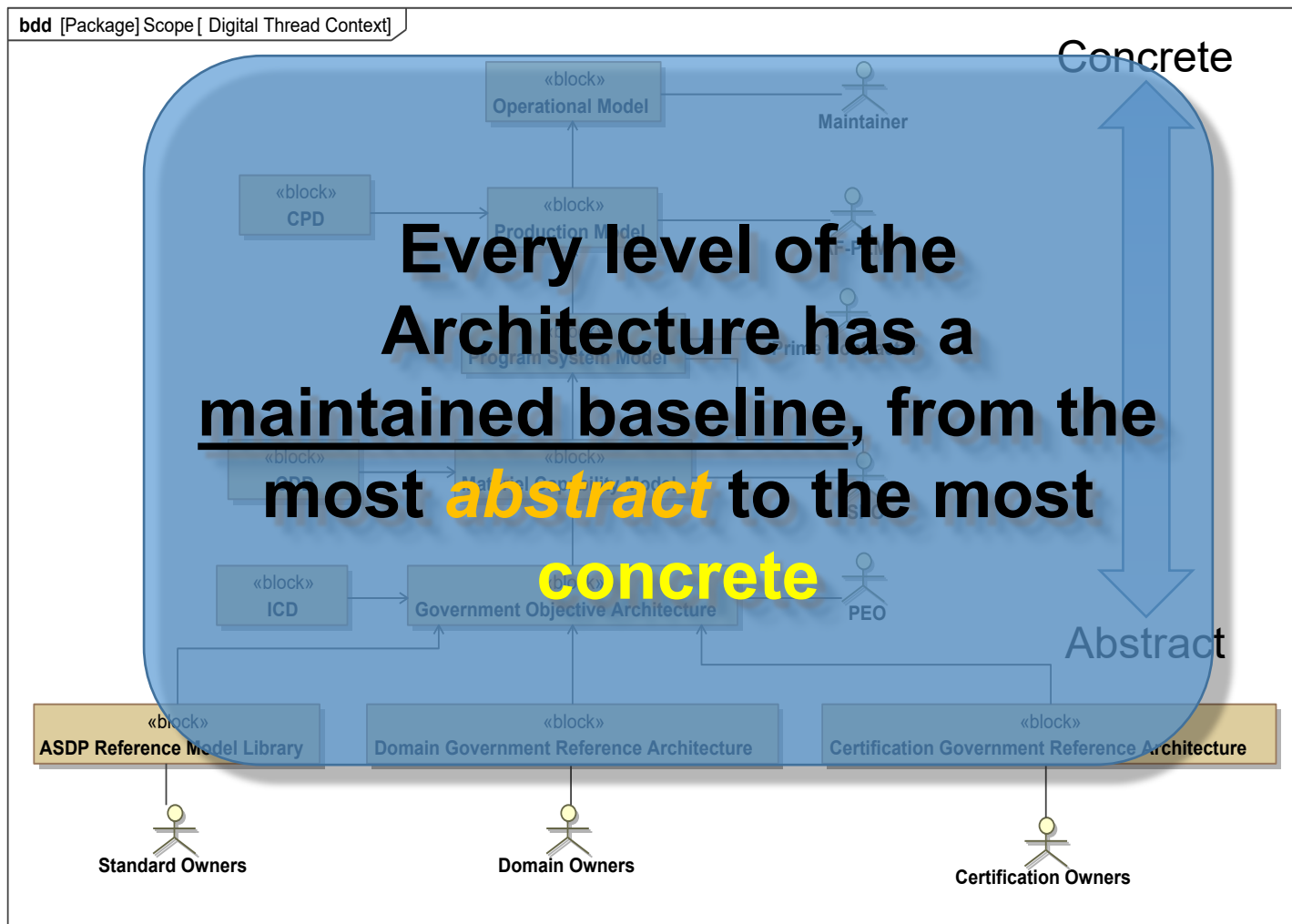
Digital Ecosystem

Produce Digital CDD Model

Own the reference architecture and model in modern tools

Use Government Tech Stack for Continuous Review

Link Model with LogRA for PLM Integration

Tradespace & Operations Analysis

Contracting Language

System Development

System Lifecycle

AF Futures
MAJCOMS
AFLCMC
SDPE
PEOs

RFP
SOW/PWS
CDRLS/DIDs
SRD/TRD

Technical Reviews
Agile Development
Finance, Risk, & Log Mgt
Test & Certs

Supply
Maintenance
Product Support
Operations
Modifications

Standards   Reference Architecture Models   Training   Tools   Data Architecture

Digital Ecosystem Enabled By

PLM / FENCES / CLOUDONE / PLATFORMONE

Architecture in Action!

ASDP Future in the Digital Thread

Every level of the Architecture has a maintained baseline, from the most *abstract* to the most concrete
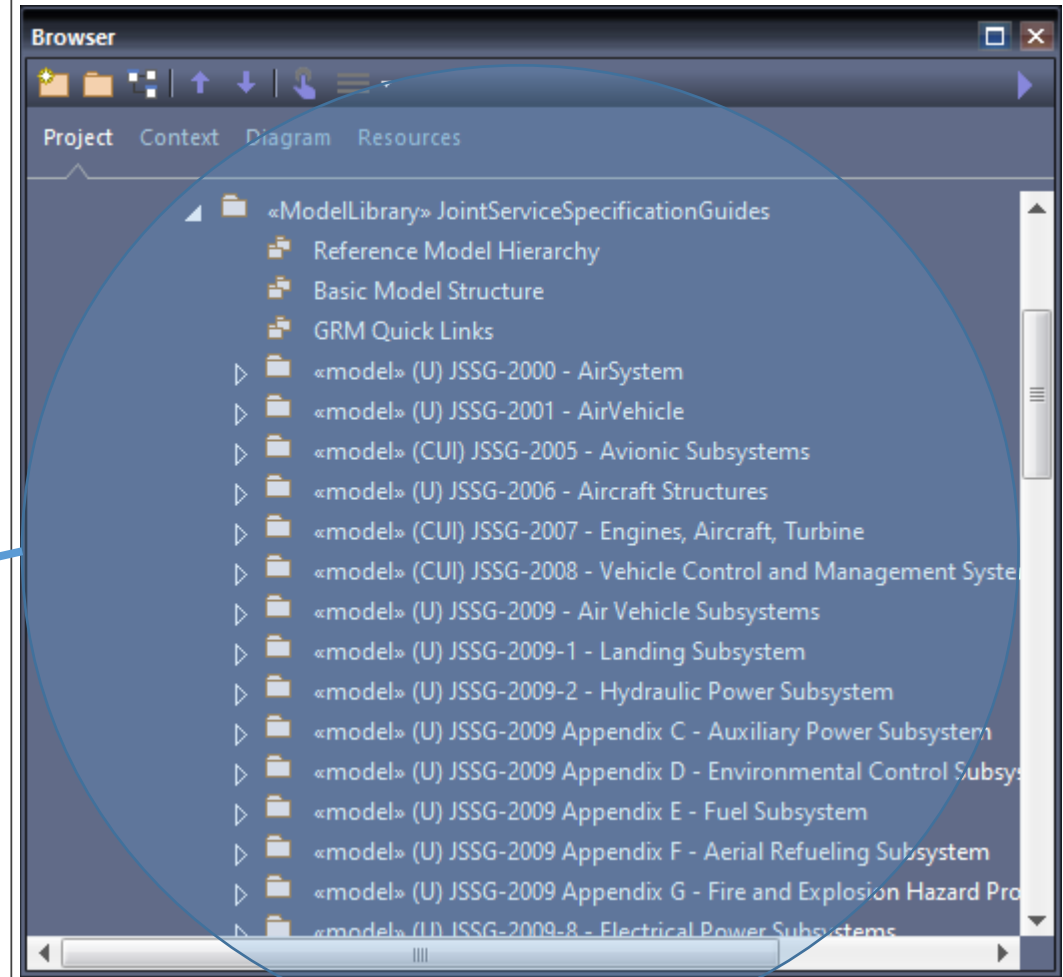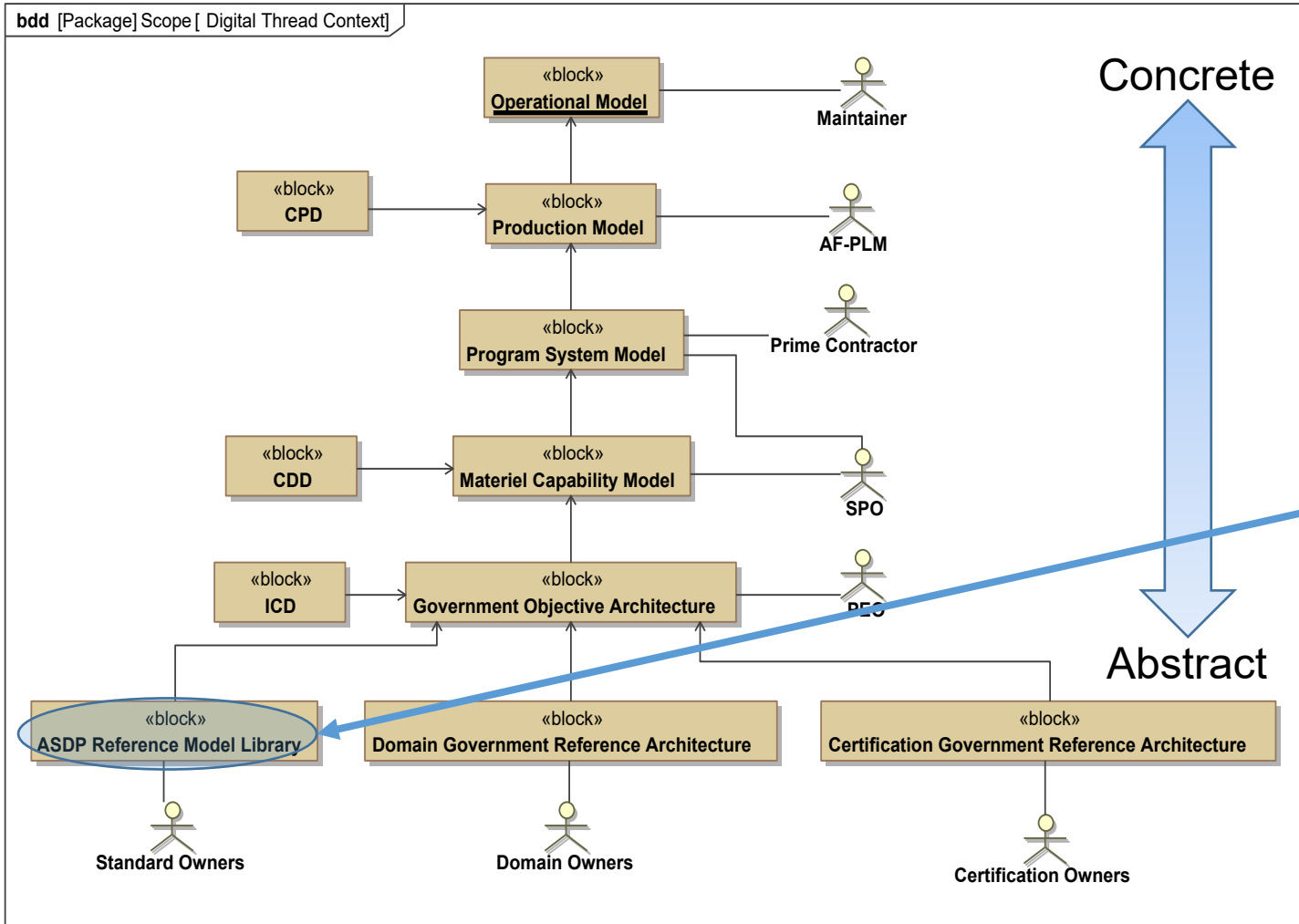
Baseline Configuration Considerations

- **Software attempts to merge to a single trunk release**
    - **Not always possible**
    - **Different targets need different feature sets from the trunk**
        - **Sometimes with modifications of the trunk that are never merged back**
    - **Results in multiple edition releases**

- **Theoretically, the only common aircraft baseline will be the abstract Air Vehicle model**
    - **Each level of the architecture has a release branch of its own**
    - **Each branch is managed separately as its own "trunk"**
    - **Changes to the more abstract trunk may drive changes to more concrete**

- **Every Air Vehicle will consist of library-based common system / subsystem elements (from the JSSGs), but pulls "Legos" from the library to define the whole**
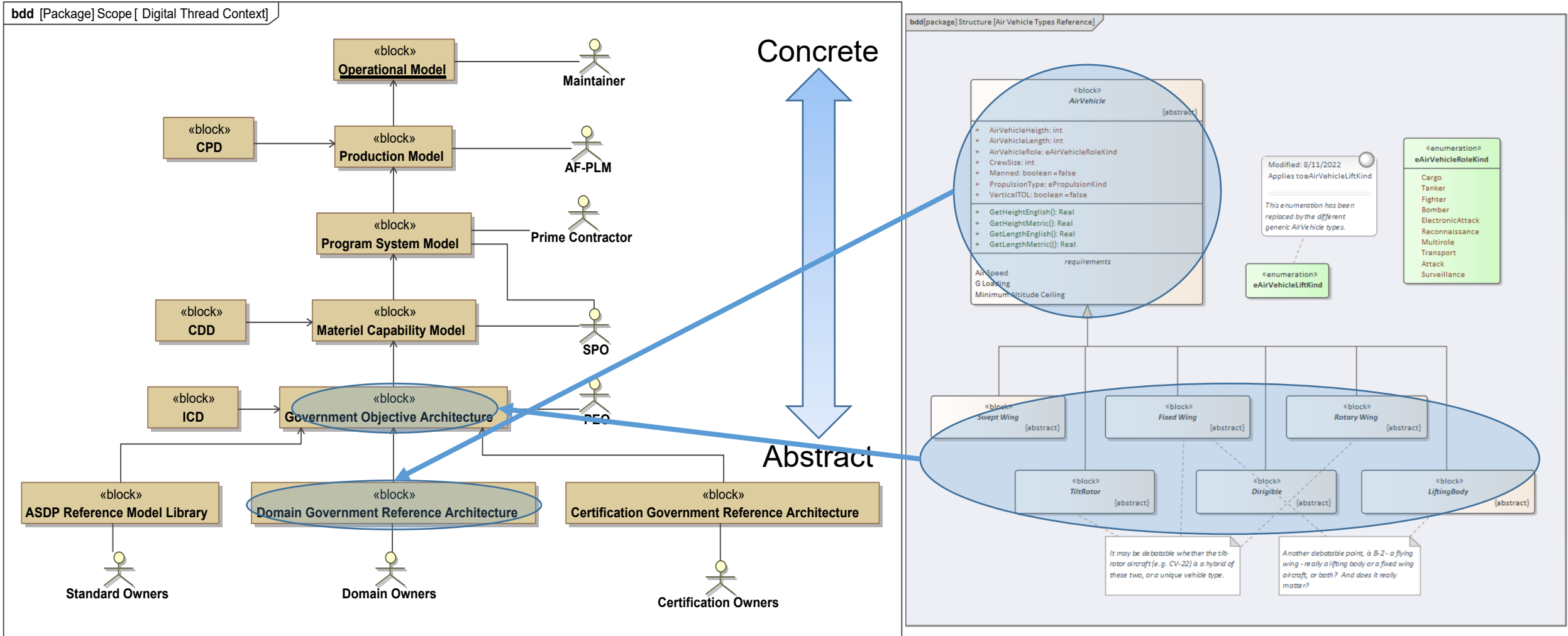
- **Model libraries are separate baselines**
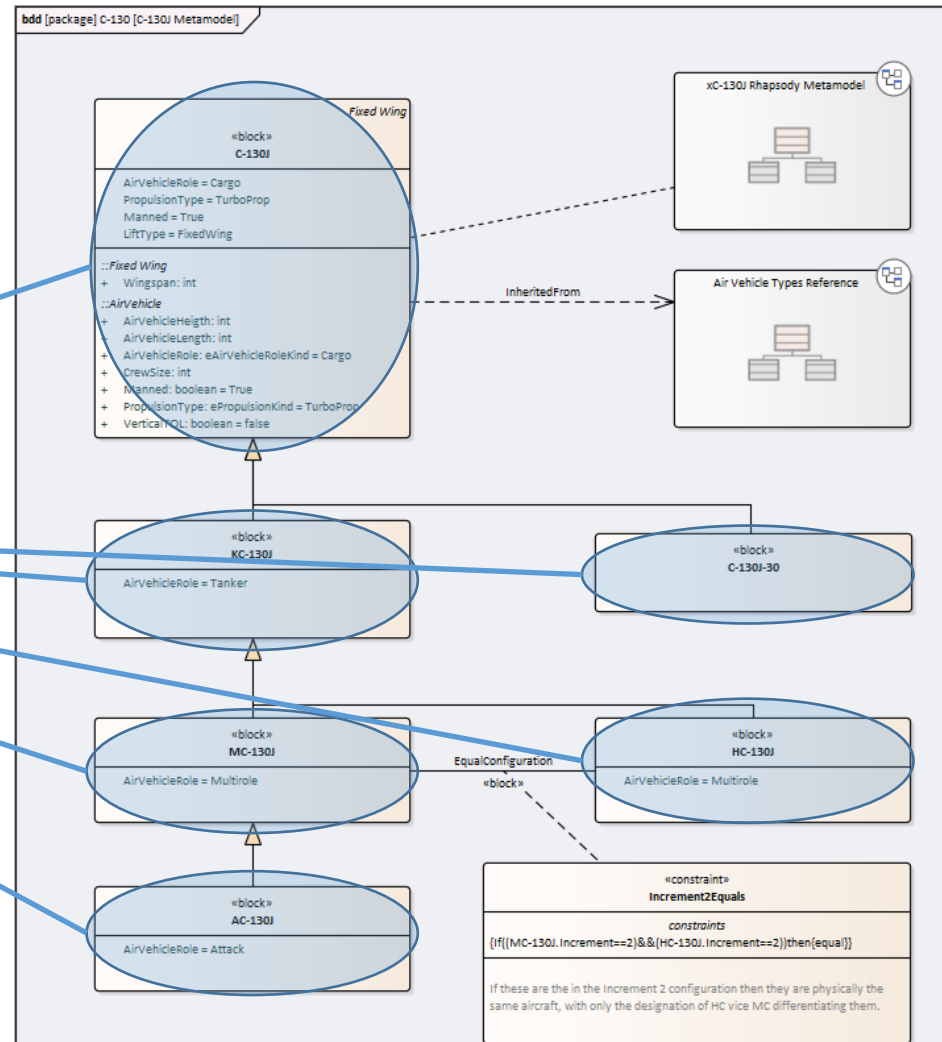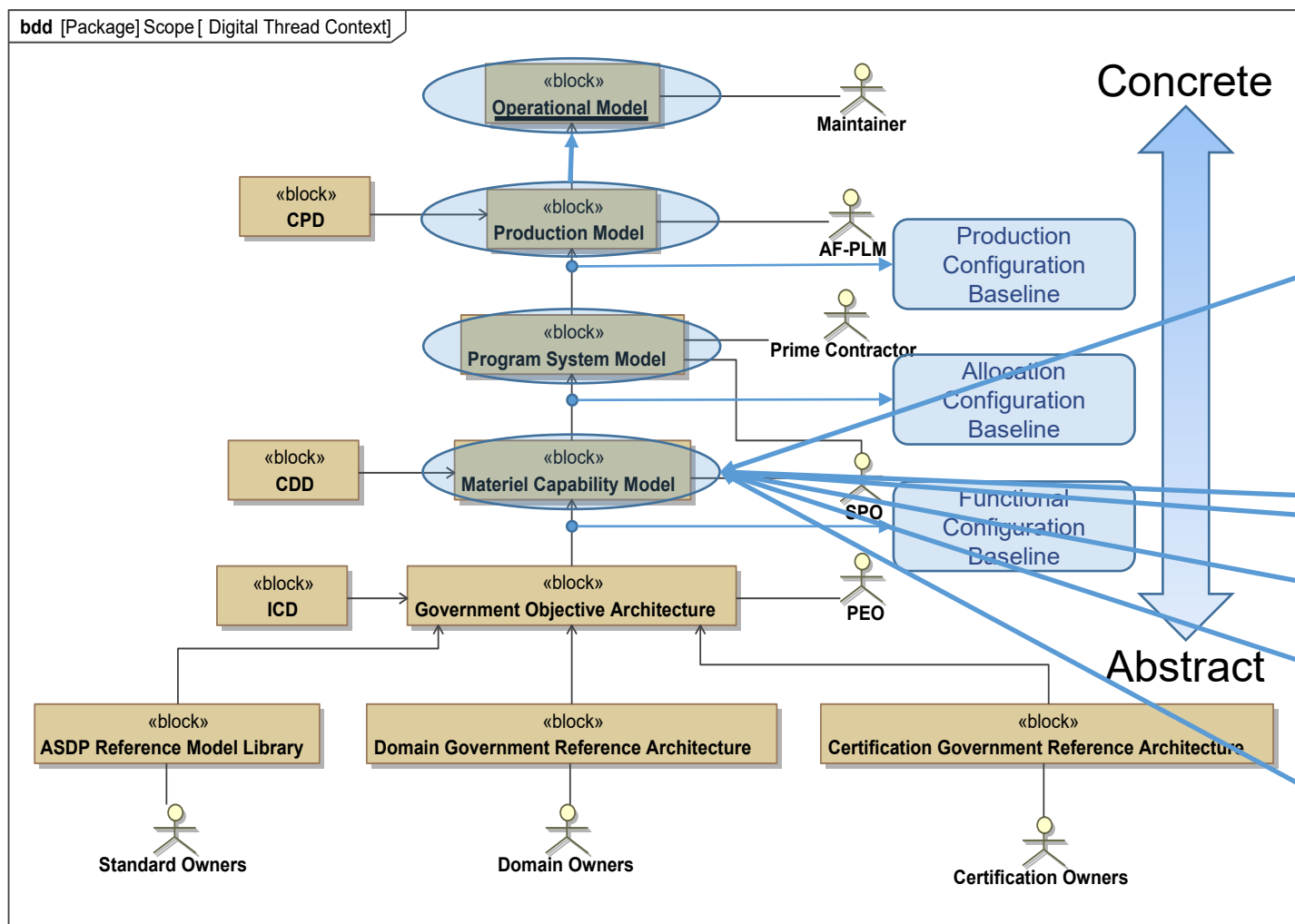
Abstract Models Managed per Level

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Abstract Models Managed per Level

- **CM of MBSE Models basically equivalent to Software CM**
  - **Will be even more so with SysML v2.0**
- **Multiple levels of architecture CM is needed**
  - **Each level needs its own repository**
  - **Repositories need to be able to exchange model data**

Questions

Changes in the Near-term Future

- **SysML v2.0 is in review (with updates) for formal release**
  - **Target date may have slid into 2023/24**
  - **Based on a new language standard (not a UML profile)**
    - Kernel Modeling Language (KerML)
    - KerML v1.0 is also in review for formal release

- **SysML (and KerML) is text-based**
  - **Still has a graphical representation**
  - **Tools are expected to add text editing with graphical editing**

- **Model CM will be virtually identical to SCM**
  - **Both managed at the textual content level**