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Building blocks for resilience in evolving ICT systems

CYRENE

Certifying the Security and Resilience of Supply Chain Services

D2.1: Supply Chain Analysis and Requirements

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Revision History

Version	Date	By	Overview
0.11	18/1/2021	All WP2 partners	Tentative ToC, unifying previous proposals
0.2	25/01/2021	CRF	Final ToC
0.2	26/02/2021	MAG, CRF, UNSPMF, FP, CLS, STS, SU, TSI, PN	First contributions provided
0.3	01/03/2021	CRF	Integration of contributions from the partners
0.3.1	09/03/2021	CRF	Minor modifications
0.3.1	19/03/2021	MAG, CRF, UNSPMF, FP, CLS, SU, VPF, HYPER	Update and integration to first contribution
0.4	25/03/2021	CRF	Integration of contributions from the partners
0.4.1	26/03/2021	CRF	Minor modifications
0.4.2	09/04/2021	MAG, CRF	Minor modifications
0.5	10/05/2021	CRF	Integration of contributions
0.5.1	13/05/2021	CRF, MAG, UBI, UNSPMF	Last contributions and modifications added before internal review
0.6	28/05/2021	CRF	Updated version incorporating input and comments from internal reviewers
1.0	31/05/2021	CRF	Final version

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List of Acronyms

Acronym	Description
AIS	Automatic identification system
BP	Business Partner
CA	Conformity Assessment
CC	Common Criteria
CII	Critical Information Infrastructure
CSA	Cybersecurity Act
ENS	Entry Summary Declaration
LNG	Liquefied Natural Gas
MRA	Mutual Recognition Agreement
PCS	Port Community System
PDCA	Plan-Do-Check-Act
RA	Risk Assessment
SC	Supply Chain
SCADA	Supervisory Control And Data Acquisition
SCRM	Supply Chain Risk Management
SCM	Standard Cargo Manifest
SCS	Supply Chain Service
SOG-IS	Senior Officials Group Information Systems Security
ToE	Target of Evaluation
TVRA	Threat Vulnerability Risk Analysis
VTS	Vehicle Transport Service

Executive Summary

The objective of this deliverable is to report the results of the activities performed in the first phase of CYRENE's Work Package 2. The main output is related to the requirements that have been collected from relevant standards and literature review, project pilot partners, as well as external stakeholders.

The document can be divided in four main parts. In the first one, an overview of the Supply Chains is given, describing both their classification, including three different views (business, technical and sectorial) of the SCs, and their security aspects, consisting of the threat landscape, legal framework, SC security and Risk Management standards and SC risk assessment methodology and tools.

In the second part, an overview of the EU Certification schemes is provided, encompassing the general definition and requirements (policy, legal, standards, methodologies, technical) regarding the security certification.

Moreover, in the third part, the document reports on the methodology used for collecting, analyzing and validating the requirements through the project's Advisory Boards. The feedback obtained from the proposed questionnaire for requirements validation are presented in this part and conclusions are drawn afterwards.

Finally, the fourth part of the deliverable deals with the three Targets of Evaluation (ToEs), namely, the Business, Technical, and Sectorial. Their descriptions and the respective validated requirements are provided in this section.

Two appendixes are included in the document. The first one gives information on a glossary that forms the basis of the concepts used in the project, while the second one gives details regarding the first workshop organized with the Advisory Boards at the end of the first six months of the project.

1. Introduction

1.1 Scope

This document is a record of the requirements that have been collected from several stakeholders, based on which the specifications of certification scheme, the definition of the conformity assessment processes, as well as the development and integration of tools within the CYRENE project will be developed.

The described outputs are the results of the activities performed during the following tasks:

- T2.1: Conformity and certification assessment scheme state of the art revision;
- T2.2: Large-scale European Supply Chain requirement gathering, analysis and tracking;
- T2.3: Legal and ethics requirements;
- T2.4: Classification of Supply Chains.

During the first task, the activities of CYRENE's phase 1 were initiated, focusing on the definition of a solid basis for setting up the CYRENE Conformity Assessment scheme. An updated state of the art analysis was carried out, consulting scientific papers, related projects, and relevant reference conformity assessment and certification schemes for cyber-security in related domains. In particular, during the task, the CYRENE consortium consulted and built upon the baseline security requirements recommended by ENISA **Error! Reference source not found.**. The existing relevant schemes are mapped to the four CYRENE circles of consideration (as described in **Error! Reference source not found.**), as well as to the three main aspects of CYRENE certification: business, infrastructure, and individual devices. Based on the described analysis, the task creates a basis for the conformity assessment scheme which grounds the multi-level evidence-driven supply chain risk assessment process.

During Task 2.2, in parallel to Task 2.1, the CYRENE consortium identified Supply Chains' Conformity Assessment requirements, along with legal/forensic, security and privacy requirements and covered the following aspects: (i) identification of requirements and specific needs of the participating Supply Chain Services, which represent different industry sub-sectors and with different needs with regard to IT security; (ii) substantial engagement of the participating SCs operators (representing different industrial sectors) so as to gain feedback regarding their needs and priorities in the frame of the project; (iii) specification of criteria associated to the nature of their IT system and infrastructure of SCs (such as size, interdependencies with other IT systems, services offered, etc.); (iv) analysis and documentation of the requirements of the various stakeholders, i.e. port authorities and operators, security systems integrators, policy makers etc.) in terms of the handling of multi-order dependencies and cascading effects; (v) identification and classification of dependencies between infrastructures and between SC operators, as well the dependencies among the business inter-organizational, infrastructure, and individual assets/devices.

The output of Task 2.3 is the identification, analysis and report of relevant legal and ethics requirements for CYRENE. The regulatory framework applicable to the project is analyzed to define requirements that are not dealt within the previous tasks.

Finally, Task 2.4 activities are focused on the specification of the criteria associated to the nature of IT systems and infrastructure of SCs (such as size, interdependencies with other IT systems, services offered, number of administrators and IT security awareness level, etc.) based on which the categorization of the enterprise target group will occur.

1.2 Relation with other work packages and tasks

This document describes in detail the results of the Phase 1 activities of the project.

During Phase 2 of the project, whose main task is T2.5, the Conformity/Certification Assessment scheme set-up will be described. In fact, based on the results described in this document, the activities of this task will set up the proposed Conformity Assessment scheme for ensuring the security and resilience of Supply Chain Services. The proposed scheme will be the basis for the Conformity Assessment processes implemented in WP3 and WP4.

Moreover, Task 2.6 will propose a refined specification for CYRENE architecture based on a thorough understanding of the challenges, technologies, requirements and state-of-the-art introduced in all previous tasks of Work Package 2.

The result of this task will serve as a reference for the implementation phase of the CYRENE approach, defined in WP3 and WP4. In addition, it will serve as a reference and a starting point for the integration activities described in WP5. The interdependencies between WP2 and the rest of the Work Packages is depicted in *Figure 1*.

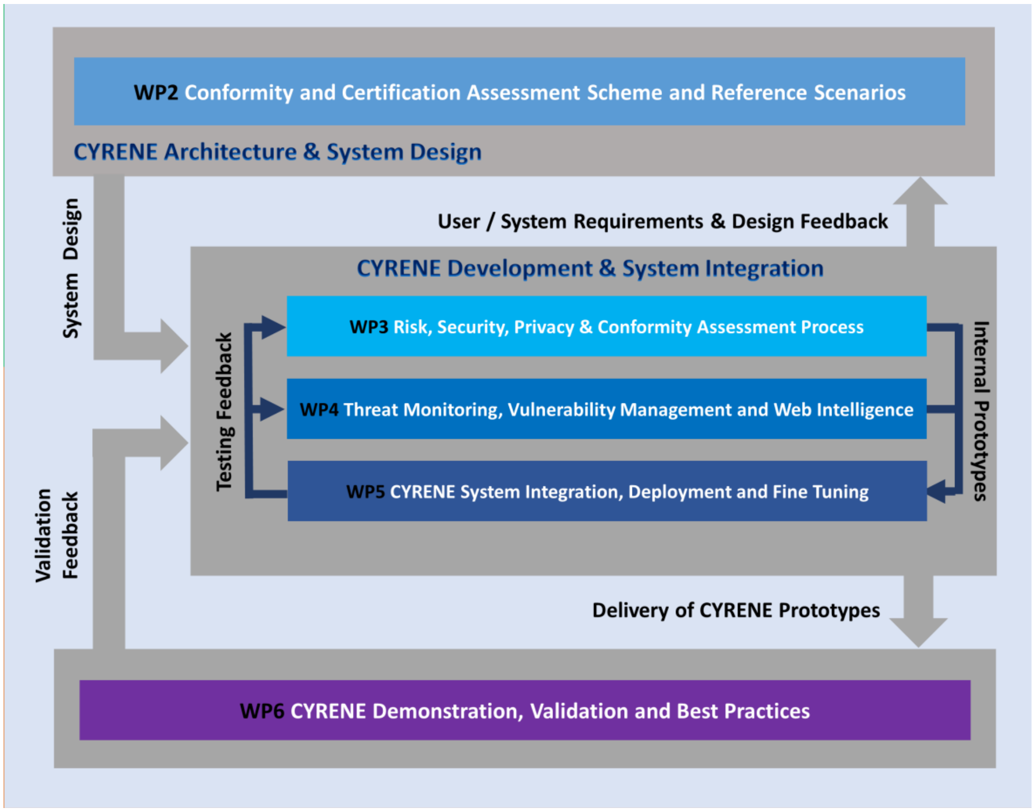
WP2 Conformity and Certification Assessment Scheme and Reference Scenarios
CYRENE Architecture & System Design
System Design
User / System Requirements & Design Feedback
CYRENE Development & System Integration
Testing Feedback
WP3 Risk, Security, Privacy & Conformity Assessment Process
WP4 Threat Monitoring, Vulnerability Management and Web Intelligence
WP5 CYRENE System Integration, Deployment and Fine Tuning
Internal Prototypes
Validation Feedback
Delivery of CYRENE Prototypes
WP6 CYRENE Demonstration, Validation and Best Practices

Figure 1 - Relation of WP2 with the other project WPs.

1.3 Document Structure

The rest of the document is structured as follows:

- Chapter 2 presents an overview of the Security of Supply Chains, describing how Supply Chains are classified and the security aspects of the involved Supply Chain Services.
- Chapter 3 gives an overview of the EU Certification schemes, presenting definitions and requirements that address the Security Certification process.
- Chapter 4 presents the Methodology used for requirements elicitation and their validation strategy.
- Chapter 5 presents the CYRENE Conformity Assessment process, including the description of the Targets of Evaluation and their requirements.
- Finally, Chapter 6 concludes the document.

DISCLAIMER: The document was submitted for revision to the EU Commission and is awaiting review and acceptance. Full access to its content will become available after this.