

CIMTool

*Bridge from CIM to
Applications*

Current and Past Practice

- We translate CIM from UML to other forms for use:
 - RDFS for CIM/XML via Xpetal (part 501)
 - XML Schemas
- We profile (subset) CIM for applications:
 - CPSM profile
 - Standard web service messages
 - Project-specific applications
 - e.g. ERCOT Nodal subsystems

Challenges

- Profile definition is hard. We tried:
 - Tags in UML
 - Spreadsheets and lists.
 - Manual editing of UML
 - Manual editing of XML Schema or RDFS Incorporating foreign models.
- We need a better way:
 - Ensure profiles are correct
 - Traceability back to the CIM
 - Version management
 - Fine grain restrictions
 - Easier and more efficient

Models and Dependencies

Information

Contextual

Message
Syntax

Models and Dependencies

Information

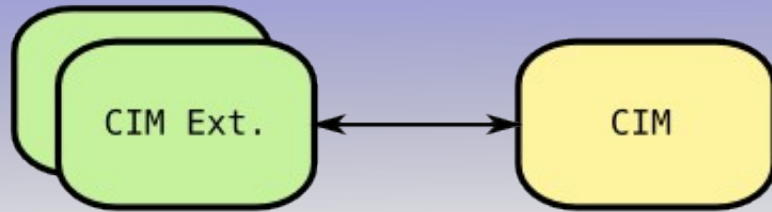


Contextual

Message
Syntax

Models and Dependencies

Information

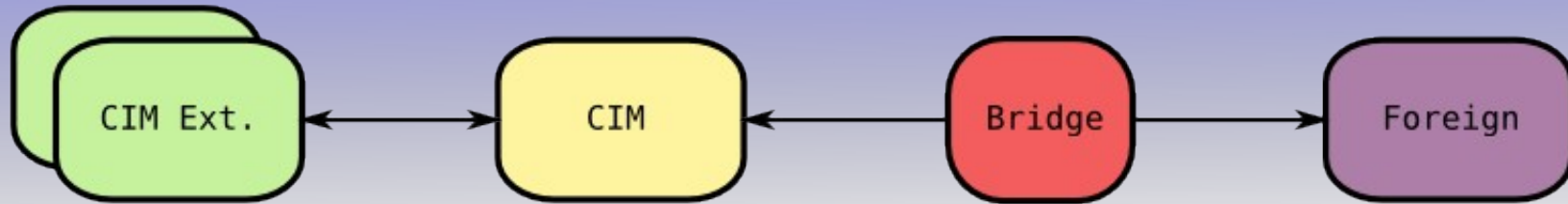


Contextual

Message
Syntax

Models and Dependencies

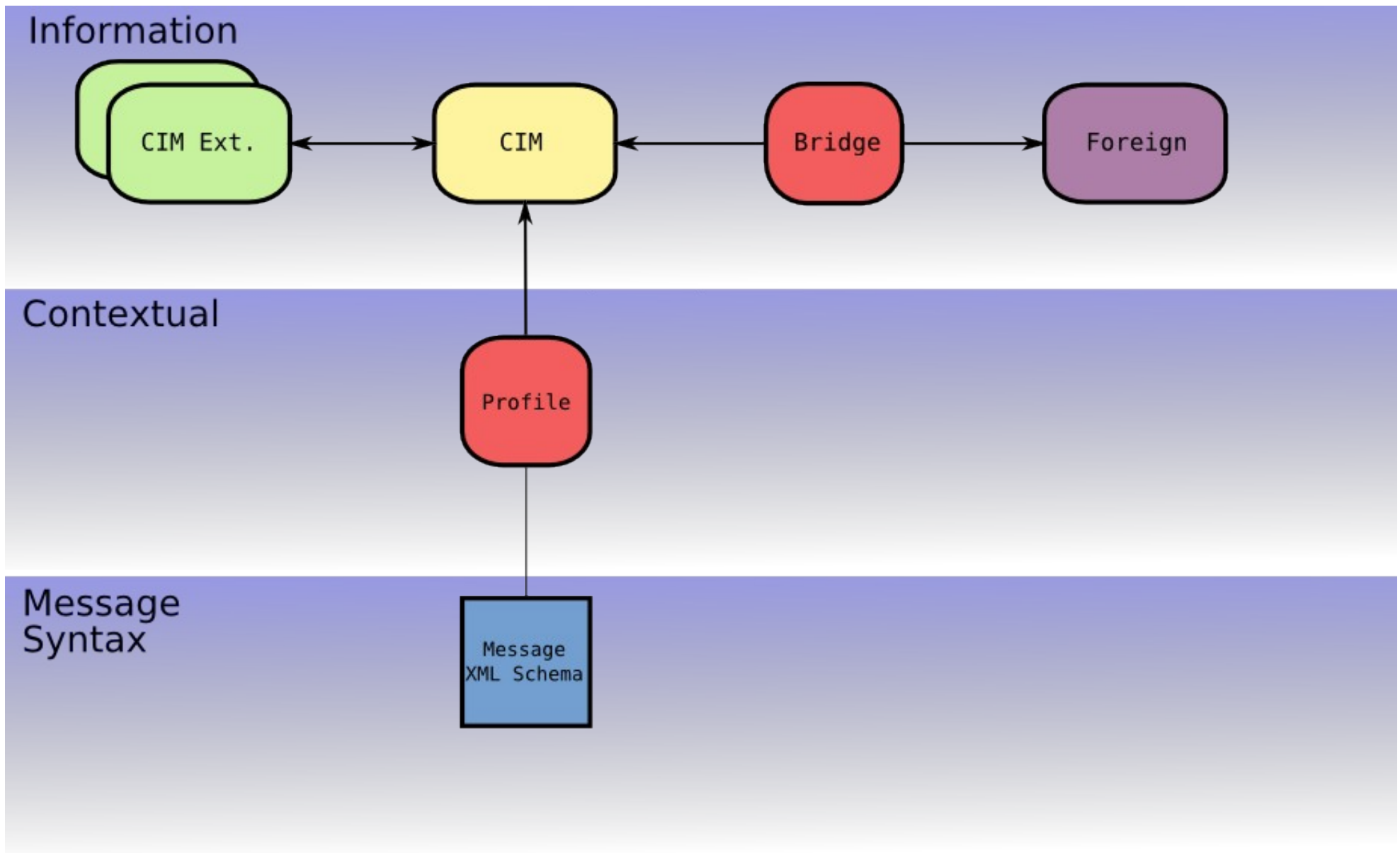
Information



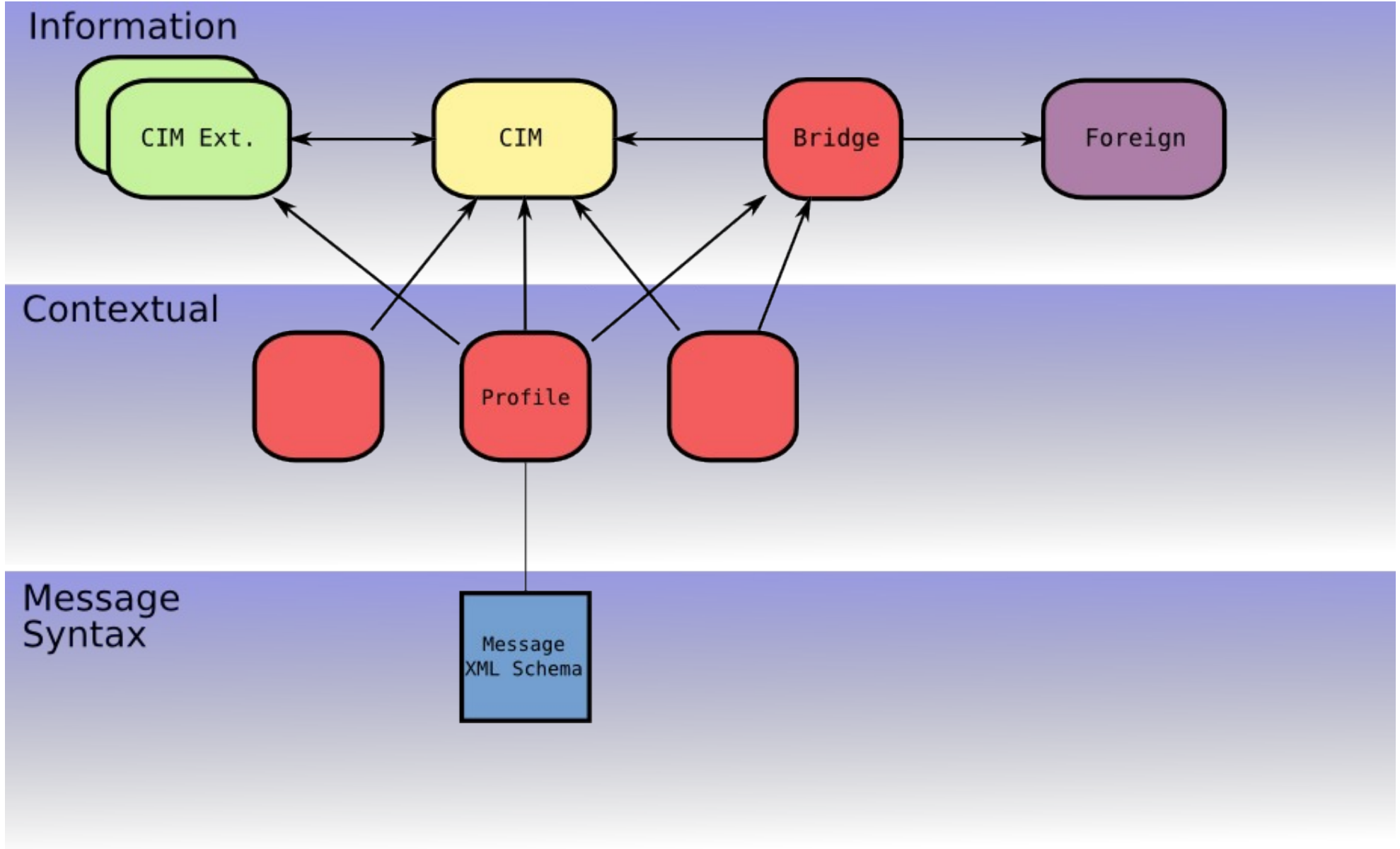
Contextual

Message
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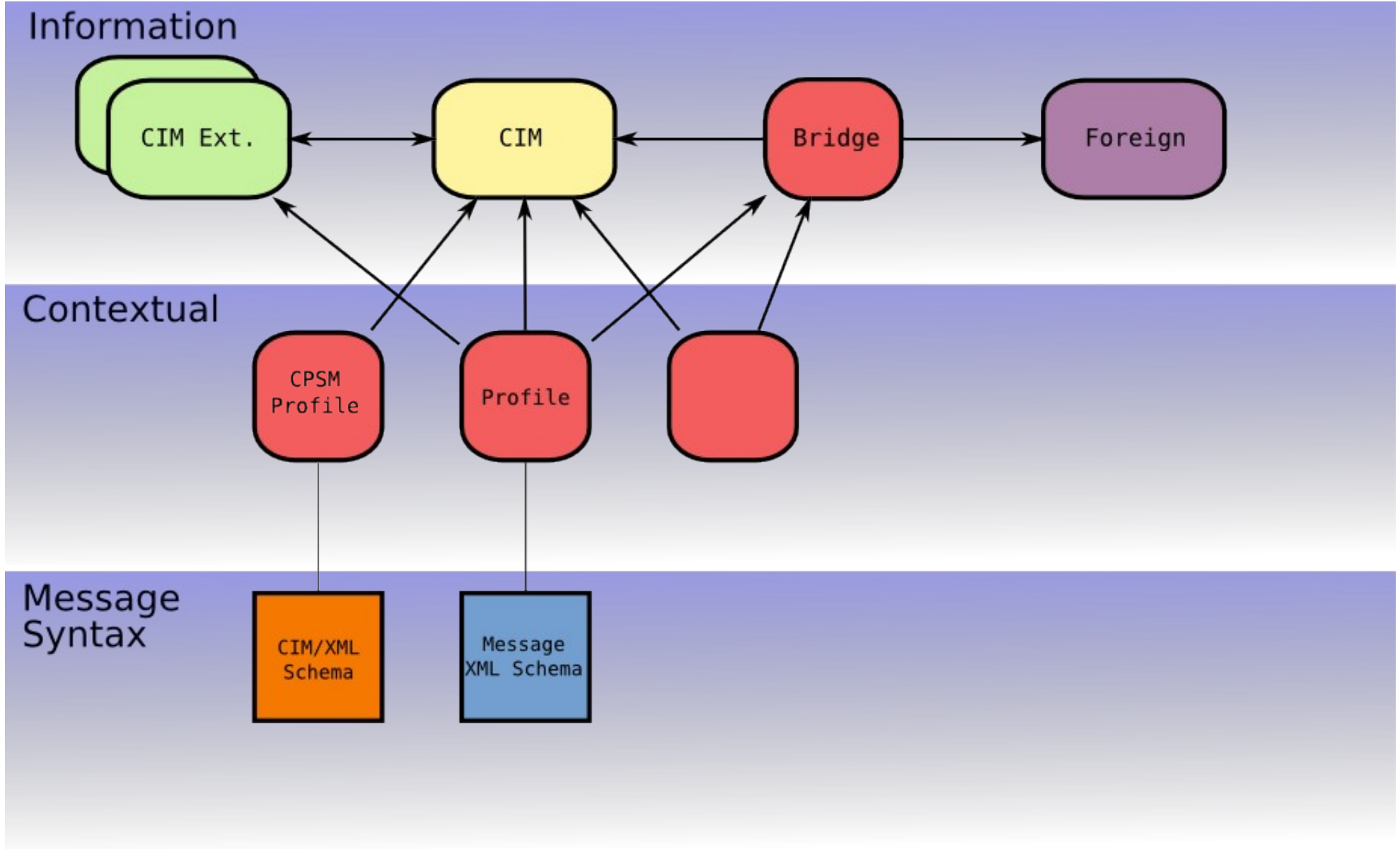
Models and Dependencies



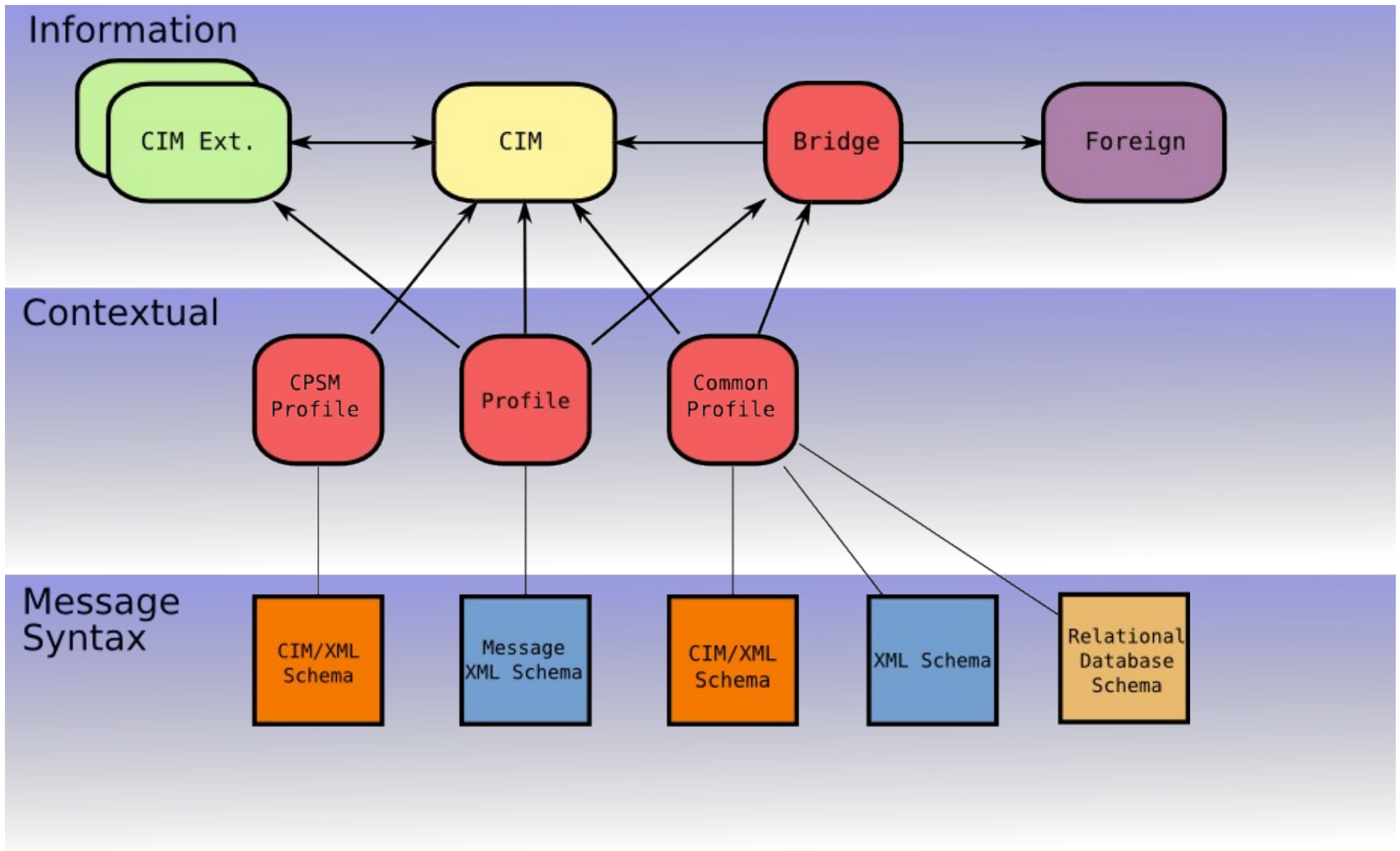
Models and Dependencies



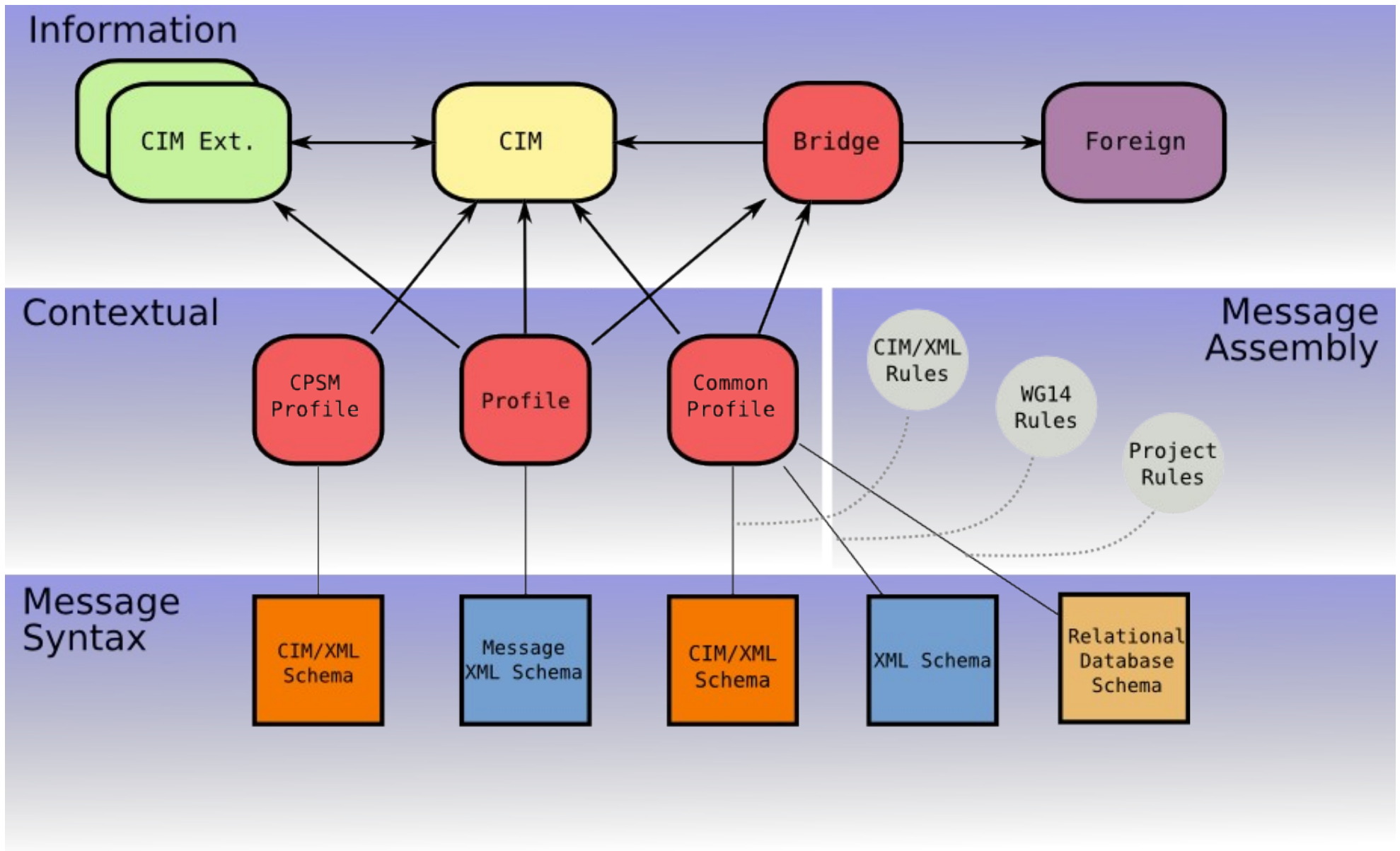
Models and Dependencies



Models and Dependencies



Models and Dependencies



CIMTool

- Is a general purpose tool for managing CIM-derived models, profiles, schemas.
- Plugs into the Eclipse tools platform.

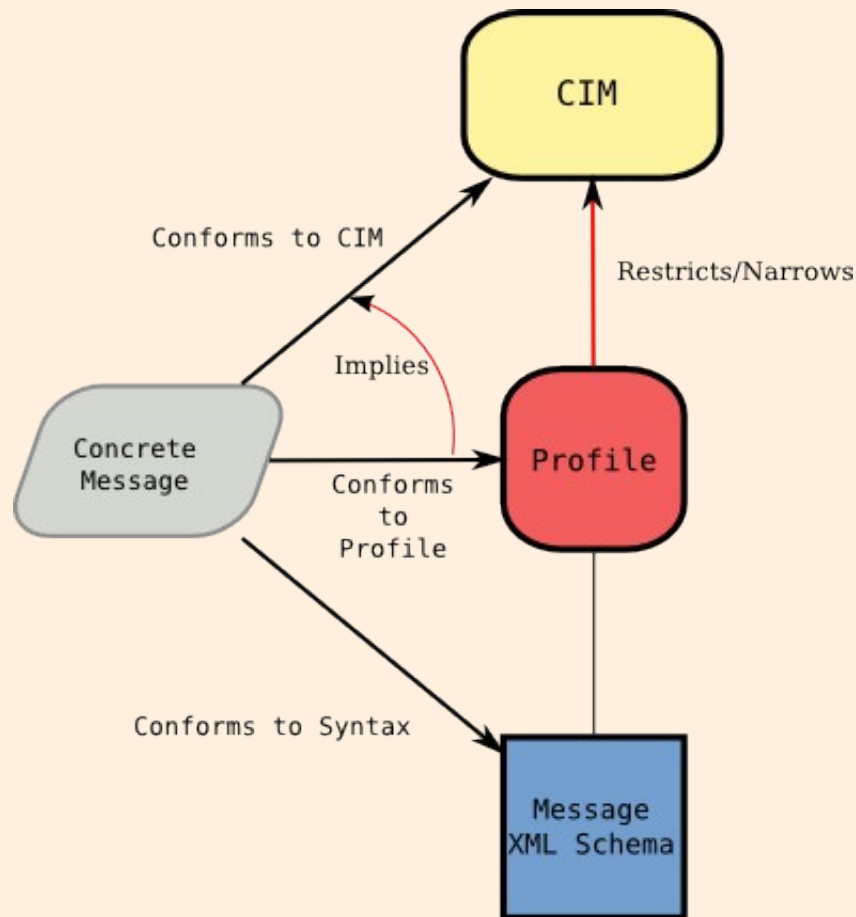
CIMTool Functions

- Merge Information Models
 - Including extensions, bridge models.
- Create valid, traceable profiles
 - Pick and restrict from information model
- Generate Schemas
 - XSD, RDFS, Simple-OWL
- Validate
 - CIM/XML Instances

Validation

- Under development
- Designed to handle large models
 - 1GB CIM/XML
- Validate against profile
 - Types, Cardinality etc
- Extended Validation
 - Electrical topology checks
 - Equipment hierarchy checks

Semantic & Syntactic Validation



Information model:

- Defines all concepts
- But Nothing mandatory

Restrictions in contextual model:

- cardinality (e.g. mandatory property)
- types (e.g. use sub classes)
- other restrictions
- can't introduce new concepts

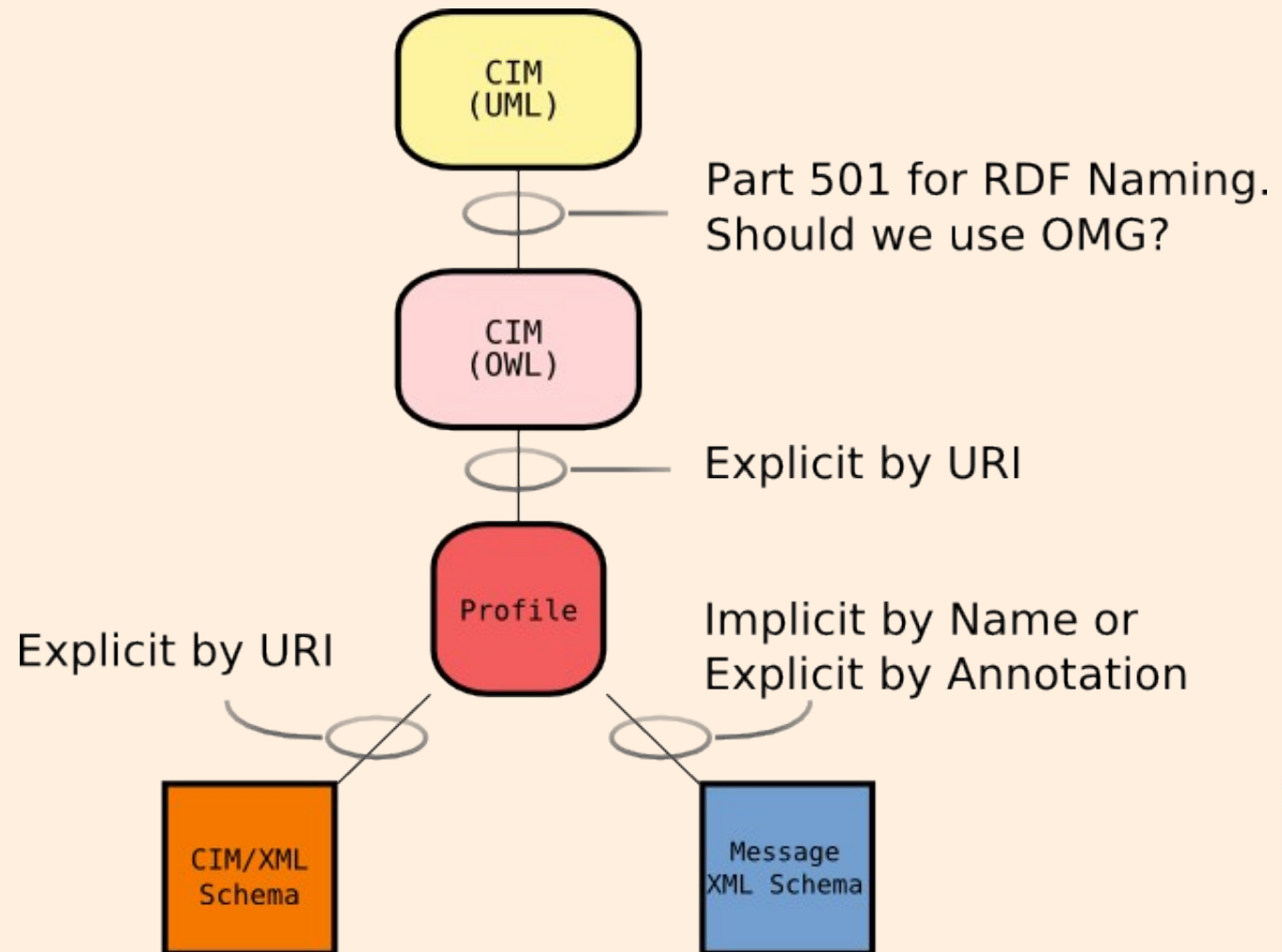
Message syntax::

- can relabel elements
- represent associations various ways
- various technology can be used

CIMTool uses OWL

- OWL = Web Ontology Language
 - Language for defining profiles
 - e.g. owl:Restriction
 - Language for mapping models
 - e.g. owl:equivalentProperty
 - Definitions are formal and traceable
 - OWL is a W3C standard

Traceability via OWL



CIMTool is Freely Available

- Available to all CIM drafters and users
- Free to use and/or customise
- Joint development by vendors and utilities
- Non-proprietary and standards based