

Requirements, Evidence and Attestation Traceability *with* *Python and Flexo MMS*

JAXA MBSE Symposium · Tsukuba

PRESENTER

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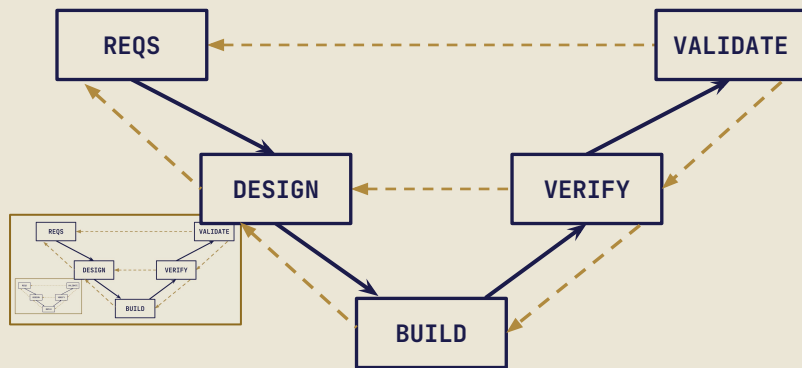
DSG is an
R&D firm
and
systems integrator
operationalizing
emerging tech.

Professional Services,
not a product company.

Engineering is *loopy*.

↻ ENGINEERING PRACTICE

e.g., V-model, nested, traversed many times



Dynamic · iterative · creative · concurrent · heterogeneous · interdependent

Institutions are *linear*.

➔ INSTITUTIONAL LEDGER

e.g., requirements traceability matrix, canonical

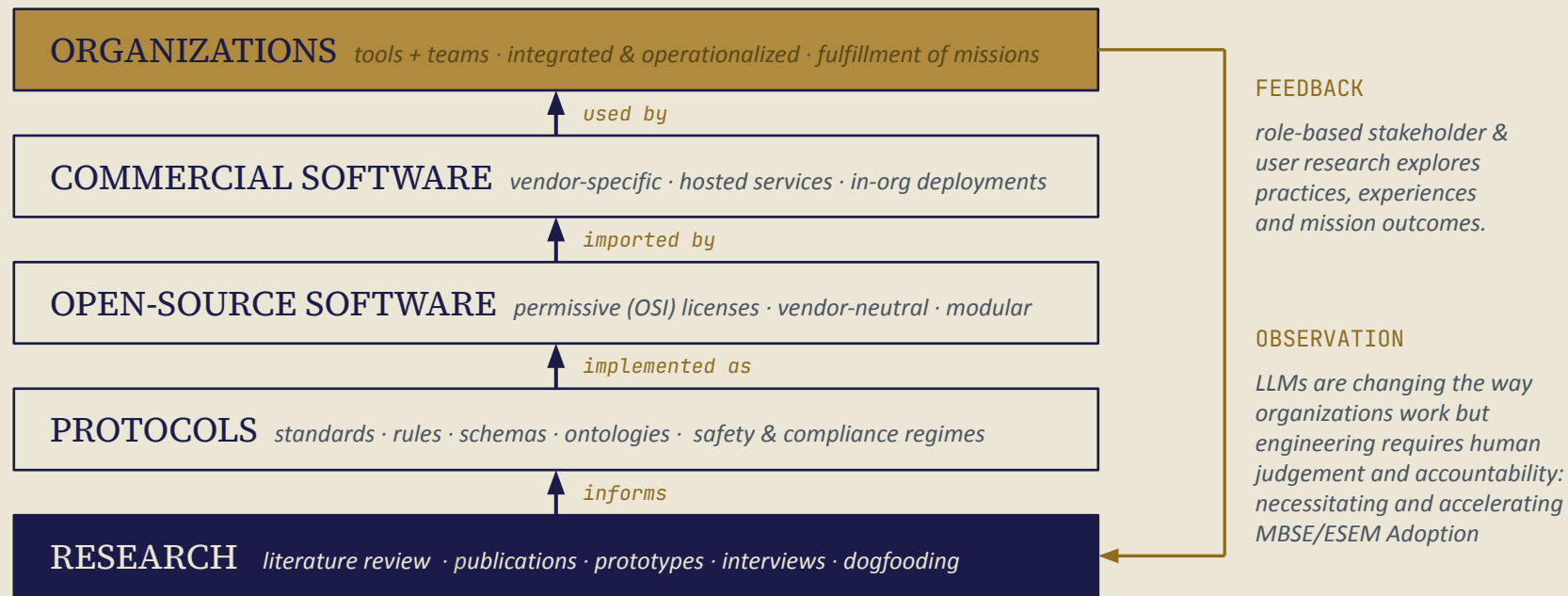
*impedance
(mis)match*

↔

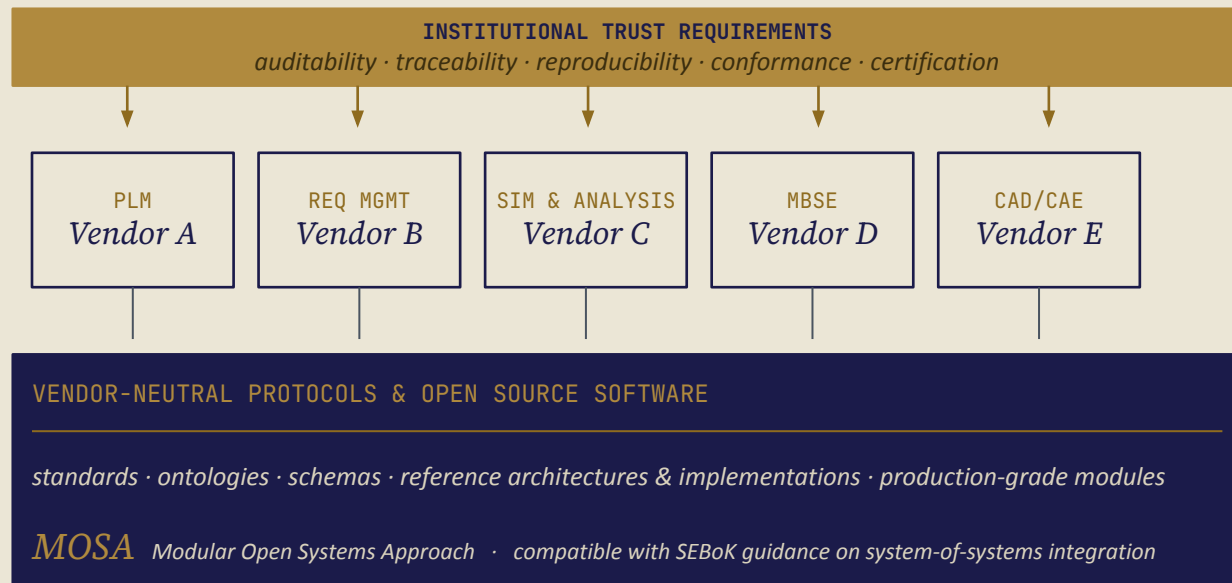
REQ	A	B	C	D	E
R-001	✓	✓	✓	✓	—
R-002	✓	✓	—	—	—
R-003	✓	✓	✓	✓	✓
R-004	✓	✓	✓	—	—
R-005	✓	✓	✓	✓	—

Static · linear · accountability-bearing · homogeneous · independently auditable

Software *Supply-Chain* as a layered *Stack*, with feedback.



Heterogeneous vendor ecosystems need *vendor-neutral* spines.



01 *Practices & Operations*

02 *Model-Based Engineering*

03 *Protocols & Software*

DSG provides Protocol R&D, Policy Design, Behavioral Modeling & Analysis, and Systems Integration Professional Services.

One live notebook — *reproducible evidence with full provenance.*

01 THE SPINE

A vendor-neutral semantic spine, assembled like packages: PROV · EARL · OntoGSN · SysMLv2 OWL · SHACL · P-PLAN · OSLC. No novel epistemic vocabulary.

02 TRACEABLE ORACLES

Behavior-model oracles verify a model-level claim (metric vs acceptance criterion). Evidence ≠ Acceptance.

03 HUMAN ATTESTATION

Adequacy (Assumption) + sufficiency (Justification), per Hawkins–Habli. Only attestation links evidence to requirement satisfaction.

04 PROVENANCE ACROSS ASoTs

Live push to Planetary Utilities hosted Flexo MMS instance: code in git, RDF in Flexo, runtime in Docker. Reproducible evidence, end-to-end.

Live demo delivered by Michael Zargham · built on DSG team R&D (protocol · OSS · UX) · dynamicalsystemsgroup.github.io/ADCS-lifecycle-demo/