NATO STANDARD

AOP-49

SG/2 SHAREABLE (FIRE CONTROL) SOFTWARE SUITE (S4) QUALITY SYSTEM

Edition D Version 1

OCTOBER 2015

NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

7 October 2015

1. The enclosed Allied Ordnance Publication AOP-49, Edition D, Version 1 SG/2 SHAREABLE (FIRE CONTROL) SOFTWARE SUITE (S4) QUALITY SYSTEM, which has been approved by the nations in the NAAG AC/225, ICG-IF, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 4537.

2. AOP-49, Edition D, Version 1, is effective upon receipt and supersedes AOP-49, Edition 3 which shall be destroyed in accordance with the local procedure for the destruction of documents.

3.

4. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

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1 INTRODUCTION

1.1 IDENTIFICATION

This document describes the SG/2 Shareable (Fire Control) Software Suite (S4) Quality System for NAAG AC/225 Integrated Capability Group-Indirect Fires (ICG-IF) Sub-Group 2 (SG/2) usage during the life cycles of sharable computer software products by joint programs supported by SG/2 member countries.

1.2 SCOPE

This Quality System will apply to all projects building products for the NAAG AC/225, IG-IF, SG/2 Sharable Software Suite (S4) unless an exception has been explicitly authorized by SG/2.

1.3 REFERENCE DOCUMENTS

(a) NATO STANAG 4537 (Edition 3.0) on a NATO Artillery Ballistic Kernel (NABK) and other Sharable Fire Control Software dated 30 April 2010

(b) Ratification Draft of NATO STANAG 4537 (Edition 4.0), Sub-Group 2 Sharable (Fire Control) Software Suite, dated 19 March 2013

(c) S4 Programme Plan for the Shareable (Fire Control) Software Suite products, contained in Volume 1 of AOP-37.

2 ORGANIZATIONAL FRAMEWORK

The eleven policies identified in the Quality System are organized into 4 major domains to aid in understanding the broad areas that are addressed by the framework.

A. Programme Management Domain 1. Coordination Policy 2. Oversight Policy	B. Project Management Domain 1. Project Planning Policy 2. Project Monitoring and Control Policy 3. Risk Management Policy
C. Engineering Domain 1. Requirements Engineering Policy 2. Technology Development Policy 3. Software Development Policy	D. Support Domain 1. Configuration Management Policy 2. Process Assurance Policy 3. Product Evaluation Policy 4. Archival Policy

2.1 STRUCTURE OF AN INDIVIDUAL POLICY

Each policy contains 5 sections in a standardized layout to ease navigation and understanding. These sections are:

- Purpose

  This section is used to define the aim or purpose of the policy. In addition, it contains the background, rationale or requirement for this policy statement; that is, what needs to be done and why.

- Responsibilities

  This section is used to describe the responsibilities associated with the policy using named roles.

- Inputs

  This section is used to list the typical inputs that should be available for those applying the policy.

- Activities

  This section is used describe the activities being performed within the context of the policy.

- Outputs

  This section is used to list the typical outputs associated with the policy.

2.2 PROJECT ROLES

The roles defined within the policies are designed to be independent of position and may be assigned to a specific individual and/or a group to ensure completion.

Within this document the following role structure is used:

- The Project Team role includes:
  - Project Leader
  - Product Leader (described in Section 2.3 Sponsorship Roles)
  - Sub Groups within the Project Team
    - Development Team
    - Qualification Team
  - Specific Roles (Full or Part Time)
    - Configuration Management Representative
    - Process Auditor
    - Requirements Analyst
  - Generic Roles
    - Author
    - Reviewer
- The external roles outside the Project Team include:
  - Independent Safety Auditor (ISA)
  - Lead ISA
  - Programme Policy Coordinator
  - S4 Configuration Control Board (CCB)
  - SG/2
  - Stakeholders
  - Suite Quality Assurance and Configuration Manager
  - Suite Technology Coordinator
  - National Point of Contacts (PoC)
  - Customers
- The hybrid roles (internal and external) include:
  - Project CCB
  - Technology Team

2.3 SPONSORSHIP ROLES

STANAG 4537, reference a) and b), permits the technical leadership of a Kernel project within the S4 programme to include a Product Leader from a sponsored government.

The Project Leader, from the sponsoring government, always retains the formal responsibility for the project. However, the degree of autonomy of the Product Leader, from the sponsored government, is encapsulated in the applicable Memorandum of Understanding (MoU) between the two governments.

This document describes the Project Leader and Product Leader roles separately for all policies within the Programme Management domain. In the subsequent domains, the Project Leader role is used exclusively, although the Product Leader will be responsible for some/all of the activities in accordance with the planned autonomy.

3 PROGRAMME MANAGEMENT DOMAIN

3.1 COORDINATION POLICY (A1)

3.1.1 Purpose

The coordination policy describes the details linking the Quality System framework for the Sharable Fire Control Software Suite within NAAG-ICG-IF-SG/2 to the STANAG 4537 agreement, which manages the Sharable Fire Control Software Suite products.

This coordination policy describes the responsibilities of SG/2 and National PoCs relating to the coordination of projects.

3.1.2 Responsibilities

3.1.2.1 Lead ISA

The Lead ISA is responsible for:
- Coordinating all project/products ISAs
- Presenting common issues at programme reviews

3.1.2.2 Programme Policy Coordinator

The Programme Policy Coordinator is responsible for:
- Coordinating proposed changes to STANAG 4537
- Drafting new editions of 4537
- Coordinating policy issues with SG/2
- Presenting policy issues at programme reviews

3.1.2.3 SG/2

SG/2 is responsible for:
- Managing participation in the projects
- Appointing ISAs for the projects
- Coordinating between the projects

3.1.2.4 National PoCs

National PoCs are responsible for:
- Obtaining participation commitments from their respective governments and following through on the delivery of these commitments
- Directing resources to meet SG/2 programme plans

3.1.3 Inputs

- Overall NATO AC/225 ICG-IF guidance
- STANAG 4537

3.1.4 Activities

3.1.4.1 Manage Participation

SG/2 is responsible for managing the STANAG 4537 participation guidelines, marketing the Shareable Software Suite to increase participation from new and existing countries, and monitoring the level of participation within the Sharable Software Suite projects.

3.1.4.2 Programme Coordination

SG/2 is responsible for initiating projects through business planning, prioritizing projects; and coordinating resources and management interfaces between projects. This includes the establishment of Project Charters and/or Project Working Groups, if applicable.

3.1.5 Outputs

- S4 Programme Plan
- Programme Participation Data
- Project Charter(s)

3.2 OVERSIGHT POLICY (A2)

3.2.1 Purpose

This policy describes the programme oversight responsibilities to ensure that resources are expended in an efficient manner that is consistent with the customer's stated requirements.

The activities described in this policy are aimed at enhancing customer satisfaction.

3.2.2 Responsibilities

3.2.2.1 SG/2

SG/2 is responsible for:

- Providing oversight and scheduling project review(s). This is accomplished in conjunction with project working groups, if applicable.
- Providing the interfaces to gather customer satisfaction feedback on all projects.
- Reviewing ISA reports
- Gathering national implementation data
- Conducting AOP-49 Quality System reviews
- Agreeing to MoU plans for Project and Product Leadership (if applicable)

3.2.2.2 S4 CCB

The S4 CCB is responsible for:

- Obtaining feedback on the AOP-49 Quality System and recommending changes

Suite Quality Assurance and Configuration Manager

The Suite QACM is responsible for:

- Suite level testing of S4 products

3.2.2.3 Project Leader

The Project Leader is responsible for:

- Supervising the Product Leader according to the degree of autonomy encapsulated in the MoU (if applicable)
- Providing information for project reviews.

3.2.2.4 Product Leader

The Product Leader is responsible for:

- Providing information to the Project Leader according to the degree of autonomy encapsulated in the MoU (if applicable)
- Providing information for project reviews.

3.2.2.5 Independent Safety Auditor

The ISA is responsible for:

- Providing information for programme reviews.

3.2.2.6 Lead ISA

The Lead ISA is responsible for:

- Mentoring project/product ISAs (as required)
- Briefing SG/2 on common issues

3.2.2.7 Stakeholders

Stakeholders are responsible for:

- Providing feedback on their satisfaction with SG/2 project progress and the resultant products.

3.2.3 Inputs

- S4 Programme Plan
- Programme Participation Data
- Memorandum of Understanding(s) (if applicable)
- Project Charter(s)
- Project Plan(s)
- Project Archives

3.2.4 Activities

3.2.4.1 Project Reviews

SG/2 has a responsibility to schedule reviews of each project at least once a year. Each review shall include:

- Updated Project Schedule
- Progress Report
- Level of effort information by country
- Issues requiring SG/2 decisions
- Project Charter, if required
- Interfaces to other Sharable Software Suite projects, if required
- National implementation data of the product

This activity may be accomplished in conjunction with a working group.

3.2.4.2 Solicit Project Satisfaction Feedback

SG/2 is responsible for obtaining feedback on project satisfaction from all stakeholders. Action shall be taken by SG/2 to address specific project issues. Consolidated feedback and trends shall be used to guide improvements to the quality system.

National Implementation Data shall be used to obtain project satisfaction feedback.

3.2.4.3 Review of Quality System

SG/2 will conduct periodic management reviews of the AOP-49 Quality System to ensure its continuing suitability. Each policy within the quality system must be reviewed at least once every 24 months.

The S4 CCB will obtain feedback from project teams on the use of the AOP-49 Quality System and periodically recommend changes to the quality system.

3.2.4.4 Suite Level Testing

The Suite Quality Assurance and Configuration Manager will perform suite level testing to ensure that the S4 software products work together correctly in an operational environment.

3.2.5 Outputs

- Project Review Minutes
- National Implementation Data
- Customer Satisfaction Report(s)
- Quality System Problem Reports and Change Requests
- Suite Test Results

4 PROJECT MANAGEMENT DOMAIN

4.1 PROJECT PLANNING POLICY (B1)

4.1.1 Purpose

This policy describes the requirements for project planning.

The key to effective project management and the production of quality products is proper planning. This includes scheduling, resource management, and risk management. Regular communication of documented and approved Project Plan(s) decreases coordination costs among the contributing nations and their respective agencies/vendors and eases the integration of SG/2 products into national systems.

4.1.2 Responsibilities

4.1.2.1 SG/2

SG/2 is responsible for:

- Reviewing and approving Project Plans.

4.1.2.2 Project Leader

The Project Leader is responsible for:

- Developing the Project Plan
- Maintaining the Project Plan

4.1.2.3 National POC

National PoCs are responsible for:

- Providing AOP-49 coverage mapping(s) of local quality systems in use in National development sites

4.1.2.4 Stakeholders

The Stakeholders are responsible for:

- Assisting in the development of the project schedule by identifying task activities, critical dates and external interfaces

4.1.3 Inputs

- Available Project Resources (from National Commitments)
- Project Charter
- Lessons Learned Report(s)

4.1.4 Activities

4.1.4.1 Develop Project Plan

The Project Leader shall develop the project plan. The Project Plan shall include:

- Schedule
- Work Breakdown Structure (WBS)
- Resources (equipment and personnel)

- Development Model, if applicable
- Project Development Environment
- Processes to be used
- Interfaces to other projects
- External Dependencies

4.1.4.2 Maintain Project Plan

The Project Leader will revise the Project Plan throughout the life of the project. This can occur as requirements are changed, new risks are discovered, and analysis of the project monitoring and control framework results in adjustments.

The Project Plan is typically reviewed and updated periodically in order to communicate an accurate view of the project to all Stakeholders as well as members of the project team.

4.1.5 Outputs

- Project Plan
- AOP-49 coverage mappings for local quality systems for National development site(s)

4.2 PROJECT MONITORING AND CONTROL POLICY (B2)

4.2.1 Purpose

This policy describes the activities involved in monitoring and controlling projects.

Project monitoring and control includes the assignment of tasks, monitoring of tasks and overall project progress, reporting on progress, and capturing lessons learned.

Review meetings and status reports ensure that outstanding resource issues are resolved and stakeholders are kept informed about project progress. These items help the project team effectively manage the Project Plan and permit Stakeholders needs to be addressed in a timely manner.

Mandating projects to capture and evaluate information for inclusion in a "Lessons Learned" document is a valuable way for the project team members, as well as the stakeholders, to gain insight into the project. This document is used in subsequent projects.

4.2.2 Responsibilities

4.2.2.1 SG/2

SG/2 is responsible for:

- Providing oversight and project review.
- Reviewing Lesson Learned reports

4.2.2.2 Project Leader

The Project Leader is responsible for:

- Assigning tasks to the Project Team

- Monitoring task progress
- Reporting project status
- Capturing the Lessons Learned

4.2.2.3 Project Team

The Project Team is responsible for:

- Understanding the Project Plan
- Performing tasks in accordance with the Plan
- Reporting status of tasks to the Project Leader

4.2.3 Inputs

- Project Plan

4.2.4 Activities

4.2.4.1 Tasking

The Project Leader is responsible for allocating logical units of work to the Project Team and communicating interdependencies of that work.

Task planning must consider the size and complexity of the work, and the experience of the Author of the work product. Large tasks require less coordination of Product Evaluation but can delay discovery of issues. Conversely small tasks can overwhelm the Project Leader with tasking and the scheduling of Product Evaluation. A balanced approached should be adopted that is gradually tuned to the project needs.

4.2.4.2 Monitoring Tasks

The Project Leader is responsible for analyzing task progress and addressing issues affecting the project.

4.2.4.3 Project Reporting

The Project Leader is responsible for publishing status reports to Stakeholders containing: a list of issues and risks, accomplishments, and ongoing tasks. The frequency of the status reports shall be documented in the Project Plan.

4.2.4.4 Capture Lessons Learned

The Project Leader is responsible for capture, consolidation, and publication of Lessons Learned. This shall include an analysis of project activities, best practices, problems encountered, solutions applied, and recommendations for improving the Quality System.

4.2.5 Outputs

- Project Status Reports
- Lessons Learned Report(s)

4.3 RISK MANAGEMENT POLICY (B3)

4.3.1 Purpose

This policy describes the activities associated with the management of project risks.

Recognizing and managing risks is an essential aspect of project management. Risk management is a proactive and iterative process that is vital to controlling costs, meeting deadlines and producing quality results.

Risk identification and assessment allows management to understand project risk. Severe risks are then addressed using risk mitigation strategies.

4.3.2 Responsibilities

4.3.2.1 SG/2

SG/2 is responsible for:

- Providing approval for risk control actions that cannot be addressed at the project level.

4.3.2.2 Project Leader

The Project Leader is responsible for continually:

- Assessing risks
- Mitigating risks

4.3.2.3 Project Team

The Project Team is responsible for:

- Identifying risks
- Assisting in the assessment of risks
- Assisting in the planning and execution of risk control actions

4.3.2.4 Stakeholders

Stakeholders are responsible for:

- Identifying risks

4.3.3 Inputs

- Project Plan
- Approved Requirements

4.3.4 Activities

4.3.4.1 Risk Identification

This activity involves capturing individual risk items.

4.3.4.2 Risk Assessment

The Risk Assessment activity:

- Determines the probability of the risk occurring
- Determines the impact of the risk (delays, costs, quality)
- Determines the severity of the risk using a combination of probability and impact
- Assesses which risk items need to be addressed by a risk mitigation activity

4.3.4.3 Risk Mitigation

The Project Leader:

- Devises Risk Control Actions to reduce the probability and/or address the impact of a risk item
- Assigns risk control actions to the Project Team as scheduled task(s)

4.3.5 Outputs

- Prioritized Risk Items
- Risk Control Actions

5 ENGINEERING DOMAIN

5.1 REQUIREMENTS ENGINEERING POLICY (C1)

5.1.1 Purpose

This policy describes the actions for capturing and controlling product requirements.

Each country, and their associated Stakeholders, has a vested interest in the resulting software product meeting Customer expectations.

5.1.2 Responsibilities

5.1.2.1 S4 CCB

The S4 CCB is responsible for:

- Ensuring each project stays within scope

5.1.2.2 Project CCB

The Project CCB is responsible for:

- Prioritizing and allocating requirements for implementation
- Establishing the list of requirements to be implemented within a version

5.1.2.3 Project Leader

The Project Leader is responsible for:

- Submitting requirement proposals to CCB
- Establishing and maintaining internal controls to ensure that approved requirements are used to drive project planning and product development

5.1.2.4 Requirements Analyst

The Requirements Analyst is responsible for:

- Reviewing requirement changes for completeness and clarity
- Analyzing submitted changes for product impact

5.1.2.5 Project Team

The Project Team is responsible for:

- Ensuring that any implementation that modifies an approved requirement is brought to the attention of the Project Leader for review.

5.1.2.6 Stakeholders

Stakeholders are responsible for:

- Proposing and submitting requirements changes.

5.1.3 Inputs

- Project scope
- Approved Requirements from Previous releases
- Higher Level Requirements (if applicable)

5.1.4 Activities

5.1.4.1 Requirement Submission

Stakeholders shall submit adequately documented requirement proposals to the Project Team for analysis.

Stakeholders are also responsible for communicating relative priority of requirement changes.

5.1.4.2 Requirement Analysis

The Requirement Analyst evaluates and rationalizes proposed new/changed requirements. This activity includes:

- Reviewing for clarity, accuracy, and completeness
- Analyzing for product impact
- Determining if technology development is required

5.1.4.3 Requirement Management

The Project Leader (PL) submits proposed new/changed requirements to the Project CCB for consideration.

The Project CCB prioritizes requirements, allocates them to a release, and approves requirements for implementation within the constraints of the available resources.

The S4 CCB ensures that each project stays within scope.

The Project Leader establishes internal controls to ensure that approved requirements are used to drive project planning and product development

The Project Team ensures that any implementation that modifies an approved requirement is reported to the Project Leader.

5.1.5 Outputs

- Approved Requirements
- Requirements Change Control Data

5.2 TECHNOLOGY DEVELOPMENT POLICY (C2)

5.2.1 Purpose

This policy applies to the development of the underlying mathematical algorithms.

Many projects within the Sharable Software Suite have traditionally seen significant efforts in the development, validation and integration of new technology. Technology development can be treated as a portion of requirements engineering or software development. However, given the nature of the projects within the scope of this quality system it is reasonable to treat technology development as a separate topic.

5.2.2 Responsibilities

5.2.2.1 SG/2

SG/2 is responsible for:

- Working with the Project Leader and Stakeholders to develop, coordinate and maintain technology priorities

5.2.2.2 Project Leader

The Project Leader is responsible for:

- Initiating technology development tasks to address approved requirements for particular product releases

5.2.2.3 Suite Technology Coordinator

The Suite Technology Coordinator is responsible for:

- Leading technology development by the Technology Team
- Providing information for programme reviews

5.2.2.4 Technology Team

The Technology Team is responsible for:

- Developing technology for use by Development Team in product implementation

5.2.3 Inputs

- Approved Requirements

5.2.4 Activities

5.2.4.1 Technology Development Initiation

The Project Leader manages the technology dependencies of the approved requirements for product releases and initiates technology development tasks.

It is likely that additional coordination will be required with SG/2 for technology development tasks due to the specialized nature of the work. The Suite Technology Coordinator provides the focal point for this coordination. Most available resources for technology development are external to an individual project, often can only dedicate part time effort to individual tasks, and need peer review support from another specialized resource that is often best found in a separate participating nation.

5.2.4.2 Technology Development

The Technology Team formulates mathematical solutions to enable implementation of the proposed requirement. The lead-time needs for the development of new technology can be substantial. A research environment may have to be established to verify the integrity of the foundations. Field experimental trial(s) and data analysis may be required.

The Technology Team documents the features, limitations and implementation requirements (for example: computational requirements and data repositories) of the technology development.

5.2.4.3 Product Evaluation

Technology development is treated as a normal work product within the project framework. This provides for product evaluation as required for other interim work products on the programme. The Suite Technology Coordinator identifies the Reviewer, if not previously assigned.

This product evaluation may require additional support beyond the original project team. Other projects within SG/2 or other NATO Working Groups may be required to assist in the product evaluations.

5.2.4.4 Technology Agreement

Once the technology development solution has been evaluated, agreement within SG/2 must still be reached concerning further implementation. This agreement may require the publication of new STANAGs or the modification of existing STANAGs.

5.2.5 Outputs

- New or changed STANAGs
- Agreed mathematical foundations for algorithms

5.3 SOFTWARE DEVELOPMENT POLICY (C3)

5.3.1 Purpose

This policy defines the activities for the development of software products.

Modern engineering organizations use defined processes within an iterative software development lifecycle to build work products that satisfy approved requirements.

5.3.2 Responsibilities

5.3.2.1 Project Leader

The Project Leader is responsible for:

- Approving the architecture
- Allocating requirements to components of the architecture
- Creation, control and coordination of the Development Team in accordance with the software development lifecycle in use
- Coordination with the Qualification Team and Independent Safety Auditor.

5.3.2.2 Development Team

The Development Team is responsible for:

- Developing the design from approved requirements
- Implementing the product using agreed mathematical foundations
- Providing software builds to the Qualification Team.

5.3.2.3 Independent Safety Auditor (ISA)

The ISA is responsible for:

- Participating in product design reviews

- Evaluating compliance with applicable standard(s)
- Reviewing qualification testing

5.3.2.4 Qualification Team

The Qualification Team is responsible for:

- Developing test cases from product requirements
- Testing software builds against approved requirements

5.3.2.5 National PoCs

National PoCs are responsible for:

- Developing and releasing of sharable test data to permit sufficient qualification testing of the product in realistic usage scenarios.

5.3.3 Inputs

- Approved Requirements
- Coding Standards
- Agreed mathematical foundations for algorithms
- Waiver mechanisms for deviations from requirements, coding standards and requisite authorities for waivers.

5.3.4 Activities

5.3.4.1 Design

The Development Team:

- Analyzes the product requirements
- Develops the design criteria for the product
- Identifies key design issues and constraints
- Develops alternative solutions for the product architecture

The Project Leader and Development Team review proposed solutions, examine the trade-offs, and select an appropriate architecture for the product.

The Project Leader and Development Team allocate product requirements, including derived requirements, to components of the product architecture.

The Development Team documents the product architecture, component design, interfaces, and the rationale for the decisions made.

The ISA participates in project reviews and evaluates design documentation.

5.3.4.2 Implementation and Unit Testing

The Development Team implements software components and performs unit testing on those components. This work is performed in accordance with the selected product architecture, coding standards, technology and/or STANAGs. Where waivers are permitted or required, the project team and Project CCB implement a waiver documentation process that records waivers granted at the appropriate authority level. At a minimum, such waivers are recorded in the design document or source code with appropriate references.

The ISA evaluates compliance with applicable standard(s).

5.3.4.3 Integration

The Development Team integrates components into progressively larger assemblies as implementation and unit testing are completed. The Development Team conducts integration testing on these assemblies to ensure that the product is fit for qualification testing.

5.3.4.4 Sharable Test Data

Sharable Software Suite products are tested to defined requirements with an expectation towards intended usage.

Operational usage of the products requires that each National PoC analyze the qualification test suite to verify that it covers their actual usage of the product. This may require that the National PoC develop and release appropriate information and/or data to support development of realistic tests.

5.3.4.5 Qualification Testing

The Qualification Team develops test cases in order to verify that the product requirements have been satisfied. The documentation of test cases includes traceability to the requirements.

The Qualification Team should be independent from the development team.

The Qualification Team uses the software 'builds' provided by the Development Team for testing the product. These 'builds' will be produced from controlled components that are under configuration management.

The Qualification Team tests the development 'builds' to verify the implementation of the Product requirements using the test cases. When appropriate, the Qualification Team will automate the qualification test cases.

The Qualification Team conducts regression testing, when appropriate, to ensure that product functionality has not degraded due to maintenance activities associated with the software

The Qualification Team documents the test results in a software test report.

The ISA evaluates qualification testing.

5.3.5 Outputs

- Design Documentation
- Unit Test results
- Qualification Test Documentation
- Automated Qualification Tests, as applicable
- Software Test Report

6 SUPPORT DOMAIN

6.1 CONFIGURATION MANAGEMENT POLICY (D1)

6.1.1 Purpose

This policy specifies the requirements for configuration management (CM).

CM principles are essential to the management and control of project work products. CM tooling permits the isolation of changes that facilitate regression testing.

Projects typically require configuration management tool(s) to provide an accurate repository for project work products. This tooling is essential when developers are working at different locations. SG/2 projects coordinate the efforts of personnel working at a variety of National sites. Therefore, CM tooling is required for all Sharable Software Suite projects.

6.1.2 Responsibilities

6.1.2.1 Project Leader

The Project Leader is responsible for:

- Determining the requirements for configuration management on the project
- Managing the approval of proposed changes

6.1.2.2 Configuration Management Representative

The Configuration Management Representative is responsible for:

- Determining the requirements for configuration management on the project
- Implementing configuration management tools
- Supporting the development of project builds, and product release

6.1.2.3 Project Team

The Project Team is responsible for:

- Controlling work products according to the CM Plan

6.1.3 Inputs

- Work Products

6.1.4 Activities

6.1.4.1 Configuration Management Planning

The Project Leader and Configuration Management Representative prepare the configuration management plan. This includes determining which work products are subject to configuration management, how changes to identified work products are controlled, and when baselines are created.

6.1.4.2 Change Control

The Project Team controls changes to work product(s) according to the CM Plan.

The Project Leader manages the approval of proposed changes. SG/2 approves changes to project scope. The Configuration Control Board (CCB) approves requirements change.

6.1.4.3 Baselines

The Project Leader establishes a baseline(s) for every release that is, or could be, operational within national systems. A baseline contains approved requirements, the component products, tests, and documentation associated with the release.

6.1.4.4 Configuration Audit

The Configuration Management Representative performs audits to verify that the configuration information for controlled item(s) is accurate, complete and meets the requirements of the CM Plan.

6.1.5 Outputs

- CM Plan (Component of the Project Plan)
- Controlled Work Products
- Audit reports

6.2 PROCESS ASSURANCE POLICY (D2)

6.2.1 Purpose

This policy defines the requirements for process assurance.

Process maturity has direct influence on the quality of the product. Advanced process maturity provides additional safety assurance to meet customer requirements. The functions associated with S^4 products are not safety critical but are considered “safety related”.

Project processes must be defined, adhered to, and verified.

6.2.2 Responsibilities

6.2.2.1 Project Leader

The Project Leader is responsible for:

- Ensuring that project processes are documented
- Planning for process assurance

6.2.2.2 Project Team

The Project Team is responsible for:

- Defining project processes
- Maintaining process evidence
- Reviewing and updating project processes

6.2.2.3 Independent Safety Auditor (ISA)

The ISA is responsible for:

- Auditing externally visible project activities

- Auditing internally visible project activities through the Process Auditor(s)

6.2.2.4 Process Auditor(s)

The Process Auditor is responsible for:

- Auditing project processes in an active national agency/vendor within the Project Team by analyzing process evidence
- Providing process evidence to the ISA, when requested

6.2.3 Inputs

- Project Processes
- Project Work Products

6.2.4 Activities

6.2.4.1 Document Processes

The Project Team defines the processes being used. A process details when it is to be applied, who performs the process, what activities are done, and how the activities are verified. A use of flow chart(s) for process definition deserves consideration. The objective is to define processes that facilitate Project Team activities.

The Project Leader documents the process assurance mechanisms in the Project Plan. This includes documenting a process for the management of corrective action(s) raised during process auditing.

6.2.4.2 Maintain Process Evidence

The Project Team maintains process evidence to support process assurance.

Project work products are maintained using a configuration management system. However, there are a number of articles that may not be maintained under configuration management but are nevertheless part of the process evidence. These articles include Peer Review Evaluation notes, meeting minutes, and status reports.

6.2.4.3 Process Auditing

The Process Auditor audits activities within an active national agency/vendor using maintained evidence to verify compliance with the defined processes.

The ISA audits externally visible project activities with available process evidence.

The ISA may also audit internal activities, when required, through evidence that is accessible through the Process Auditor(s). This could occur, for example, if software/safety issues are discovered that indicate a potential problem with project processes.

6.2.4.4 Process Review

The Project Team periodically reviews the defined processes to ensure that the processes are still valid and that the desired level of product quality is being achieved.

6.2.5 Outputs

- Documented Project Processes
- Process Evidence
- Process Audit Reports

6.3 PRODUCT EVALUATION POLICY (D3)

6.3.1 Purpose

This policy describes the work product evaluation responsibilities.

Peer reviews are a widely accepted concept for early defect detection. The earlier in the development cycle that defects are found, the easier and cheaper they are to correct.

6.3.2 Responsibilities

6.3.2.1 Project Leader

The Project Leader is responsible for:

- Allocating Reviewer(s) to ensure effective product evaluation

6.3.2.2 Author

The Author is responsible for:

- Submitting the work product for review
- Resolving review issues
- Updating the work product
- Delivering the completed work product to CM

6.3.2.3 Reviewer

The Reviewer is responsible for:

- Reviewing work product(s)
- Participating in resolution of issues
- Verifying the resolution of issues

6.3.3 Inputs

- Work Products
- Requirements/Standards for the Work Product (if applicable)
- Waiver Documentation (if applicable)
- Checklists (if available)

6.3.4 Activities

6.3.4.1 Submission

The Project Leader identifies the Reviewer, if not previously assigned. The ideal time to assign a Reviewer is when the development task is assigned, but this may not always be feasible. The selection of the Reviewer is usually a peer to the Author.

The Author submits the work product(s) for review. The review process can commence before the work product is complete. For example, in some cases work products can be evaluated while in draft or framework form to facilitate early identification of issues. However, the final work product must still be submitted to the Reviewer.

6.3.4.2 Work Product Review

The Reviewer conducts the review of the work product. The Reviewer verifies the completeness, correctness, consistency and overall quality of the work product.

All review steps should include lots of communication (email, telephone, and/or review meetings) during the process to help shorten the calendar time necessary to complete the review. It is important that communications be maintained so that a review does not stall. The Reviewer will often be performing their own tasks and the Reviewer may have to be re-assigned or priorities changed to ensure that reviews are completed in a timely manner.

The Reviewer sends the Review Evaluation Notes to the Author. It is recommended that an issue classification system (for example, Critical, Major, or Minor) be established so that issues can be addressed in an organized manner.

Some work products may require additional reviews, as appropriate.

6.3.4.3 Finalize Review

The Author reviews the Review Evaluation Notes. The Reviewer and Author discuss the issues to ensure clear understanding. A third party can be used to mediate issues, as appropriate.

The Author updates the Work Product. This update may include changing the work product or clarifying explanations in the product in the case of misunderstandings. Some issues may not be addressed in the current activity and such issues are tracked for later closure.

The Reviewer verifies that all issues have been addressed in the updated work product.

The Author submits the completed work product to CM, if not already under configuration control.

6.3.5 Outputs

- Updated Work Product, incorporating results of review
- Review Evaluation Notes (Comments and Response)

6.4 ARCHIVAL POLICY (D4)

6.4.1 Purpose

This policy describes the archival responsibilities.

Archival processes are a way to ensure current and previous versions of products and documents are available as required.

6.4.2 Responsibilities

6.4.2.1 S4 CCB

The S4 CCB is responsible for:

- Providing programme guidance for archival plans and procedures
- Providing an annual S4 document archive to the Suite QACM

6.4.2.2 Suite Quality Assurance and Configuration Manager (Suite QACM)

The Suite QACM is responsible for:

- Storage and management of the archives
- Maintenance of a catalogue for the archives
- Production of archive copies
- Release of copies as requested by National POCs.

6.4.2.3 Project Leader

The Project Leader is responsible for:

- Developing archival plans and procedures
- Monitoring and control of the implementation of the archival procedures
- Distributing archives to the Suite QACM.

6.4.2.4 Project Team

The Project team is responsible for:

- Implementing the archival procedures.

6.4.2.5 Independent Safety Auditor

The Independent Safety Auditor is responsible for:

- Evaluating archival plans and procedures
- Evaluating the project portion of the S4 archive catalogue.

6.4.3 Inputs

- S4 Programme Plan
- National Implementation Data

6.4.4 Activities

6.4.4.1 Archival Planning

The S4 CCB provides programme guidance and national implementation data to the individual project archival plans and procedures.

The Project Leader determines project archival plans in conjunction with the Project Team to ensure that all relevant material associated with a product is available to external organizations using these products for as long as they are required. Such plans should address the availability of earlier versions, security of products and electronic availability.

Archival Procedures
The Project Team develops and implements archival procedures to accomplish the archival plans.

The Project Leader distributes archives to the Suite QACM.

The Suite QACM stores and manages the archives. This includes the maintenance of a catalogue for S4 archived products. The Suite QACM also produces archive copies and responds to requests from National POCs for archive copies.

6.4.4.2 Review

The Independent Safety Auditor (ISA) evaluates the archival plans and procedures in use on the project. The ISA also evaluates the project portion of the S4 archive and the catalogue information to ensure correctness, completeness, and retention.

6.4.5 Outputs

- Archival plans and procedures
- Archives of project and product material
- S4 archive catalogue

ANNEX A ACRONYMS/GLOSSARY

AC	Acquisition Practices, AC/225
AOP	Allied Ordnance Publication
Archive	The cataloguing and retention of products and project materials in a form that guarantees that such products can be retrieved and reused in their original form at an arbitrary point in the future. Where relationships exist between products, or versions of products, these relationships are clearly documented by each of the related products during the archival process.
Author	This role is the person who prepares a work product.
Configuration Management Representative	This role is a member of the Project Team who is responsible for configuration management requirements, tools, and procedures.
Customer	This role includes: - Implementers and potential implementers of national systems that integrate SG/2 Sharable Software Suite product(s). - National system(s) end-user representatives
Design	Design includes the development of an architectural framework for the product to ensure that high-level product requirements are considered. This architecture provides a framework for identifying key structures, technologies and mechanisms to be used/considered during the implementation. Systems that attempt to map requirements solely to an implementation are difficult to manage as some requirements do not map cleanly to specific components and may be missed during the implementation.
Development Team	This role is performed a subset of the Project Team.
Implementation	Implementation includes product development using the established design. Integration, within the implementation, is used to ensure that the components of the product, which may have been developed by separate/distinct teams, can be assembled into progressively larger software aggregations that define the product.
ISA	The role of Independent Safety Auditor is external to the Project Team. The ISA participates in project reviews and evaluates Project Team products and processes against defined standards.
LCG 3	Land Capability Group 3 (Surface-to-Surface)
Lead Government	A NATO or sponsored government that takes the lead in one of the projects or in a certain area within a project, of S4 software engineering, development, and/or maintenance as allocated by SG/2. The lead government provides the Project Leader. The lead government may delegate authority to a sponsored government subject to MoU agreement.
Lead ISA	The Lead ISA is external to the Project Teams. The Lead ISA mentors, coordinates, and reports on common issues found by the project and product ISAs.
MoU	Memorandum of Understanding
NAAG	NATO Army Armaments Group
National Implementation Data	This includes information regarding: - National systems using the product - Status of national systems – deployment, etc. - Customer contact information including product integrators, etc. - Details on version(s) in-use
National PoC	This role provides the S4 program with links back into the respective national governments for resource commitments. National POCs also provides inputs into project management for risk identification, requirement prioritization, project external interfaces, and the development of shareable test data.

PFP	Partnership for Peace
PL	The Project Leader is a role within the Project Team. The role is performed by a representative of the lead government. This role is often further refined in the project plan with activity allocation to individual sub-leadership roles, i.e. a Risk Manager, a Development Team Lead, or team lead(s) for major areas/deliverables within a project.
PoC	Point of Contact
Process Auditor	This role is performed within each national agency/vendor who is active within an S4 project. The Process Auditor(s) verify local quality framework conformance and provide process evidence, as required, to the Independent Safety Auditor (ISA) for the project.
Process Evidence	Artifacts gathered during an activity used in Process Assurance.
Product Leader	A sponsorship role performed by a designated resource, within a lead sponsored government, when they are delegated authority for leading a S4 project under a MoU agreement. This role also includes some/all of the Project Leader activities defined in the Quality System in accordance with the degree of autonomy encapsulated in the MoU.
Programme	This is the overarching construct below which projects and products exist
Programme Policy Coordinator	The Programme Policy Coordinator role coordinates policy issues from the S4 programme with SG2. This role also drafts of new editions of STANAG 4537.
Project CCB	Project Configuration Control Board (CCB). This role is performed within an individual S4 project and may be performed by any of the following, as dictated by the needs of the project: - PL - PL and Stakeholders - Project Working Group
Project Team	This role is often distributed to multiple nations and within each nation a variety of agencies/vendors may collaborate to accomplish portions of the required activities. Each project describes their Project Team structure in their Project Plan.
Qualification Test	A test that demonstrates that software product meets the requirements.
Qualification Team	This role is performed by a subset of the Project Team that is not typically part of the Development Team.
QS	Quality System
Requirements Analyst	This role is performed by a subset of the Project Team. The Requirement Analyst reviews requirement changes for completeness and clarity and performs analysis of submitted changes to determine product impact.
Reviewer	The person who reviews a work product, generally a peer of the product's author or an independent entity, for the purpose of identifying deficiencies and improvements.
Risk Item	Any circumstance or condition that may adversely affect project cost, schedule or quality.
S4 or S^4	The programme under control of NAAG, AC/225(LCG/3-SG/2). The SG/2 Shareable (Fire Control) Software Suite (S^4) consists of (but not limited to) the following kernels – NASS, NABK, NAGIK, NAMK, and NIFAK. The acronym can be written as S4 or S^4.
S4 CCB	The SCCB ensures the usability, interoperability, and safety for intended use of the S4; coordinates product release schedules; and ensures that a quality system is maintained, processes implemented, and adhered to by the software projects.
SG/2	Sub Group 2 within Land Capability Group 3
Lead Sponsored Government	A lead sponsored government (described as L2 in STANAG 4537) may lead technical delivery of an S4 product through a Product Leader. This arrangement is subject to agreement by SG/2 of the MoU encapsulating the degree of autonomy from the sponsoring participating NATO government. The sponsoring

	government provides a Project Leader and retains formal responsibility for the project.
Stakeholders	This role includes National PoCs and Customers.
STANAG	(NATO) Standardization Agreement
Suite QACM	The Suite Quality Assurance and Configuration Manager role is from the S4 Configuration Control Board (SCCB) Terms of Reference. The Suite QACM provides archive control and suite level testing of S4 products.
Suite Technology Coordinator	The Suite Technology Coordinator role provides leadership and coordination for the integration of SG/2 technology, principally published via STANAGs, into S4 products. The S4 Programme Plan also refers to the role as the S4 Technology Team Leader.
Technology	In the context of this document, technology refers to the underlying mathematic foundations for algorithms to be used in Sharable Software Suite products. Technology is the result of various research efforts within participating nations. In some cases these are new items; while in other cases they represent adaptations from other research areas; that is, an extension to the original derivation.
Technology Team	This role is performed by a subset of the Project Team, augmented by members outside the Project Team, developing technology for use by the Development Team in product implementation.
WBS	Work Breakdown Structure
Work Product	A work product is a document, a model, a set of images, code – virtually anything – created during a project. Work products differ from “deliverables” as deliverables are formally presented (i.e., delivered) to the customer.

ANNEX B ROLES

- Author
- Configuration Management Representative
- Development Team
- Independent Safety Auditor
- Lead ISA
- National PoCs
- Process Auditor
- Product Leader
- Programme Policy Coordinator
- Project CCB
- Project Leader
- Project Team
- Qualification Team
- Requirements Analyst
- Reviewer
- S4 CCB
- Stakeholders
- Sub-Group 2
- Suite QACM
- Suite Technology Coordinator
- Technology Team

ANNEX C RESPONSIBILITIES

1.1 Author

The Author is responsible for activities in the following policy:

1.1.a Product Evaluation Policy (D3)
- Submitting the work product for review
- Resolving review issues
- Updating the work product
- Delivering the completed work product to CM.

1.2 Configuration Management Representative

The Configuration Management Representative, a member of the Project Team, is responsible for activities in the following policy:

1.2.a Configuration Management Policy (D1)
- Determining the requirements for configuration management on the project
- Implementing configuration management tools
- Supporting the development of project builds, and product release.

1.3 Development Team

The Development Team is responsible for activities in the following policy:

1.3.a Software Development Policy (C3)
- Developing the design from approved requirements
- Implementing the product using agreed mathematical foundations
- Providing software builds to the Qualification Team.

1.4 Independent Safety Auditor

ISAs are responsible for activities in the following policies:

1.4.a Oversight Policy (A2)
- Providing information for programme reviews

1.4.b Software Development Policy (C3)
- Participating in project reviews and evaluating design documentation
- Evaluating compliance with applicable standard(s)
- Evaluating qualification testing.

1.4.c Process Assurance Policy (D2)
- Auditing externally visible project activities
- Auditing internally visible project activities through the Process Auditor(s).

1.4.d Archival Policy (D4)
- Evaluating archival plans and procedures

- Evaluating the project portion of the S4 archive catalogue.

1.5 Lead ISA

The Lead ISA is responsible for activities in the following policies:

1.5.a Coordination Policy (A1)
- Coordinating all project/product ISAs
- Presenting common issues at programme reviews

1.5.b Oversight Policy (A2)
- Mentoring project/product ISAs (as required)
- Briefing SG/2 on common issues

1.6 National PoCs

National PoCs are responsible for activities in the following policies:

1.6.a Coordination Policy (A1)
- Obtaining participation commitments from their respective governments and following through on the delivery of these commitments
- Directing resources to meet SG/2 programme plans.

1.6.b Project Planning Policy (B1)
- Providing AOP-49 coverage mapping(s) of local quality systems in use in National development sites

1.6.c Software Development Policy (C3)
- Developing and releasing of sharable test data to permit sufficient qualification testing of the product in realistic usage scenarios.

1.7 Process Auditor

The Process Auditor is responsible for activities in the following policy:

1.7.a Process Assurance Policy (D2)
- Auditing the use of project processes by active national agency/vendors within the Project Team by analyzing process evidence.
- Providing process evidence to the ISA, when requested

1.8 Product Leader

The Product Leader is responsible for activities in the following policies:

1.8.a Oversight Policy (A2)
- Providing information to the Project Leader according to the degree of autonomy encapsulated in the MoU (if applicable)
- Providing information for project reviews.

1.8.b Sponsorship Roles (Section 2.3)
- Performing some/all activities from the Project Leader role in accordance with the degree of autonomy encapsulated in the applicable Memorandum of Understanding (MoU).

1.9 Programme Policy Coordinator

The Programme Policy Coordinator is responsible for activities in the following policy:

1.9.a Coordination Policy (A1)
- Drafting new editions of STANAG 4537
- Coordinating policy issues with SG/2
- Presenting policy issues at programme reviews

1.10 Project CCB

The Project CCB is responsible for activities in the following policy:

1.10.a Requirements Engineering Policy (C1)
- Prioritizing and allocating requirements for implementation
- Establishing the list of requirements to be implemented within a version.

1.11 Project Leader

The Project Leader is responsible for activities in the following policies:

1.11.a Oversight Policy (A2)
- Supervising the Product Leader according to the degree of autonomy encapsulated in the MoU (if applicable)
- Providing information for project reviews.

1.11.b Project Planning Policy (B1)
- Developing the Project Plan
- Maintaining the Project Plan.

1.11.c Project Monitoring and Control Policy (B2)
- Assigning tasks to the Project Team
- Monitoring task progress
- Reporting project status
- Capturing the Lessons Learned.

1.11.d Risk Management Policy (B3)
- Assessing risks
- Mitigating risks.

1.11.e Requirements Engineering Policy (C1)
- Submitting requirements proposals to the CCB
- Establishing and maintaining internal controls to ensure that approved requirements are used to drive project planning and product development.

1.11.f Technology Development Policy (C2)
- Initiating technology development tasks to address approved requirements for particular product releases.

1.11.g Software Development Policy (C3)
- Approving the architecture

- Allocating requirements to components of the architecture.

1.11.h Configuration Management Policy (D1)
- Determining the requirements for configuration management on the project
- Managing the approval of proposed changes.

1.11.i Process Assurance Policy (D2)
- Ensuring that project processes are documented
- Planning for process assurance.

1.11.j Product Evaluation Policy (D3)
- Allocating Reviewer(s) to ensure effective product evaluation.

1.11.k Archival Policy (D4)
- Development of archival plans and procedures
- Monitoring and control of the implementation of archival procedures
- Distributing archives to the Suite QACM.

1.12 Project Team

The Project Team is responsible for activities in the following policies:

1.12.a Project Monitoring and Control Policy (B2)
- Understanding the Project Plan
- Performing tasks in accordance with the Plan
- Reporting status of tasks to the Project Leader.

1.12.b Risk Management Policy (B3)
- Identifying risk
- Assisting in the assessment of risks
- Assisting in the planning and execution of risk control actions.

1.12.c Requirements Engineering Policy (C1)
- Ensuring that any implementation that modifies an approved requirement is brought to the attention of the Project Leader for review.

1.12.d Technology Development Policy (C2)
- Using validated technology in product implementations.

1.12.e Software Development Policy (C3)
- Developing and/or reviewing interim work products.

1.12.f Configuration Management Policy (D1)
- Controlling work products according to the CM Plan.

1.12.g Process Assurance Policy (D2)
- Defining project processes
- Maintaining process evidence
- Reviewing and updating project processes.

1.12.h Archival Policy (D4)

- Developing archival plans and procedures
- Implementing the archival procedures.

1.13 Qualification Team

The Qualification Team is responsible for activities in the following policy:

1.13.a Software Development Policy (C3)
- Developing tests cases
- Testing software builds against approved requirements.

1.14 Requirements Analyst

The Requirements Analyst, a member of the Project Team, is responsible for activities in the following policies:

1.14.a Requirements Engineering Policy (C1)
- Reviewing requirement changes for completeness and clarity
- Analyzing submitted changes for product impact.

1.14.b Technology Development Policy (C2)
- Reviewing requirement changes for completeness
- Analyzing requirement changes for technology dependencies prior to their submittal to the project working groups for consideration.

1.15 Reviewer

The Reviewer is responsible for activities in the following policy:

1.15.a Product Evaluation Policy (D3)
- Reviewing work product(s)
- Participating in resolution of issues
- Verifying the resolution of issues.

1.16 S4 CCB

The S4 CCB is responsible for activities in the following policies:

1.16.a Coordination Policy (A1)
- Coordinating between the projects.

1.16.b Oversight Policy (A2)
- Obtaining feedback on the AOP-49 Quality System and recommending changes.

1.16.c Requirements Engineering Policy (C1)
- Ensuring each project stays within scope.

1.16.d Software Development Policy (C3)
- Ensuring that interfaces between software projects are properly coordinated.

1.16.e Archival Policy (D4)
- Providing programme guidance for archival plans and procedures.

- Providing an annual S4 document archive to the Suite QACM

1.17 Stakeholders

Stakeholders are responsible for activities in the following policies:

1.17.a Oversight Policy (A2)
- Providing feedback on their satisfaction with SG/2 project progress and resultant products.

1.17.b Project Planning Policy (B1)
- Assisting in the development of the project schedule by identifying task activities, critical dates and external interfaces.

1.17.c Risk Management Policy (B3)
- Identifying risks.

1.17.d Requirements Engineering Policy (C1)
- Proposing and submitting requirements changes.

1.18 Sub-Group 2

SG/2 is responsible for activities in the following policies:

1.18.a Coordination Policy (A1)
- Managing participation in the projects.
- Appointing ISAs for the projects

1.18.b Oversight Policy (A2)
- Providing oversight and scheduling project review(s). This may be accomplished in conjunction with project working groups, if applicable.
- Providing the interfaces to gather customer satisfaction feedback on all projects.
- Gathering national implementation data
- Reviewing ISA reports
- Conducting Quality System reviews.

1.18.c Project Planning Policy (B1)
- Reviewing and approving Project Plans.

1.18.d Project Monitoring and Control Policy (B2)
- Providing oversight and project review.
- Reviewing Lesson Learned reports.

1.18.e Risk Management Policy (B3)
- Providing approval of risk control actions that cannot be resolved at the project level.

1.18.f Technology Development Policy (C2)
- Working with the Project Leader and stakeholders to develop coordinate and maintain technology priorities.

1.19 Suite Quality Assurance and Configuration Manager (QACM)

The Suite QACM is responsible for activities in the following policies:

1.19.a Oversight Policy (A2)
- Suite level testing of S4 products.

1.19.b Archival Policy (D4)
- Storage and management of the archives
- Maintenance of a catalogue for the archives
- Production of archive copies
- Release of copies as requested by National POCs.

1.20 Suite Technology Coordinator

The Suite Technology Coordinator is responsible for activities in the following policy:

1.20.a Coordination Policy (A1)
- Coordinating technology inserting in the projects.

1.20.b Technology Development Policy (C2)
- Leading technology development by the Technology Team
- Providing information for programme reviews.

1.21 Technology Team

The Technology Team is responsible for activities in the following policy:

1.21.a Technology Development Policy (C2)
- Developing technology for use by Development Team in product implementation.

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