

# White Paper

## Enterprise Architecture Viewpoint Library Considerations

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### Rowan Napier

Rowan is an Enterprise Architect with Row1 Enterprise Engineering where he believes in “Architecting Interesting Things™”. Rowan is focused on the delivery of a business-appropriate and sustainable EA practice and offers EA Related and General Management “Asset-Light” Consulting services through 3rd party relationships and client engagements.

Rowan has consulted to clients in different industries in different roles and across architecture domains for 10 years. This varied experience coupled with his education in both business and information technology spheres has provided the basis for his enterprise architecture expertise.

He welcomes your comments. at:  
[rowan@row1enterpriseengineering.com](mailto:rowan@row1enterpriseengineering.com)  
<https://www.linkedin.com/in/row1rowan>

The purpose of this paper is to explore the organization and usage of the Viewpoint Library Concept (highlighted below in the ISO 42010 Conceptual Model of Architectural Description - figure 1) in its ability to aid in the transition from Business Requirements to coherent Enterprise Architecture Design. This concept is further explored as supporting a Foundational Architecture Capability. This is seen as essential to maintaining the credibility of the Enterprise Architecture (EA) function as being well managed, high performing, aligned and consistent in its operation and content at the strategic, program and project levels.

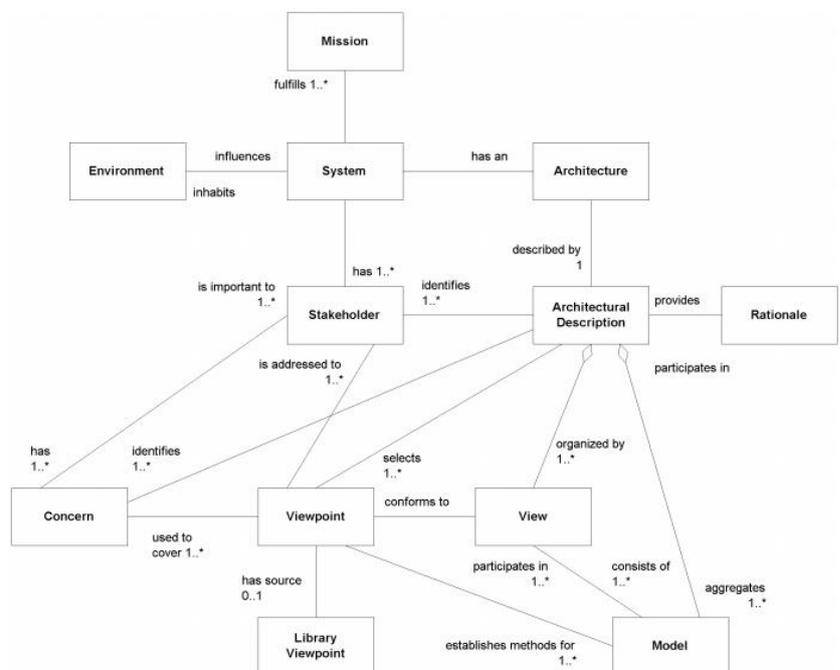


Figure 1: ISO/IEC 42010 Conceptual Model of Architectural Description

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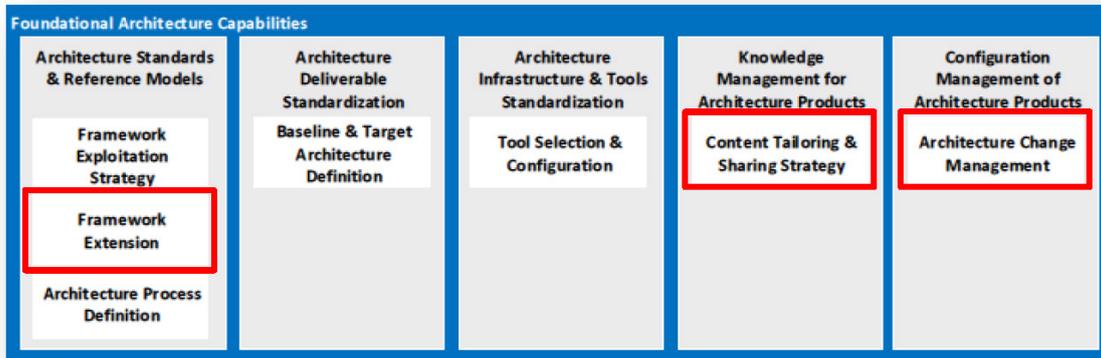


Figure 2: World-Class Enterprise Architecture Capability Model – Foundational Architecture Capabilities

To further understand the usage of this concept we need to position the use of the Viewpoint Library Concept within the Architecture Development Method (ADM), through the application of the **Business Scenarios Technique** within Phase A ‘Architecture Vision’. This ensures an exploration and alignment to the business requirements and how the architecture project will enable the organization to achieve its business objectives.

The understanding derived from a well-developed business scenario (Problem Space Definition Capability) is what drives the selection of the most appropriate viewpoints from the Viewpoint Library. It also serves to identify which **viewpoint building blocks** may still need to be configured to meet the identified enterprise capability or project requirements that can be included as input into the Architecture Vision and Architecture Statement of Work artifacts. These work products may result in an organization specific Content Framework extension deliverable.

This white paper will further position the Viewpoint Library concept as a contributor to the Partial Enterprise Models (PEMs), within the Generalised Enterprise Reference Architecture and Methodology (GERAM) Framework, in its role as an aid to **organizing** the existing enterprise integration knowledge.

Examples of PEMs Viewpoint Libraries that I am most familiar with include the British Ministry of Defence Architecture Framework (MODAF), the US Department of Defence Architecture Framework (DODAF), ArchiMate, TOGAF® 9, the Enterprise Architecture Management Pattern Catalog (EAMP) and the Zachman Framework. We will specifically look at the **content and organization** of these viewpoint libraries.

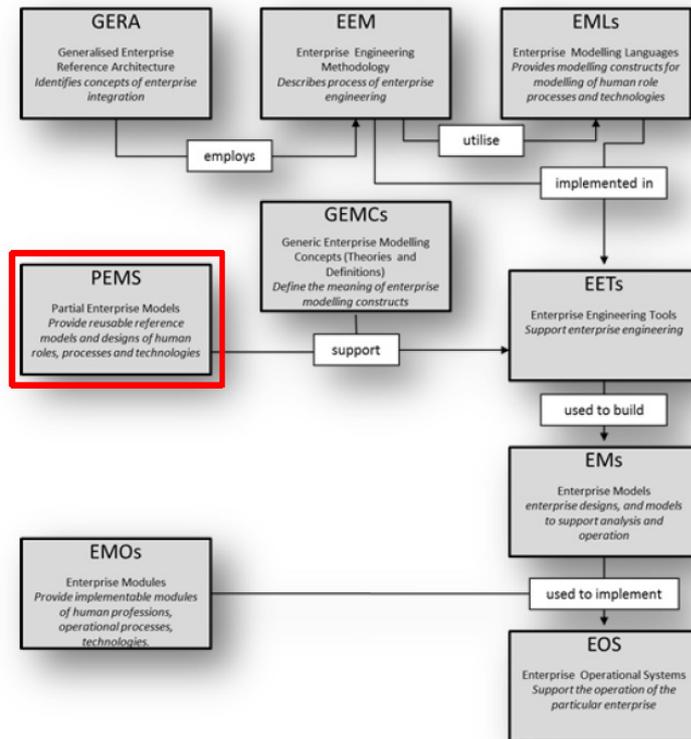


Figure 3: GERAM - Framework for Enterprise Engineering and Enterprise Integration

In terms of TOGAF® 9 these PEMS can further be classified by the Architecture Continuum, where the reference models are classified as Foundation, Common Systems or Industry Architectures before being tailored for use as an Organization Specific Architecture.

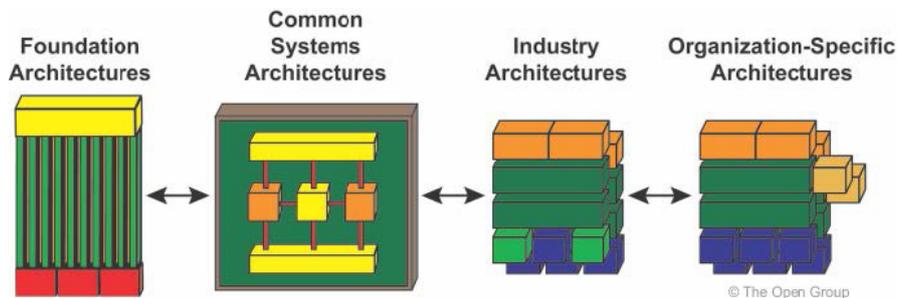


Figure 4: TOGAF® 9 – Architecture Continuum

The paper will also discuss how the Unified Method Architecture can be useful when establishing a mental distinction between the capabilities highlighted above in a way that allows for a fundamental separation of concerns between reusable core method content (in this instance our “Library Viewpoint Concept”) from its application in processes e.g. Architecture Development Method. These elements all form part of the larger Architecture Repository as defined in TOGAF® 9.

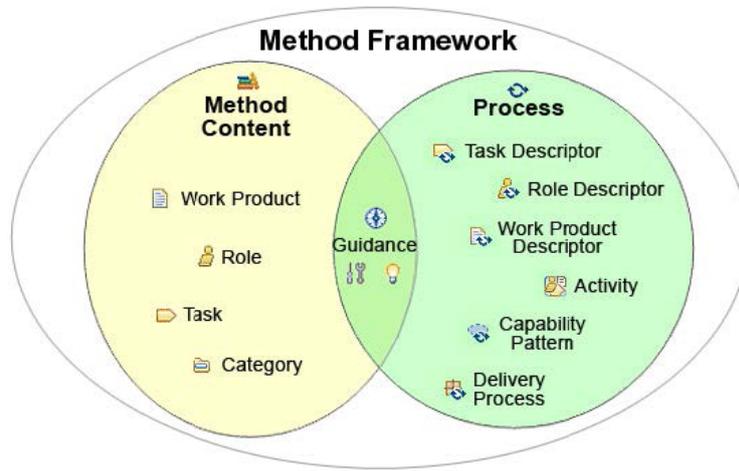


Figure 4: Unified Method Architecture Framework

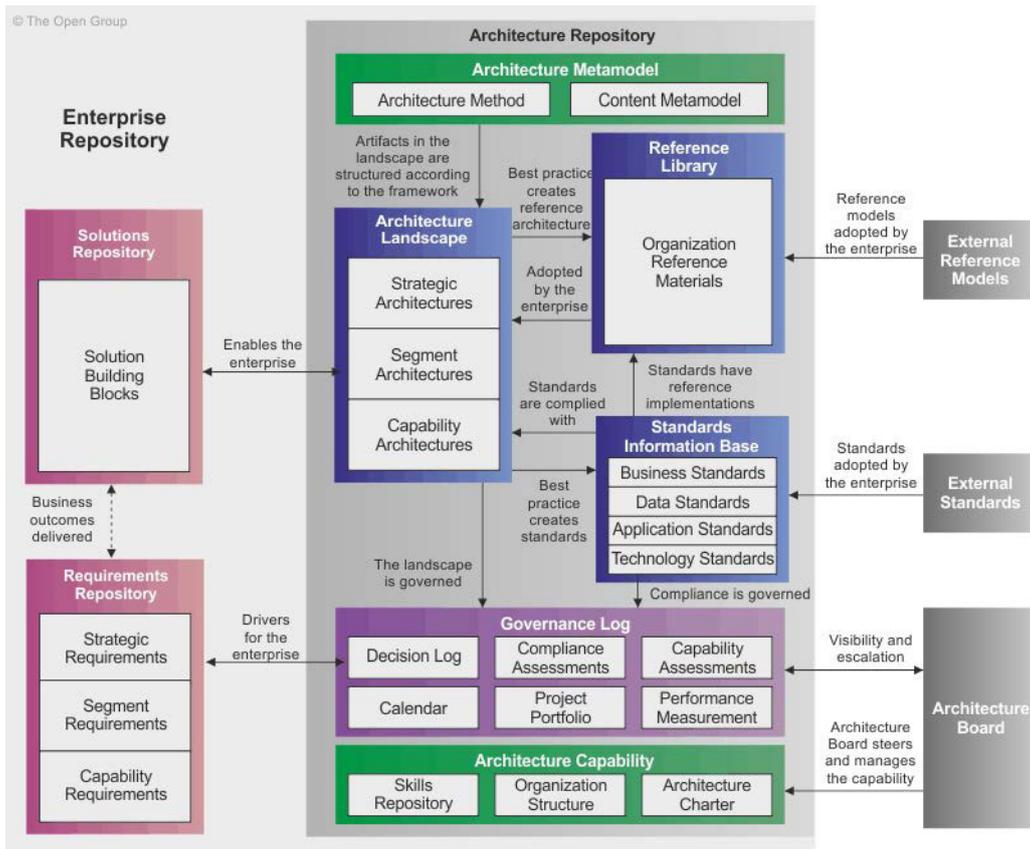


Figure 5: Overview of Architecture Repository

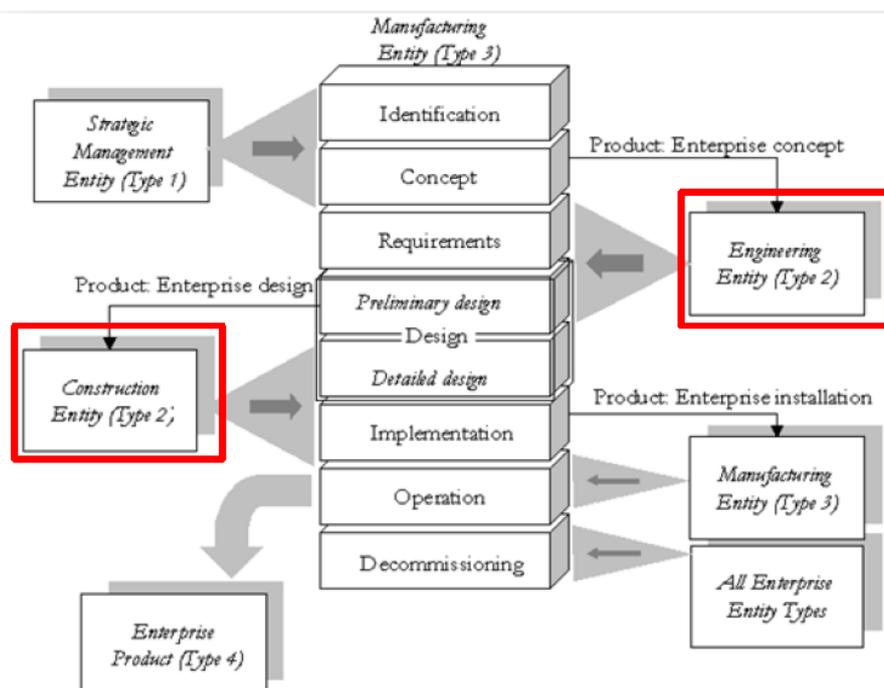
## Workplace Scenario

Imagine you are fulfilling the role of an Information Architect within the EA Function at an enterprise of your choice, where you are responsible for contributing to the Architecture Statement of Work artefact and the relevant Information Architecture **fit** to a supplied Business Scenario. Assume at this stage that a new Request for Architecture Work has been created to move forward with a re-architecting effort as output from enterprise architecture change management process in Phase H.

Having access to an industry and/or organizational specific Viewpoint Library to help address and evaluate the new stakeholder concerns from the supplied business scenario would enable you as the domain architect to:

Task	Description
<b>Review Prior Stakeholder Maps</b>	Quickly examine the baseline to see where similar concerns may have already been addressed to understand which building blocks exist within the content framework.
<b>Identify Required Viewpoints</b>	From the Viewpoint Library identify which 1-* new viewpoints will address the stakeholders concerns for use in an updated stakeholder map.
<b>Examine Existing Viewpoints</b>	<ol style="list-style-type: none"> <li>For gaps in terms of their <ul style="list-style-type: none"> <li>o level of detail or</li> <li>o level of abstraction</li> </ul> </li> <li>Ability to meet stakeholder requirements within the scope of the target architecture design.</li> </ol>
<b>Understand Viewpoint Trade-off's</b>	Examine new and existing building blocks to achieve maximum re-usability of the building blocks.

It is important to understand when making these evaluations for the architecture project that they are for the correct Enterprise Entity Type so as not to compromise the interoperability that an existing architecture building block has been designed for.



**Figure 4: Relationships between GERA Entity Types**

A generic and recursive set of four enterprise entity types which have been defined as follows:

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**Strategic Enterprise Management Entity (Entity Type 1)**

which defines the necessity and the starting of any enterprise engineering/integration effort.

**Enterprise Engineering/Integration Entity (Entity Type 2)**

which provides the means to carry out the enterprise engineering efforts defined by enterprise Entity Type 1. It employs a methodology (Entity Type 5) to define, design, implement and build the operation of the enterprise entity (Entity Type 3).

**Enterprise Entity (Entity Type 3)**

which is the result of the operation of Entity Type 2. It uses a methodology (Entity Type 5) and the operational system provided by Entity Type 2 to define, design, implement and build the products and customer services of the enterprise (Entity Type 4).

**Product Entity (Entity Type 4)**

which is the result of the operation of Entity Type 3. It represents all products and customer services of the enterprise.

**Methodology Entity (Entity Type 5)**

which represents the methodology to be employed by any enterprise entity type in the course of its operation, which operation in general leads to the creation of another entity type.

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## Viewpoint Library

Considering the kinds of tasks a Domain Architect would need to carry out to assess the fit to the business scenario and existing architecture within the enterprise we can see that having your viewpoints optimally organized would allow you as the Architect to carry out those tasks as quickly as possible. If we look at two of my favourite reference models listed earlier we can see examples of the views presented of the various viewpoint libraries and begin to identify techniques for organizing viewpoints and relevant meta-data to aid in the creation and organization of our own enterprise specific viewpoint library.

### ArchiMate

The ArchiMate viewpoint library is classified along two dimensions; purpose and content with the goal being to assist architects and others find suitable viewpoints given their task at hand; i.e., the purpose that a view must serve and the content it should display.

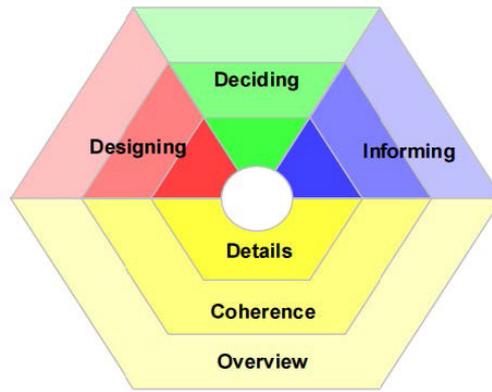


Figure 5: Classification of Enterprise Architecture Viewpoints

	Typical Stakeholders	Purpose	Examples
<b>Designing</b>	architect, software developer, business process designer	navigate, design, support design decisions, compare alternatives	UML diagram, BPMN diagram, flowchart, ER diagram
<b>Deciding</b>	manager, CIO, CEO	decision-making	cross-reference table, landscape map, list, report
<b>Informing</b>	employee, customer, others	explain, convince, obtain commitment	animation, cartoon, process illustration, chart
<b>Details</b>	software engineer, process owner	design, manage	UML class diagram, BPMN process diagram
<b>Coherence</b>	operational managers	analyze dependencies, impact of-change	views expressing relationships like "use", "realize", and "assign"
<b>Overview</b>	enterprise architect, CIO, CEO	change management	landscape map

Figure 6: Viewpoint Purpose, Abstraction

Meta-Data	Description
<b>Viewpoint Name</b>	Name of the viewpoint.
<b>Description</b>	Description of the viewpoint explaining its use.
<b>Stakeholders</b>	The intended stakeholders for the viewpoint.
<b>Concerns</b>	The concerns the viewpoint can address.
<b>Purpose</b>	Purpose according to the classification
<b>Abstraction Level</b>	Content characterisation according to the classification
<b>Layer</b>	Indication of the applicable architecture domains
<b>Aspect</b>	Architecture element notation classification
<b>Concepts &amp; Relationships</b>	Reference to the architecture tool specific content meta-model of building blocks and permissible relationships.
<b>Example</b>	An example of the instantiated viewpoint

Figure 7: ArchiMate Viewpoint Meta-Data

# Enterprise Architecture Management Pattern Catalog (EAMP)

If we look at the EAMP Catalog we can see the viewpoint library concept decoded here as dependencies between management concerns, methodologies, viewpoints and information models. Methodologies, viewpoints and information models are thus presented as patterns, so called EAM patterns.

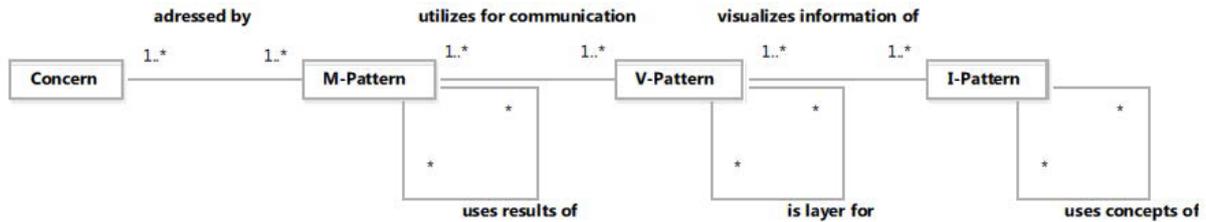


Figure 8: UML Class Structure of EAM Pattern Catalog

The EAMP Catalog also documents the semantic relationships between the various pattern types to aid in their understanding.

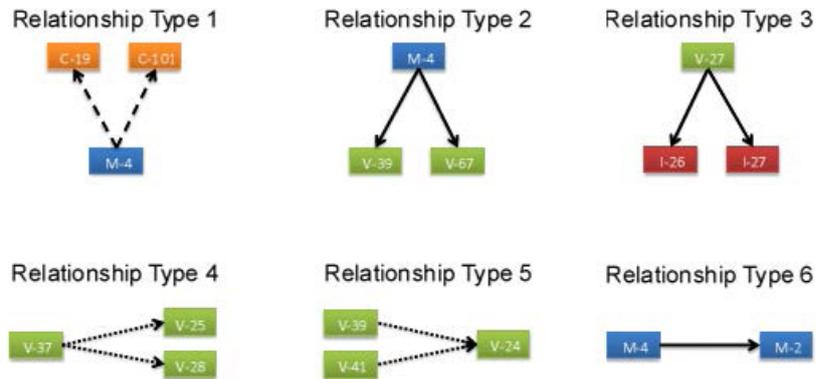


Figure 9: Types of Relationships between EAM Patterns

The entry point here, from the architect's point of view, is to identify concerns from the business scenario and match them to an appropriate M-Pattern that can address those concerns. From there on it's a matter of following the framework through to the supporting V and I-Patterns.

Meta-Data	Description
Pattern Name	A short and expressive name for the EAM
Pattern Type	The type of pattern
Summary	A short summary of the EAM pattern
Id	An unique alphanumeric identifier
Alias	Names this EAM pattern is also known as (optional)
Version	Version number of the EAM pattern
Solution	Detailed description of the EAM pattern including and instantiated example where applicable.
Consequence	Consequences resulting from the usage of the EAM pattern (optional)
Problem	List the concerns addressed by the respective M-Pattern

**Figure 10: EAM Pattern Meta-Data**

Just by examining these two reference models you can quite quickly see what is required to organize your viewpoint library and how this can benefit and bolster your EA Function's foundational architecture capability. Making use of these partial models makes the modeling process more efficient.

This kind of thinking is also an enabler to TOGAF® 9 part 24.3.4 'Tailor Engagement Deliverables' where we are told "it is important to pay particular attention to stakeholder interests by defining specific catalogs, matrices, and diagrams that are relevant for a particular enterprise architecture model. This enables the architecture to be communicated to, and understood by, all the stakeholders, and enables them to verify that the enterprise architecture initiative will address their concerns."

Managing your viewpoints in a defined and repeatable manner allows for greater maintainability and traceability as a means of achieving organizational alignment in a way that supports continuous change.

## Viewpoint Design to Definition

Having reached the point where we now know which architecture building blocks are required to be implemented to meet our stakeholders concerns I have found that the Unified Method Architecture (UMA) Framework has a great approach to operationalizing the implementation of these viewpoints.

By adopting the ADM as the process component and the viewpoint

library concept as the method content and by using a tool like Orbus iServer you can adopt this framework and move forward with your enterprise architecture definition.

The most fundamental principle of the UMA is the separation of reusable core method content from its application in processes.

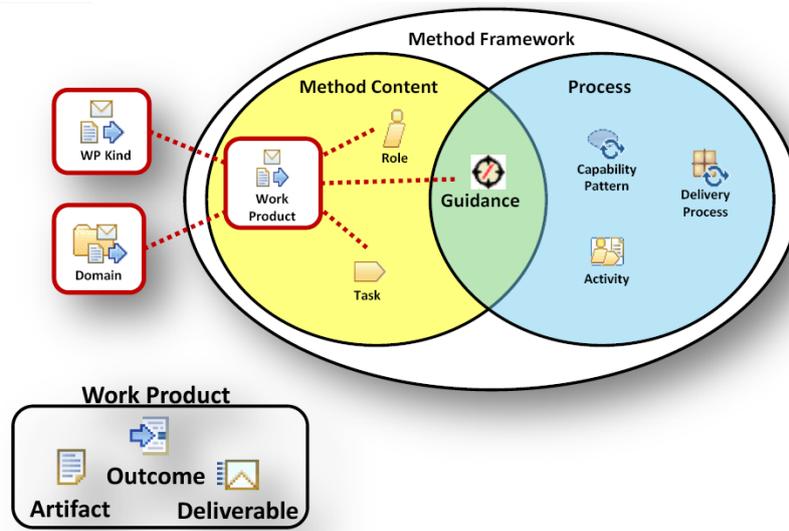


Figure 11: Unified Method Architecture Framework

**Method Content** describes what is to be produced, the necessary skills required and the step-bystep explanation describing how specific development goals are achieved, independently of placement of these items in a development lifecycle. The UMA contains categorisations for method content. UMA work products are made of artifacts, deliverables and outcomes.

Processes take method content elements and relate them into semi-ordered sequences that are customized to the life cycles of specific types of projects. Outputs for a project are produced through the execution of processes.

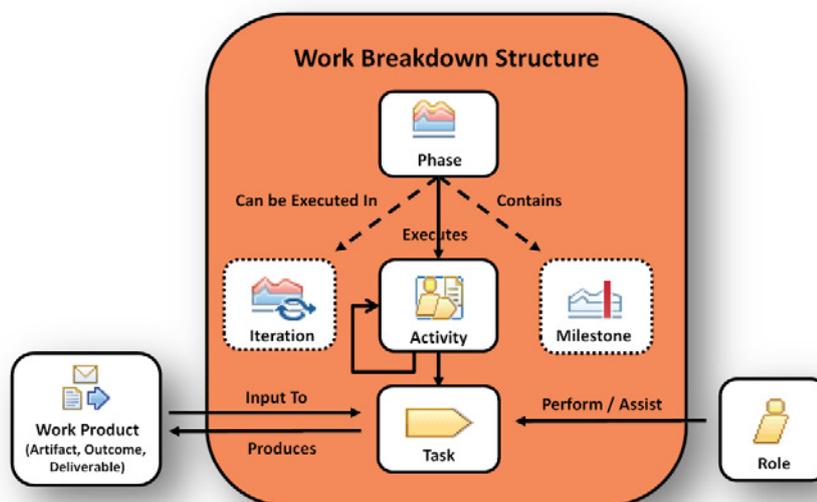


Figure 12: UMA Work Breakdown Structure.

## Conclusion

Having an organization specific viewpoint library is a valuable means to saving considerable time and effort when receiving new requests for architecture work. It should be maintained with an understanding that viewpoints are essentially the design to be managed in a way that is modular, iterative and incremental in nature. Having a successful viewpoint library requires the participation of all domain architects. This enables the EA Function to transition from requirements to coherent design with reduced complexity normally inherent to managing architectural alignment to the business.

## References

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### Orbus Software

3rd Floor  
111 Buckingham Palace Road  
London  
SW1W 0SR  
United Kingdom

+44 (0) 870 991 1851  
[enquiries@orbussoftware.com](mailto:enquiries@orbussoftware.com)  
[www.orbussoftware.com](http://www.orbussoftware.com)

