NIST's Semantic Mediation and Validation Tool Kit

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**Goals**

**Target domain:** Manufacturing Production Networks

Information flow between many companies from diverse industries based on different exchange schemata and schema languages.

### Mediation

Goal: enable seamless communication within production network without pairwise translations

### Validation

Goal: catch errors in information flow before they become disruptive (includes message choreography and content)
Architecture

Models or Schemas

Extraction Tool(s)

Domain Model

Ontology

Business Process Rules

Business Rules

RECON Tool

Mapping Tool

Semantic Map

PRIKL

Testing Result

Validation Queries

Domain Expert

Domain Expert or Knowledge Engineer

Xchange Schemata

xform In-bound

Message Info Base

xform Out-bound

Rule Engine

Assertion Base

Mediator

Msg

scenario & app knowledge

<artifact> dynamic data flow
<tool or process> static data input
inter-artifact relation

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No knowledge representation language meets these requirements

- Semantically unambiguous
- Highly expressive
- Easy to learn and use
RECON to PrIKL

RECON

- *(Restricted English for Constructing Ontologies)*
- well-defined syntax & semantics based on English

PrIKL

- *(Prover for Ikris Knowledge Language)*
- Optimized for reasoning with ontologies
DEMO

(α-versions – keep fingers crossed)

Example: “Each shipment consists of 5000 gallons of gasoline.”
People

NIST Engineering Lab
- Ed Barkmeyer
- Antoine Gerardin
- Don Libes
- Fabian Neuhaus
- Severin Tixier
- Evan Wallace
- Martin Weber

NIST Information Technology Lab
- Harold Booth
- Paul Cichonski