PYRAMID Technical Standard Guidance Version 1.0

Version Description Document Issue 1.0

Ministry of Defence

This document sets out a generic approach to the implementation of the PYRAMID Reference Architecture. The PYRAMID Reference Architecture has not been created for any specific system. It is the user's responsibility to ensure that any article created using this document meets any required operational, functional and safety needs. The Author accepts no liabilities for any damages arising due to a failure of the user to verify the safety of any product produced using this document, nor for any damages caused by the user failing to meet any technical specification.

For further information regarding how you can exploit PYRAMID on your project, provide feedback, or have a technical query that you would like answering, please contact the PYRAMID Team using the following email address: PYRAMID@mod.gov.uk

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CHANGE HISTORY

Date	Issue	Description of Changes
February 2025	1.0	First Issue.

List of Effective Pages

23 pages total

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REFERENCES

PYRAMID Document References

Reference	Author/Organisation, Date, Title, Document Number & Issue
[1]	Ministry of Defence, February 2025, PYRAMID Technical Standard, PYD/TechStan/V1.0.
[2]	Ministry of Defence, February 2025, PYRAMID Technical Standard Guidance, PYD/TechStanGuide/V1.0.
[3]	Ministry of Defence, February 2025, PYRAMID Technical Standard Version Description Document, PYD/TechStan/V1.0/VDD/Issue 1.0.
[4]	Ministry of Defence, February 2025. PYRAMID Model, PYD/TechStanModel/V1.0.
[5]	Ministry of Defence, September 2023, PYRAMID Exploiter's Pack, RCO_FUT_23_004, Version 4.1.

Other References

Reference	Author/Organisation, Date, Title, Document Number & Issue
[6]	Object Management Group, June 2015, XML Metadata Interchange (XMI) Specification, Version 2.5.1.

1 Introduction

1.1 PYRAMID and PYRAMID Reference Architecture

Military aircraft effectiveness is critically dependent on software, especially mission systems software, and fundamental to this effectiveness is the ability to provide new capability where and when it is required. Further to this, effective partnering, capability exchange, and interoperability between allies is essential for operational success.

Traditional software design has been such that relatively small changes can have wide reaching consequences across the aircraft, and the scope for reuse across air platforms (including support systems) and programmes has been limited. This problem has become even more significant with the rapid growth in the complexity of military air system software to meet capability needs. In response, the PYRAMID programme was established to enable technology advantage though systematic software reuse and rapid adaptability.

Modularity and open architectures have been identified as key enablers, but their consistent application across air platforms, and ensuring compatibility with other standards, is essential if the benefits are to be fully realised. In response, a number of open architecture standards have been developed to address areas such as hardware design, data architectures, and software architectures including middleware; but a gap was identified for application software.

The PYRAMID Technical Standard, Ref. [1], has been developed to provide a consistent approach to modularising air system application software though the PYRAMID Reference Architecture (PRA), whilst ensuring that fundamental requirements, including airworthiness certification and security accreditation, can also be achieved.

An accompanying document, the PYRAMID Technical Standard Guidance, Ref. [2], has also been produced to provide guidance and supporting information to aid understanding and application of the PYRAMID Technical Standard, enabling the development of PYRAMID compliant systems.

1.2 PYRAMID Development

The PYRAMID Exploiter's Pack, Ref. [5], has undergone a significant restructuring due to the transformation required for PYRAMID to become a standard. Most notably, the PYRAMID Exploiters Pack has been re-expressed as two documents:

- The PYRAMID Technical Standard, Ref. [1], which contains all the normative content required to be compliant with the PRA.
- The PYRAMID Technical Standard Guidance, Ref. [2], which contains the majority of the informative content, providing guidance and supporting information to aid understanding and application of the PYRAMID Technical Standard, enabling the development of PYRAMID compliant systems.

The PYRAMID Reference Architecture (PRA) has continued to mature during the transformation of the PYRAMID documentation to a technical standard and has now reached Version 6. The PRA has been redefined to no longer include the PYRAMID Concepts (formerly policies, for more information see section 2.2 Technical Standard Guidance Change Summary), PYRAMID Interaction Views, and use cases. This is due to the fact that these three artefacts are not considered to be normative instruction for maintaining compliance with the PRA. The PYRAMID Concepts, PYRAMID Interaction Views and Use Cases are therefore provided as supporting material within the guidance document. Table 1 shows the development of the PRA alongside the associated documentation.

PYRAMID Documentation Version	PRA Version
PYRAMID Exploiter's Pack Version 4.1	PYRAMID Reference Architecture Version 4
PYRAMID Exploiter's Pack Version 5* (unreleased)	PYRAMID Reference Architecture Version 5* (unreleased)
PYRAMID Technical Standard V1.0 and PYRAMID Technical Standard Guidance V1.0	PYRAMID Reference Architecture Version 6

Table 1: PRA Development

**PYRAMID Exploiter's Pack v5, Ref.* [5]*, was not released, since it was used to develop a solid foundation for the PYRAMID Technical Standard, including incorporating exploiter feedback. Neither PRA v5 nor PYRAMID Exploiter's Pack v5 are available for distribution.*

1.3 Scope

As the PYRAMID Technical Standard and PYRAMID Technical Standard Guidance supersede the PYRAMID Exploiter's Pack, this document details changes impacting the latter since the last available release of the PYRAMID Exploiter's Pack (v4.1), Ref. [5].

This document describes the changes to the content within the guidance document, Ref. [2] with a particular focus on the PYRAMID Concepts and PYRAMID Interaction Views, which were previously part of the PRA, as well as an overview of the restructure of the PYRAMID documentation. While these changes are captured within this document, it is recommended that an exploiter reads the main body of the PYRAMID Technical Standard Guidance in full for a full appreciation of the content.

For changes made between PYRAMID Exploiter's Pack v4.1 and the corresponding content in the PYRAMID Technical Standard please refer to the PYRAMID Technical Standard Version Description Document, Ref. [3].

1.4 Structure

This Version Description Document is structured as follows:

Section 1: Introduction – An introduction to the document and its content, scope, and structure.

Section 2: PYRAMID Technical Standard Guidance V1.0 Release Notes – This section explains the restructuring of the PYRAMID Exploiter's Pack into the PYRAMID Technical Standard and PYRAMID Technical Standard Guidance and gives a summary on what has changed with a particular focus on PYRAMID Concepts, PYRAMID Interaction Views, and use cases.

Appendix A: PYRAMID Technical Standard Guidance Detailed Changes – The specific changes made between the PYRAMID Exploiter's Pack v4.1 and the corresponding content in the PYRAMID Technical Standard Guidance. The focus being on the PYRAMID Concepts and PYRAMID Interaction Views.

Appendix B: PYRAMID Model Installation Instructions – Instructions for installing the PYRAMID model in various formats, and the limitations for the different formats.

2 PYRAMID Technical Standard Guidance V1.0 Release Notes

This section summarises the changes that have taken place between PYRAMID Exploiter's Pack v4.1, Ref. [5], and PYRAMID Technical Standard Guidance V1.0, Ref. [2]. The primary change is that the PYRAMID Exploiters Pack has been restructured into the PYRAMID Technical Standard and an accompanying guidance document. PYRAMID is now a Technical Standard and has been modified as such.

2.1 Document Structure Change

In order to develop the PRA into a standard, it became essential to separate the normative content from the informative content, so that exploiters can clearly distinguish what is required to be compliant from supporting information and guidance. Figure 1 summarises how the PYRAMID Exploiter's Pack content has been redistributed to form the PYRAMID Technical Standard, Ref. [1], and PYRAMID Technical Standard Guidance Ref. [2]. With the following notable exceptions, the PYRAMID Exploiter's Pack has been redistributed between these two documents:

- Reader Guidance has changed significantly, and the previous content now forms most of the content in the main body of the PYRAMID Technical Standard Guidance, Ref. [2].
- Content describing the key user requirements (KURs) has not been included.

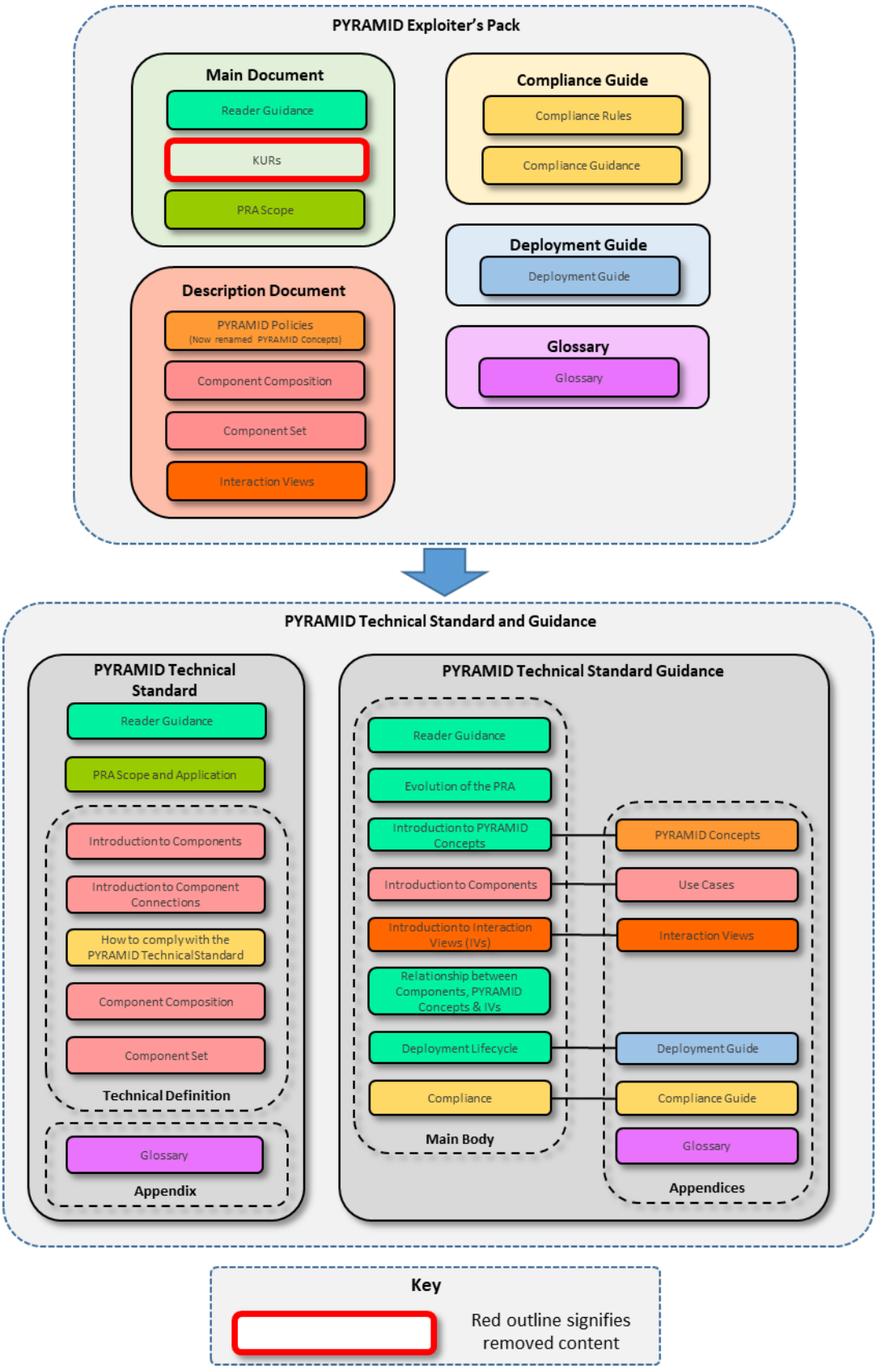

Figure 1: PYRAMID Restructure

2.2 Technical Standard Guidance Change Summary

As the PYRAMID Exploiter's Pack has now transitioned into the PYRAMID Technical Standard and accompanying guidance document, all normative content is captured within the PYRAMID Technical Standard while the majority of informative content is captured within the PYRAMID Technical Standard Guidance. Due to the volume of change, it is recommended that exploiters read through the Technical Standard Guidance main body in full. This list is intended to give the reader a general idea of what has changed as well as prompt them to reread sections relevant to them as necessary.

Major Themes	Impact
Updated Compliance Rules and Guidance	The rules for compliance have been modified, see Ref. [3]. The supporting compliance guidance has been updated accordingly. An Exploiter should reread the rules for compliance and compliance guidance to ensure they are still compliant.
Identified key PYRAMID Concept content	PYRAMID Polices have been renamed PYRAMID Concepts and re-categorised. The PYRAMID Concepts have been assessed for any normative content included within them. Where the PYRAMID Concepts included normative content that was not explicitly included within the PRA component set or the component composition, this has been added to the relevant PRA component definition or the component composition. Each PYRAMID Concept concludes with a summary table, the purpose of which is to identify the specific details of how the PYRAMID Concept is reflected in the PRA. This may include the identification of specific component responsibilities or services, or the identification of PRA components that have a specialised role in relation to the PYRAMID Concept topic. By providing this mapping from the PYRAMID Concepts to the PRA, the summary tables help understanding of how compliance with the PRA defined subject matters, de facto, achieves adherence to the PYRAMID Concepts. The assessment has also resulted in a number of improvements to the PYRAMID Concepts, predominately to improve clarity.
Revised the definition of 'resource component'	The Control Architecture and Interaction with Equipment PYRAMID Concepts have been updated to revise the definition of 'resource component' and to clarify the expected interactions between resource components.

Major Themes	Impact
Modified Resource Management PYRAMID Concept	Due to the removal of the Resource Brokerage component and addition of the Conflict Resolution component, the approach to resource management, described by the Resource Management PYRAMID Concept, has been modified. The Resource Management and Dependency Management PYRAMID Concepts have both been updated. Many of the changes are to allow conflict resolution for all conflicts not just centred on resource conflicts. Deployments with resource management capability will require modification to align to the new resource management component interaction pattern. For further detail, see Ref. [3], Section 2.2.3.
Clarified the use of Bridges	The recommendations for what should and should not be included in a bridge have been updated and clarified. Component interaction patterns have been moved from the Deployment Guide to the Component Connections PYRAMID Concept. These updates are included in the Component Connections PYRAMID Concept and the Deployment Guide.
Updates surrounding the concept of 'Counterparts'	The Component Connections PYRAMID Concept and Deployment Guide have been updated to provide additional information about counterparting. Minor changes elsewhere to align.
Improved application of Constraint Management	The Constraint Management PYRAMID Concept has been updated to help exploiters to understand the similarities and differences between requirements and constraints, which are derived by components and placed on other components. This includes the acknowledgement of internal constraints, and revision of the definitions of solution and rule-based constraints.
Inclusion of catering for capability shortfalls	The Capability Assessment PYRAMID Concept has been renamed to Capability Management and has introduced content on how capability shortfalls can be managed.
Updates surrounding the concept of 'planning context'	The Dependency Management PYRAMID Concept's content about planning contexts has been significantly updated. Minor changes elsewhere to align.
Revised the concept of Multi-Vehicle Coordination	The Multi-Vehicle Coordination PYRAMID Concept has been significantly updated and its scope has been broadened. Examples have been clarified.
Revised and moved Tactics extensions to Component Extensions	The tactics extensions have been moved out of the PRA components list and are now provided as examples in the Component Extensions PYRAMID Concept. Some of the tactics have been removed from both documents entirely.
Updates to Deployment Guide to aid accessibility and readability	The Deployment Guide has been significantly updated to improve readability, including additional explanation of existing topics.
Provided a clear definition for the hierarchy of Health Components	The Health Management PYRAMID Concept has been updated, particularly in relation to the hierarchy of health components.

Major Themes	Impact
Maintained consistency across all Exploiters Pack elements	The Deployment Guide, Compliance Guide, Glossary, PYRAMID Concepts, and PYRAMID Interaction Views have been updated to remain consistent with updates made to the PRA and to content within the PYRAMID Technical Standard, Ref. [1].

Table 2: PYRAMID Technical Standard Guidance Change Summary

Appendix A: PYRAMID Technical Standard Guidance Detailed Changes

Due to the transition of the PYRAMID Exploiter's Pack, Ref. [5], into the PYRAMID Technical Standard, Ref. [1], and PYRAMID Technical Standard Guidance, Ref. [2], much of the text found in the guidance document has been reviewed and changed since its publication in Ref. [5].

Where these textual changes do not affect the technical content from an exploiter's point of view, they have been omitted from this document, however it is encouraged that a previous exploiter of PYRAMID rereads the sections relevant to them. For example, the Deployment Guide has undergone significant modification and the changes may benefit the reader.

A summary of change has been provided in Section 2.2 Technical Standard Guidance Change Summary, but it is not exhaustive.

A.1 PYRAMID Concept Changes

Only PYRAMID Concepts that have undergone change relevant to an exploiter are included within this section. All PYRAMID Concepts have undergone some degree of editorial change and these changes are not included here. However, if a change that was editorial in nature and likely to have any effect on an exploiter's understanding of the content it has been included. Despite technical content not changing, these clarifications may alter how the content is perceived and are important to capture within this section. The terms 'revised', for technical changes, and 'clarified', for clarifications, are used to make these changes clear.

Note that all the PYRAMID Concepts have had a Concept Summary Table added to the end to identify the specific details of how the PYRAMID Concept is reflected in the PRA.

PYRAMID Concept	Change Detail
Control Architecture	Updates: – Revision of definition of the resource layer. Resource components can be directly reliant upon other resource components. This is reflective of the changes made to some resource components within the PRA. – Clarification that the Tasks component Tactics extensions are only examples and are not part of the PRA component set. – Clarification of general principles descriptions. – General updates to improve clarity
Constraint Management	Content added: – Constraints are not always imposed on components, but instead can be internally imposed within a component (referred to as 'internal constraints'). – About reporting and rectifying constraint breaches. Updates: – Revision of definitions of solution-based constraints to clarify that they do not have to directly result from rule-based constraints. – General updates to improve clarity
Dependency Management	Scope changed: – Addition of a pattern for conflict resolution, including the use of the new Conflict Resolution component. Updates: – Updated 'Examples of Rigid and Dynamic Dependencies' section. – Updates around planning contexts. – General updates to improve clarity.
Autonomy	Updates: – Improvements to clarify the Context section and Component Composition section.
Health Management	Updates: – Updates around the subject of the hierarchy of health components. – General updates to improve clarity.
Capability Management (formerly Capability Assessment)	PYRAMID Concept renamed from Capability Assessment to Capability Management. Scope changed: – Addition of content for addressing shortfalls in capability. – Changes around the subject of the hierarchy of health components. Updates: – General updates to improve clarity.
Multi-Vehicle Coordination	Scope changed: – Significant changes made to the structure and content of the PYRAMID Concept. It is now broader in scope and no longer gives the impression that adherence to its content is mandatory, but rather presents options and examples for how the PRA may be applied in multi-vehicle situations.

PYRAMID Concept	Change Detail
Interaction with Equipment	Updates: – Clarification that resource components can utilise other resource components. – General updates to improve clarity.
Resource Management	Scope changed: – Significant updates made to the structure and content of the PYRAMID Concept, taking into account the removal of the Resource Brokerage component and the addition of the Conflict Resolution component within the PRA. Updates: – Revision of descriptions/characterisations of different types of resource. – Significant revision of the resource management pattern.
Operational Support	Updates: – General updates to improve clarity.
Storage	Updates: – Significant changes made to more clearly present the same information previously conveyed by the PYRAMID Concept.
Recording and Logging	Updates: – Significant changes made to more clearly present the same information previously conveyed by the PYRAMID Concept, especially in the distinction between recording and logging.
Cyber Defence	Removed: – References to Tasks component extensions, within examples.
Human-Machine Interface	Updates: – Replaced the Objectives component with the Tasks component, to correct figure 88 (parameter mapping). – General updates to improve clarity.
Interfacing with Deployable Assets	Updates: – Refined the characterisation of different types of deployable assets. – Updates to provide additional focus on the communication with deployable assets within examples. – General updates to improve clarity.
Tactical Information	Updates: – Clarifications within the Overview section and Tactical Information Components section. – Clarification to the difference between Sensor Products and Data Fusion in the Separation of Tactical Information from Data Handling section, and Separation of Data Handling and Control section.
Test	Updates: – General updates to improve clarity. Removed: – Removed the references to the Resource Brokerage component, which has been removed from the PRA.

PYRAMID Concept	Change Detail
Use of Communications	Updates: – Updates to the characterisation of 'communications aware', 'communications agnostic', and 'communications capability' components. – Updates to components listed as providing communications capability, including a summary of their role in communications. – General updates to improve clarity. Removed: – References to the Resource Brokerage component, which has been removed from the PRA.
Data Exchange	Updates: – Significant changes made to more clearly present the same information previously conveyed by the PYRAMID Concept.
Component Connections	Scope changed: – Addition of further information about Counterparting. – Addition of examples of component interaction patterns, which were originally in the Deployment Guide, are now in this PYRAMID Concept and have been revised. Updates: – Significant changes made to more clearly present the same information previously conveyed by the PYRAMID Concept. This includes restructuring the PYRAMID Concept.
Component Extensions	Scope changed: – The Tasks component extension examples (called tactics) have been moved from the PRA Tasks component definition to this PYRAMID Concept, since they are not PRA components and are only examples of how the Tasks component could be developed. They now serve as examples of component extensions. The tactics Aerial Refuelling, Contingency, and Survival have been removed entirely. Updates: – The Rules section reworked and renamed to Criteria and Guidance. – Additional guidance for why, when or how using component extensions could be beneficial.
Data Driving	Scope changed: – Significant changes made to the structure and content of the PYRAMID Concept. It is now broader in scope and no longer focuses on a particular method of implementing data driving.

Table 3: PYRAMID Concept Changes

A.2 PYRAMID Interaction View Changes

Each group of PYRAMID Interaction Views now includes a use case diagram, to show the PYRAMID Interaction Views in context as a group and is now supported with introductory text; please refer to Ref. [2], Appendix C to see these groupings in context. The updated PYRAMID Interaction Views are displayed under these sets within the following tables. Only PYRAMID Interaction Views that have undergone change relevant to an exploiter are included within this section. Editorial change is likely on some level for all interactions views and is not included here.

Vehicle Path Views	**Change Detail**
Take-Off	• Updated to take account of the removal of Path Demands from the PRA.
Landing	• Updated to take account of the removal of Path Demands from the PRA.
Path Execution	• Updated to take account of the removal of Path Demands from the PRA.
Routing	• Updated to take account of the removal of Path Demands from the PRA.
Vehicle Movement	• Updated to take account of the removal of the Path Demands component and the addition of the Conflict Resolution component in the PRA. • Minor correction to the assumptions.
Vehicle Performance	• Expanded the scope of the scenario to show a requested change to the performance envelope and to include the new Conflict Resolution component.

Table 4: Vehicle Path Views Changes

Vehicle Environment Views	**Change Detail**
Airspace Integration	• The response to interrogations, using a transponder, has been removed from the scenario.
Cooperative Air Collision Avoidance	• IV name updated from Aircraft Collision Avoidance. • Updated to take account of the removal of the Path Demands component from the PRA.
Terrain Avoidance	• Updated to take account of the removal of the Path Demands component from the PRA.
Weather	• Updated to take account of the removal of the Survival Tactic from the set of examples Tasks component extensions.

Table 5: Vehicle Environment Views Changes

Communications Views	Change Detail
Network Initialisation	• Interaction between Tasks, Networks and Communication Links updated to reflect a more likely component interaction pattern.
Data Transfer	• Updated to remove Data Distribution from listed resource components.
Tactical Exchange- Track Distribution	• Component interactions updated to reflect a more likely component interaction pattern. • Pre-Conditions updated.
Tactical Exchange- TDL Receipt	• Post-Conditions clarified.

Table 6: Communications Views Changes

Sensing Views	Change Detail
Search	• Clarification added to the IV sequence of events description.
Tactical Sensing	• Interaction between Sensing, Sensors, and Power updated to reflect the ability of resource components to directly manage their own resource dependencies.
Sensor Data Interpretation	• Component interactions updated to reflect a more likely component interaction pattern, where action/service component interaction is increased, instead of placing too much reliance on the Tasks component. • Refinements to the way that Sensor Data Interpretation is described to better align to the PRA component definition.

Table 7: Sensing Views Changes

Vehicle Stores Views	Change Detail
Role Fit Discovery	• Terminology changes throughout, to aid clarity: changing authorised/authorisation to validated/ validation or permission. • Assumptions corrected. • Semantic Translation removed.
Releasing	• Updated to take account of the removal of the Path Demands component from the PRA. • Terminology changes throughout, to aid clarity: changing authorised/authorisation to permission.

Table 8: Vehicle Stores Views Changes

Support Functions Views	Change Detail
Start-up	• Updated to align with the Shutdown IV.
Fault Investigation	• Anomaly Detection use if monitoring sensors clarified.
EM Interoperability	• Interaction between Sensing, Sensors, and Spectrum updated to reflect the ability of resource components to directly manage their own resource dependencies.
Cryptographic Management-Cryptographic Device Management	• Missing events added for interaction with the Service User actor and associated IV description updated. • Assumptions and exclusions updated.
Cryptographic Management-Cryptographic Material Revocation	• Missing events added for interaction with the Service User actor, Service Tasker actor replaced with the Cyber Defence component, and associated IV descriptions updated.
Cryptographic Management-Cryptographic Device Sanitisation	• Missing events added for interaction with the Service User actor and associated IV description updated. • General clarity improvements to the IV description.
Defence Against Cyber Attack	• Updated to take account of the removal of the Contingency Tactic from the set of examples Tasks component extensions. • Interaction between Tasks, Cyber Defence, and Data Fusion updated to reflect a more likely component interaction pattern.
Generation of Reports - Generation of Handover Briefing	• Assumptions and exclusions clarified.
Generation of Reports - Generation of PMDH Report	• Assumptions and exclusions clarified.
Mission Data Load	• Assumptions and exclusions updated. • General updates throughout the IV for clarification.

Table 9: Support Functions Views Changes

Operator Interactions Views	Change Detail
Human Communications	• Overview clarified. • Interactions with Call Receiver revised.

Table 10: Operator Interactions Views Changes

Decision Making Views	Change Detail
Authorisation	• IV name updated from Action Authorisation. • Substantially changed to reflect a more likely component interaction pattern.

Table 11: Decision Making Views Changes

Offensive Actions Views	Change Detail
Plan for A/S Engagement	• General updates throughout the IV for clarification.
Kinetic Attack	• Interlocks component removed, since it out of scope of the scenario. • Interaction between Tactical Objects, Release Aiming, and Trajectory Prediction updated to reflect a more likely component interaction pattern. • Updated to take account of the removal of the Path Demands component from the PRA.

Table 12: Offensive Actions Views Changes

Contingency Views	Change Detail
Survival	• Updated to take account of the removal of the Survival Tactic from the set of examples Tasks component extensions. • Preconditions updated.
Countermeasure Coordination	• Updated to take account of the removal of the Path Demands component from the PRA. • General updates throughout the IV for clarification.
Recognition of the need for a Contingency Response	• Updated to take account of the removal of the Contingency Tactic from the set of examples Tasks component extensions. The Transit Tactic has also been removed from the IV for clarity. • Updated to reflect the revised resource management pattern.
Jettison Management	• Exclusions and preconditions updated. • General updates throughout the IV for clarification.

Table 13: Contingency Views Changes

Resource Views	Change Detail
Fuel Management- During a mission	• Updated to reflect the revised resource management pattern.
Fuel Management- Pre-mission	• Updated to reflect the revised resource management pattern.
Power Management	• Updated to reflect the revised resource management pattern and in response the ability of resource components to directly manage their own resource dependencies. • The scenario has been refined to aid clarity.

Table 14: Resource Views Changes

A.3 Glossary Changes

There have been changes throughout the glossary, including the structure and text, as well as changes to the terms defined by the glossary. There are many terms added, removed, and changed. Acronyms and abbreviations have also been added and removed.

Appendix B: PYRAMID Model Installation Instructions

The PYRAMID model incorporates the modelled content included in both the PYRAMID Technical Standard, Ref. [1], and the accompanying guidance document, Ref. [2]. The PYRAMID model for exploiters contains the following:

- Component Composition
- Component Composition Use Cases
- Component Set
- Modelled diagrams used in the PYRAMID Concepts
- PYRAMID Interaction Views
- Glossary

The PYRAMID model has been created using version v9.5 of the Windchill Modeler toolset. The PYRAMID model is available in CWF, XMI, and HTML file formats. Some limitations remain with the PYRAMID model in the XMI and HTML formats when compared against the PYRAMID model viewed in the tooling environment in which it was developed. Installation instructions and known limitations of the respective file formats are provided below.

B.1 CWF

The .cwf file can be loaded into a Windchill Modeler model for use. Please note that a version of the toolset compatible with v9.5 will be required to be able to access the PYRAMID model. To ensure correct visibility of model artefacts it is necessary to have the SysML (Full Profile) installed in the model.

Steps:

- The user should create a new model or locate the model into which to load this release of the PYRAMID model – the destination model. Open the destination model in Windchill Modeler.
- Unpack the .cwf file and save to a local network directory of the users choosing.
- From the destination model in Windchill Modeler the user should select the ‘Component Wizard’ tool from the ‘Tools’ drop-down menu and then select the sub-option to ‘Import From Directory’. This action will open the relevant import wizard.
- The user can then step through the import wizard to import the .cwf file into the destination model. By using this wizard, users will be able to select the .cwf file from the directory above and then browse exactly which model elements this contains before importing. Users can step through the wizard selecting the appropriate settings they require (model dependent) to import the PYRAMID model into their own model.
- Finally, users should check the PYRAMID model import by opening the selected model and ensuring the selected model artefacts have been restored. At this point access controls can be applied to the model and permissions to view in a read only or editable state can also be set by the user. The model .cwf file is supplied with all previous permissions removed. These will need to be set locally by the appropriate model administrator.

B.2 XMI

The method for use of the XMI file is toolset dependent; therefore, it is not appropriate to provide guidance in this document on how a user should view or use the PYRAMID model thus created.

B.2.1 Limitations

- No diagrams (including text diagrams) are available in the XMI format as per the definition of the XMI standard itself Ref. [6].
- The PYRAMID model has been developed using both UML and SysML notations and XMI is limited to UML. Model artefacts are created as the “nearest” equivalents when necessary (e.g., Requirements represented as Classes).

B.3 HTML

Steps:

- Unpack the HTML zip file and save to a local network directory of the user’s choosing.
- Launch the HTML file in the browser of choice (refer to limitations below).

B.3.1 Limitations

- The following are the compatible browsers according to the tool vendor:
    - Internet Explorer 8 – 11 + Metro
    - Firefox 6 – 28.0
    - Google Chrome 14.0.035.163 – 33.0.1750.154m
    - Safari for Windows 5.1 – 5.1.7
- If Google Chrome is not used, then an error message relating to local file access will be presented to the user. When you run Google Chrome, you may still get this error message, this exact error message is dependent on the local set up. The steps to enable the HTML file to be viewed in the browser of choice are specific to the local set up of the user. Therefore, it is not appropriate to provide further guidance in this document.
- If information is not present where expected, it may be hidden when viewing the PYRAMID model in HTML. This can be rectified by selecting the properties button in the top right of the HTML window to view the properties.
- There is a “Stubbed Links” package within the package browser. This should be ignored by users and is only kept to maintain the presentation of the model.
- The leaf level packages of the model often contain roles that do not provide additional information to the user in the HTML format.