What is the MODAF Meta-Model?

The MODAF Meta Model (M3) is the reference model that underpins MODAF. It, defines the structure of the underlying architectural information that is presented in the MODAF views. The goal is that MODAF tools are 'model-driven'; ie, the views that are presented to the user are snapshots of underlying architectural data which is stored in the tool or in a repository.

Individually, views can only provide consistency in terms of the type of information produced; ie, it can be recognised that one view is a systems model, whilst another is a process model. However, the same information may be represented in more than one view, and there may be important relationships between the information in different views that should be captured. This consistency between views is provided by a reference model which identifies all the types of architectural elements represented across all the views, and the relationships between those concepts. The reference model (or Meta Model in the case of MODAF) therefore provides semantic rigour for the architectural framework.
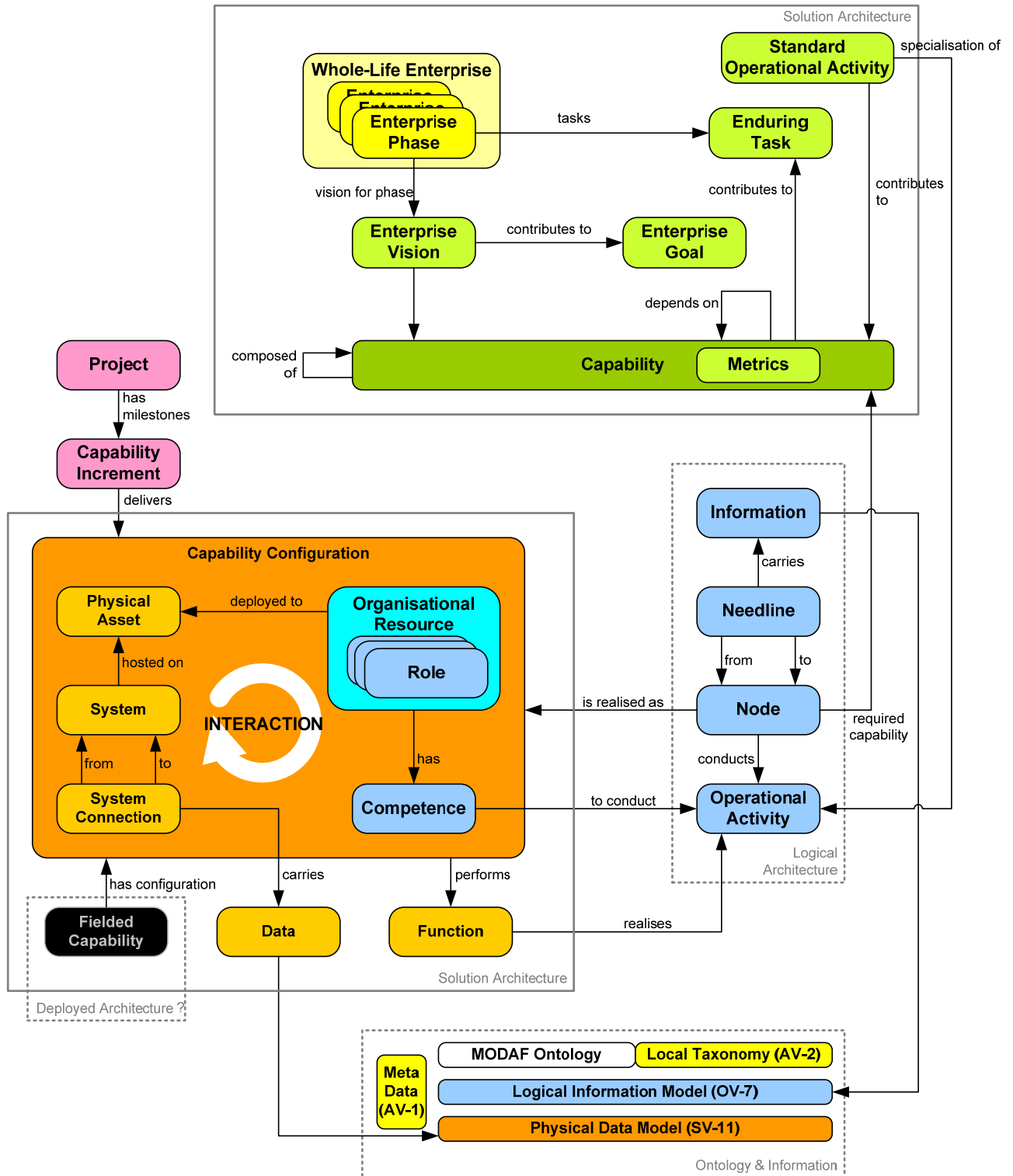
Many of the benefits from using an architectural approach will ultimately come about from the ability to share, integrate, search and re-use architectural information across an enterprise. In order for the architectural information to be stored, managed and queried electronically, the reference model that underpins the views needs to support the sharing of architectural products between tools and the implementation of an architectural repository that stores those products and the metadata relating to those products.

The diagram on Page 2 presents a simplified overview of the M3. This diagram, however, excludes services. The representation of services can be found in the SOA Views document available elsewhere on the MODAF guidance site.

The following table presents the relationship between some of the key elements within the M3 in a different way, showing the relationship between "things" at different levels within the enterprise / node / capability configuration hierarchy and the corresponding activities, entities and flows. In the context of this table, it should be noted that organisational resources and systems are essentially at the same level as capability configuration, which represents the coming together of systems and organisational resources in order to manipulate data and carry out functions.

Thing	Activity	Entity	Flow
Enterprise *eg ISTAR*	**Capability** *eg Imagery intelligence*		
Node *eg Analysis cell*	**Operational Activity** *eg Exploit imagery*	**Information** *eg Intelligence request*	**Activity / Information Flow** *eg IR input to CCIRM*
Capability Configuration *eg Watchkeeper unit*	**Function** *eg Exploit imagery*	**Data** *eg Imagery report*	**Function / Data Flow** *eg Intelligence Reporting*
Organisation, Post, Role *eg Imagery analyst within Watchkeeper troop*	**Human Function** *eg Analyse image*	**Data** *eg Annotated image*	**Data Flow** *eg Pilot - analyst*
System *eg Watchkeeper exploitation terminal*	**System Function** *eg Pre-process image*	**Data** *eg RAW Image*	**Data Flow** *eg Sensor - terminal*

Simplified overview of the MODAF Meta Model

Solution Architecture

Whole-Life Enterprise
- Enterprise
- Enterprise
- **Enterprise Phase**

Standard Operational Activity — specialisation of

Enterprise Phase — tasks → **Enduring Task**

vision for phase

Enterprise Vision — contributes to → **Enterprise Goal**

contributes to

contributes to

Enterprise Vision ↓

depends on

Project

composed of

Capability | **Metrics**

has milestones

Capability Increment

delivers

Information

carries

Needline

from — to

Node

required capability

Capability Configuration

Physical Asset ← deployed to — **Organisational Resource** / **Role**

hosted on

System

INTERACTION

is realised as

from — to

System Connection

has — **Competence** — to conduct → **Operational Activity**

conducts

has configuration

Fieldled Capability

carries ↓ **Data**

performs ↓ **Function** — realises →

Logical Architecture

Solution Architecture

Deployed Architecture ?

Meta Data (AV-1)
- MODAF Ontology | Local Taxonomy (AV-2)
- Logical Information Model (OV-7)
- Physical Data Model (SV-11)

Ontology & Information

Detailed M3 Description

The M3 is fully described within a dedicated section of this website, in which the information is browsable within a three-frame layout. The introductory page to the M3 description goes on to say that the purpose of the MODAF Meta-Model (M3) is to specify the data exchange format for MODAF architectures. The chosen file format is the Object Management Group's XMI specification (v2.1). In order to make maximum re-use of the XMI interfaces that tool vendors may already have, the M3 is an extension of the Universal Modelling Language (UML) 2.0 Meta-Model. In UML terminology this means that the M3 defines an abstract syntax for a UML profile. Each element defined in the M3 specifies a UML stereotype. The M3 does not provide the concrete syntax (the visual representation of the stereotypes that would appear in a UML diagram) because UML is not the preferred modelling approach for MODAF products – only an abstract syntax is required in order to specify the XMI usage.

Also on the M3 page can be found links to downloadable versions of the M3 in XMI V2.0, Native Sparx and HTML formats.

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