ECHO

EUROPEAN NETWORK OF CYBERSECURITY CENTRES AND COMPETENCE HUB FOR INNOVATION AND OPERATIONS

D3.12 UPDATE - GOVERNANCE MODEL DESCRIPTION

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0.1	19/12/2021	Velizar Shalamanov (IICT)	Structure of the document and key theses, based on D3.3.
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0.3	02/01/2022	Velizar Shalamanov (IICT)	New chapters 3 and 4, initial draft without chapter 2
0.4	06/01/2021	Georgi Penchev (IICT)	Chapter 2 on SPP design and general formatting (Fig/tables)
0.5	09/01/2022	Georgi Penchev (IICT), Irena Mladenova (IICT)	T3.3 Internal Review
0.6	10/01/2022	Velizar Shalamanov (IICT)	Updates and improvement after T3.3 Internal Review
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Chapter 2 new/updated (SPP design)	Georgi Penchev (IICT)
Chapter 3 new (Business model)	Velizar Shalamanov (IICT) Georgi Penchev (IICT)
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Keywords

Governance Model, Business Process Analysis, Business Process Management, Organisational Design

Disclaimer

Executive summary

This document is the first update of the *D3.3 Governance model description* written in January 2021. It was created to accommodate developments in identifying the business model for ECHO Network and implementation of the EU Regulation (REGULATION (EU) 2021/887 of the European Parliament and of the Council of 20 May 2021 establishing the European Cybersecurity Industrial, Technology and Research Competence Centre and the Network of National Coordination Centres). The document describes the Governance and Management model (incl. Business Model) on high-level, but with enough practical details in order to communicate to ECHO Partners and external Stakeholders the main results and direction of development of the future ECHO Collaborative Networked Organisation (CNO). Business models and models for the development of the National Cyber Competence Communities around the National Cyber Competence Centre (NCC) (as defined in the Regulation 2021/887) analysed in *D3.10 Update – Governance alternatives*, enabled us to definite Business model design and its governance layer with more detailed design of the Strategic Planning Process and ECHO Chapters to facilitate community development in cooperation with NCC. At the same time, requirements for the design of Service groups are defined for implementation by the ECHO Assets teams as well the requirements for ECHO Group design by WP1'Project coordination and management' (if Central Hub agreed as an element of the final Governance, as well as the Business model).

The document is based on *D3.8 Update – Governance needs and objectives* and *D3.10 Update – Governance alternatives* with transition planning update to the agreed key elements (initiatives) of change to be accommodated in *D3.14 Update - Governance model implementation plan* (the first update of D3.4).

We aim to improve the initial design of the four key processes and three organisational structures as defined in *D3.3 Governance model description*. The preparation and execution of a simulation game on strategic planning provided an opportunity to demonstrate the operation of the Governance and Management (GM) model on a high level. The structure of the document includes an introduction, five chapters and conclusions. We consider D3.12 as a stand-alone document (to be used without D3.3 and is actually replacing D3.3) to present our current agreement on the Governance model with the final design of the Strategy planning process, organizational design of the ECHO Chapter and refined requirements for the design of Service Groups (SGs), ECHO Group and Partnership development Process, Catalogue Management Process, Innovation Management Process as well as the design of the Governance and Management Information System. The document provides guidance for T3.4 'Governance operations' and T3.5 'New partner engagements' in the fourth year of the project with the key deliverable *D3.5 ECHO Operations status report.*

Annexes support the text in the main body and provide a deeper understanding of the document but are not necessary for the presentation and assessment of the content of the deliverable.

In short, with *D3.12 Update – Governance model description*, we consider key elements of the Business model defined, together with the key processes and structures of the Governance model described, along the Strategic Planning process. Formally D3.12. is developed under T3.4 by the T3.3. team.

In the year 2022, T3.4 and T3.5 will focus on the development of the D3.5 alongside the efforts to test the implementation of the Governance model and extend the partnership base. Under T3.4 the team of T3.3 will develop the second updates of D3.1, D3.2, D3.3, D3.4 – namely D3.9, D3.11, D3.13, D3.15.

The work on the final design and prototyping of Governance and Management Information System (GMIS), based on the Project SharePoint platform, is performed within the task T3.2 'Information sharing models definition' as the key aspect of GMIS is information sharing among the various ECHO Network structures and partners themselves.

D3.12 will be our contribution to the White Paper on Governance in collaboration with the other three cybersecurity H2020 pilots and ECSO under the Focus Group "Governance".

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1. Introduction

1.1. Purpose and scope of the document

The purpose of this document is to provide the next step after the initial design of the Governance and Management model for ECHO Network (as CNO) provided in D3.3. The initial design covered the following four key processes:

- Strategic Planning Process;
- Partnership Development Process;
- Catalogue Management and Customer Relations Management Process;
- Innovation (R&D) Process.

These four processes are supported by three main types of organisational bodies of future ECHO Collaborative Networked Organisation ©NO – *ECHO Central Hub (ECHO Group), ECHO National Hubs (NHs – ECHO Chapters) and ECHO Service Groups (SGs or optionally Virtual Organisations – VOs around the identified ECHO Assets)*.

The design principles are flexibility, trust and effectiveness of the processes and organisational activities.

The scope of the document falls within a general high-level description of processes and organisational bodies. The Strategic Planning Process (SPP) envelopes the other three key processes in one framework of operation for the ECHO Network and is a basis for the development of the Business model and partnership development for growing the network. SPP is supported by business planning (focus of WP9) to include catalogue management and innovation management.

The SPP identification is used in the description of the main interactions and roles of the organisational bodies and description of roles and responsibilities within RACI matrices.

The use of COBIT[1] framework does not have the purpose of detailed description (or future certification) of processes. The framework is used as a reference model – the source of good practices and main activities for process identification.

During the processes identification and description important informational relationships were discovered and updated requirements for establishing the internal Governance and Management Information System (GMIS) are presented to be further detailed in D3.13 (M48 update of D3.3.).

The update of all initial solutions is based on the work done in 2021 to test the SPP and roles of virtual organizational bodies during the SPP simulation game as well as organized workshop on alternatives for the business model and options for the national cyber competence communities. The goal is to support the demonstration of the operation of the Governance and Management (GM) model in WP8 (under T3.4.). Demonstration is a basis for further detailed development, agreement and approval in the process of testing proposed solutions during demo cases. Feedback will be used in the update D3.13. for the final design of the GM model.

[1] ISACA, *COBIT 2019 Framework Governance and Management Objectives*, 2019.

It is important to note that the description of processes, organisational bodies and roles in this document emerged in the discussion within the scope of preparation and conduction of the SPP simulation game in April 2021 and Business model workshop in November 2021.

1.2. Structure of the document

The document is structured in introduction (as a first section), five chapters (in sections numbered from 2 to 6) and conclusions (as a seventh section).

Introduction clarifies the structure of the document and relations with other documents, WPs, Project's tasks as well as participation in Focus Group (FG) on Governance between the four-pilot projects. Key references and IPR issues are addressed.

The first chapter provides an update of the overall **design framework** to start with process design and through RACI Matrix[2] to contribute to the organisational design with related roles and responsibilities. In comparison to D3.3, this chapter is simplified by transferring the more general text to Annexes. The implementation of the framework for the design of the business model and strategic planning process, together with the ECHO Chapter design, is presented further in the document. The full design of the agreed GM will be reflected in the next update of this document at the end of the project in January 2023 in *D3.13 Update 2 – Governance model description*. The D3.13 will be used to update the Standard Operating Procedure (SOP) and Charter for the ECHO Network with WP1, WP8 and WP9 support as part of the transition process. Chapter goes a step further on process discovery and design, so based on the processes landscape description and initial processes discovery, using COBIT[3] as a framework for the key processes, selected in *D3.2 Governance alternatives*:

- Strategic Planning Process.
- Partnership Development Process.
- Catalogue Management and Customer Relations Management process description.
- Innovation (R&D) Process description.

Chapter two is focused on the final design of the **Strategic Planning Process**. It is a continuation of the work described in chapter four of D3.3. organisational design, using the RACI Matrix for the Strategic Planning process. The Chapter demonstrates the approach, engaging the decision-makers from all partners in a structured discussion in focus groups, questionnaires, interviews, culminating in strategic planning simulation games during D3.4 development. The presented design is related to the Central Hub (ECHO Group) with identifying the Strategic Planning Process high-level procedures, specific procedures related to the core processes and defining the Central Hub RACI matrix, followed by the description of roles and responsibilities. This will be used to define later the requirements for the ECHO Group design (central hub – if agreed).

The third chapter of D3.3, here is transformed in an Annex, which defines the organisational design framework with the use of the RACI Matrix approach along the line of analysis of the defined processes in the second Chapter of D3.3. This can be considered as a preparation of the planned work to continue during

[2] RACI - Responsible, Accountable, Consulted, Informed matrix
[3] COBIT - Control OBjectives of Information and related Technologies

next year under T3.4 when processes and organisational structures will be implemented, audited and assessed in the CMMI[4] framework to achieve level 4 (M48) of CMMI maturity levels.

In the current deliverable, *chapter three* is about the design of the **Business model**, based on alternatives assessed in D3.10. Key elements are the Funding Model, Customer base, Catalogue of services, Costing model, Key decisions on the governance level. Based on what is defined here, the decision is to be taken at the Spring meeting and the final design of the Governance in D3.13 will be based on the agreed business model. This business model is identified as a key for the decisions of the project partners to join the ECHO Network after the closure of the project and the new partners to be attracted.

The fourth chapter is dedicated to the organizational **design of the ECHO Chapter** as a facilitator of the formation of the National cyber competence community (based on this development the invitation will be extended to four cases to be developed in D3.1 – Bulgaria, Italy, Romania, Hungary in particular as well as all other MSs partners, represented in the Consortium). As we have NCC established according to the Regulation 2021/887 – the next step is to have these National cyber competence communities and from ECHO perspective the ECHO Chapters in the member-states (MSs), where the project is represented. It is essential to organize formal relations between our partners and the NCC with the intention to contribute to the development of the community. This is the area of contribution of ECHO in Focus Group on Governance between the 4 pilots (and ECSO).

Chapter five is about defining the **requirements for options and design proposals** for D3.13. (to be developed in D3.11. at M45) on the other 2 key elements of the ECHO Network and transition plan accordingly:

1. Service Support Groups – expected design proposals from the ECHO-assets (WP-2,3,4,5,6 led by WP9) to be analysed and assessed in D3.11. ((not later than October 2022).
2. ECHO Group / Central hub (in case of selecting business model with a hub) - design proposal from WP1 (Project management), including relations with ECC in Bucharest and of course ECHO Chapters and SGs in the MSs. Plan is these proposals to be analysed and assessed in D3.11. (not later than October 2022).

The conclusions provide reference to the key achievements and findings as well as provide guidance for T3.4. on assessment of the maturity of the governance model (incl. under WP8 demo cases and contribution to TRL assessment by WP9) and T3.5 for extending the partner base in the project and joining process for ECHO Network from the Project Partners. Conclusions also include the overview of the main events and deliverables planned for 2022.

[4] CMMI - Capability Maturity Model Integration

1.3. Relation to other work in the project

The input for D3.3: *Governance model description* was D3.2: *Governance alternatives*, which provided selected most suitable option for further development of the Governance and Management model. The D3.3 results were used in D3.4: *Governance Implementation plan*.

At the same time, the Transition plan from D3.4 implemented with documented results under T3.4 'Governance operations' and T3.5 'New Partner Engagements' is re-used in M36 (January 2022) for the update of D3.2, D3.3 and even D3.4 itself. For M48 (January 2023) updates D3.9 (updated D3.1), D3.11(updated D3.2) will be used for D3.13 (updated D3.3) and all of them for the development of D3.15 (updated D3.4). Final deliverable *D3.5 ECHO Operations status report* will document all achieved in GM operation with the required assessment of maturity.

The relations with other work in the project is provided in Figure 1.

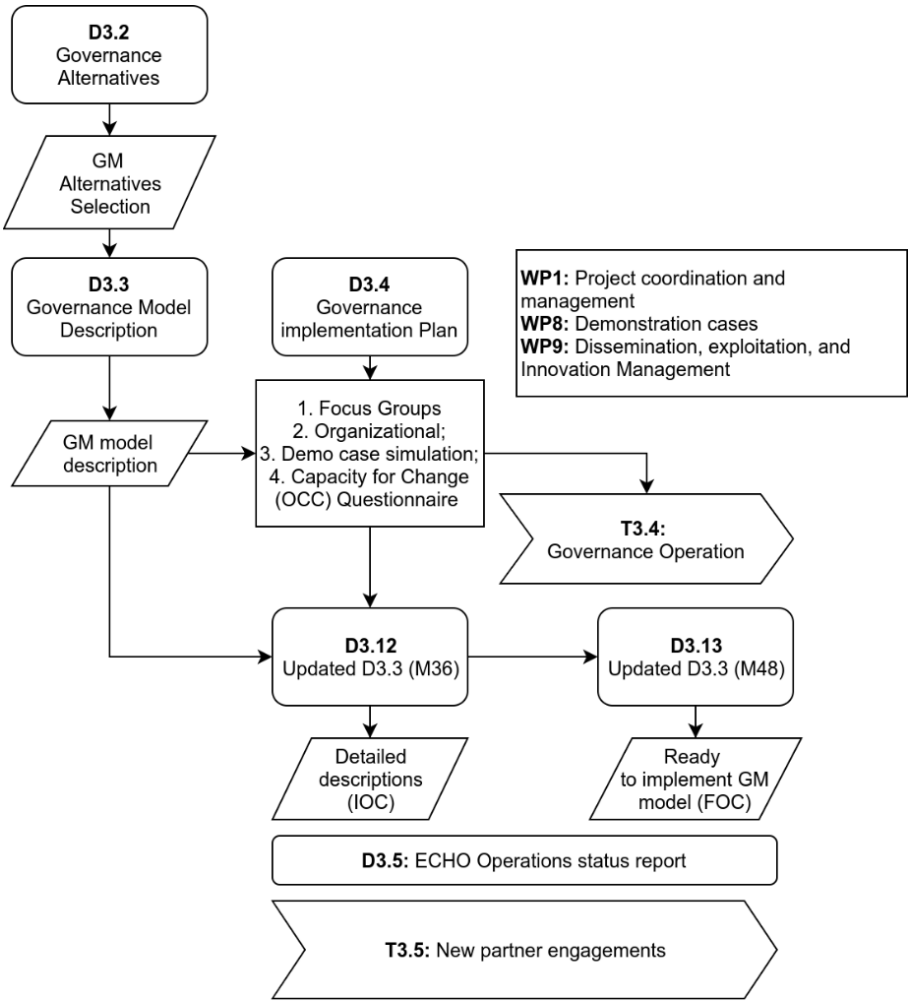


Figure 1: Relations to other work in the project

Apart from the relation with the work undertaken in WP3 'ECHO Governance Model', the document highlights as well the relation to work performed under WP1 'Project coordination and management' in the

elaboration of legal arrangements for ECHO CNO, WP9 'Dissemination, exploitation, and Innovation Management' in the set-up of processes for Catalogue and Innovation Management, Business Planning and Management. Another important follow-up for the further development of the Governance and Management model is the work under WP8 'Demonstration cases' in testing the GM model during the implementation of demonstration cases. This document serves as an input for the development and execution of the task T3.4 'Governance operations'. Task T3.4 is dedicated to the assessment of the maturity of GM operation at *Initial Operating Capability* (IOC – in project month M36 – January 2022) and at *Final Operating Capability* (FOC in M48 – January 2023) within the deliverable *D3.5: ECHO Operations status report.* This deliverable is also supported by the task T3.5'New partner engagement' to extend the partnership network of the ECHO Project as well as opportunity under T3.5 to manage the process of joining the ECHO Network by current partners of the ECHO project.

1.4. Applicable and reference documents

The following documents contain requirements applicable to the generation of this document:

Reference	Document Title	Document Reference	Version	Date
[GA]	Grant Agreement 830943 – ECHO	-	1.0	02/04/2019
[PH]	D1.1 Project Handbook	ECHO_D1.1_v1.42	1.42	20/10/2019
[PQP]	D1.3 Project Quality Plan	ECHO_D1.3_v1.4	1.4	23/04/2021

Table 1: Applicable documents

The following documents, including outside WP3 (in addition of the above mentioned WP3 documents are closely related to D3.12. development) have been consulted for the generation of this document:

Reference	Document Title	Document Reference	Version	Date
[D1]	D1.1 Project Handbook	ECHO_D1.1_v1.41	1.41	02/05/2019
[D2]	D1.2 Data Management Plan	ECHO_D1.2_v2.0	2.0	04/04/2020
[D3]	D1.3 Governance needs and objectives	ECHO_D3.1_v1.1	1.1	03/02/2020
[D4]	D1.3 Project Quality Plan	ECHO_D1.3_v1.3	1.3	31/05/2019
[D5]	D1.4 First Project Activity Report	ECHO_D1.4_v1.0	1.0	29/02/2020
[D6]	D10.1 H Requirement no. 1	ECHO_D10.1_v1.0	1.0	31/05/2019
[D7]	D10.2 POPD Requirement no. 2	ECHO_D10.2_v1.0	1.0	31/05/2019
[D8]	D10.3_NEC_ Requirement no. 5	ECHO_D10.3_v1.0	1.0	31/05/2019
[D9]	D2.1 Sector Scenarios and Use Case Analysis	ECHO_D2.1_v1.0	1.0	31/10/1019

Reference	Document Title	Document Reference	Version	Date
[D10]	D2.2 Derivation of Multisector Assessment Framework	ECHO_D2.2_v2.4	2.4	18/06/2020
[D11]	D2.2 Derivation of Multi-sector Assessment Framework	ECHO_D2.2_v1.0.15	1.015	13/11/2019
[D12]	D2.3 Transversal cybersecurity challenges and opportunities	ECHO_D2.3_v1.0	1.0	31/10/1019
[D13]	D3.2 Governance alternatives	ECHO_D3.2_v1.0	1.0	31/07/2020
[D14]	D3.6 Information Sharing Models	ECHO_D3.6_v1.0	1.0	31/10/2019
[D15]	D4.1 Transversal technical cybersecurity challenges report	ECHO_D4.1_v1.0	1.0	18/06/2020
[D16]	D4.2 Inter-sector technical cybersecurity challenges report	ECHO_D4.2_v1.0	1.0	18/06/2020
[D17]	D4.3 Inter-sector cybersecurity technology roadmap	ECHO_D4.3_v1.0	1.0	31/08/2020
[D18]	D4.6 Inter-sector Prototype Verification Plan	ECHO_D4.6_v1.0	1.0	29/10/2020
[D19]	D5.1 E-EWS High-level design	ECHO_D5.1_v1.2	1.2	31/10/2019
[D20]	D5.2 E-EWS Prototype	ECHO_D5.2_v1.0	1.0	05/05/2020
[D21]	D5.3 E-EWS Verification Plan	ECHO_D5.3_v2.2	2.2	31/07/2020
[D22]	D5.5 Update - E-EWS High-level design	ECHO_D5.3_v3.4	3.4	31/07/2020
[D23]	D6.1 E-FCR High-level design	ECHO_D6.1_v1.1	1.1	31/10/2019
[D24]	D6.2 E-FCR Prototype	ECHO_D6.2_v1.0	1.0	31/05/2020
[D25]	D6.3 E-FCR verification plan	ECHO_D6.3_v1.2	1.2	31/08/2020
[D26]	D9.1 Project Leaflets	ECHO_D9.1_v1.0	1.0	13/09/2019
[D27]	D9.10 Yearly review of project objectives and market needs/opportunities	ECHO_D9.10_v1.1	1.1	31/01/2020
[D28]	D9.11 Procedure for internal IP reviews	ECHO_D9.11_v1.1	1.1	31/01/2020

Reference	Document Title	Document Reference	Version	Date
[D29]	D9.12 IP awareness trainings	ECHO_D9.12_v1.1	1.1	31/01/2020
[D30]	D9.16 Communication and Stakeholders Engagement Plan	ECHO_D9.16_v0.9	0.9	31/07/2019
[D31]	D9.17 - Web Platform	ECHO_D9.17_v1.0	1.0	13/09/2019
[D32]	D9.18 Communication collateral social media channels set-up	ECHO_D9.18_v1.1	1.1	31/05/2019
[D33]	D9.2 Dissemination Strategy	ECHO_D9.2_v1.0	1.0	31/07/2019
[D34]	D9.3 Stakeholder Mapping	ECHO_D9.3_v1.0	1.0	31/07/2019
[D35]	D9.4 Interim dissemination reports	ECHO_D9.4_v1.0	1.0	05/02/2020
[D36]	D9.5 Event Calendar	ECHO_D9.5_v1.0	1.0	31/01/2020
[D37]	D9.6 Market Analysis	ECHO_D9.6_v1.0	1.0	14/05/2020

Table 2: Reference documents

1.5. Intellectual Property Rights

Based on the legal framework provided in the ECHO Grant Agreement and the Consortium Agreement, ECHO specific IPR procedures have been established to protect the innovations and knowledge developed within this deliverable. IPR is controlled by WP9.

1.6. Glossary of acronyms

Acronym	Description
ABC	Activity Based Costing
ADKAR	Awareness, Desire, Knowledge, Ability, Reinforcement
BGR	Bulgaria
BM	Business Model
BOA	Basic Ordering Agreement
BoD	Board of Directors
BPM	Business Process Management
BPMN	Business Process Management Notation
CCC	Cybersecurity Competence Centre
CCO	Chief Customer Officer
CCRMP	Customer Relations Management Process
CEO	Chief Executive Officer
CFO	Chief Financial Officer

Acronym	Description
CMCR	Catalogue Management and Customer Relations
CMCRP	Customer Relations Management Process
CMMI	Capability Maturity Model Integration
CNO	Collaborative Networked Organisation
COBIT	Control OBjectives of Information and related Technologies
COM	Current Operating Model
CPO	Chief Partnership Officer
cPPP	Cyber Public-Private Partnership
CR	Customer Rates
CRP	Cost Reimbursable Proposal
CTO	Chief Technical Officer
DOTMPLFI	Doctrine, Organisation, Training, Materiel, People, Leadership (and education), Facilities and Interoperability Model
DPC	Deputy Project Coordinator
ECCC	European Cybersecurity Competence Centre
ECSCON	EU Cyber Security Collaborative Network
ECSO	European Cyber Security Organisation
EDA	European Defence Agency
ESA	European Space Agency
FOC	Full Operating Capability
FP	Financial Plan
FPP	Fixed Price Proposal
FTE	Full Time Equivalent
GA	General Assembly
GDB	Governance Dash Board
GIMS	Governance Information Management System
GMIS	Governance and Management Information System
GM	Governance and Management
HR	Human Resources
I&T	Information and Technology
IES	Internal Engineering Services
IM	Innovation Management
IMP	Innovation Management Process
IOC	Initial Operating Capability
IPR	Intellectual Property Rights
ISACA	Information Systems Audit and Control Association
ITIL	IT Infrastructure Library
ITR	Internal Technical Report
KPI	Key Performance Indicator

Acronym	Description
L&D	Learning and Development
MSs	Member-states
NATO	North Atlantic Treaty Organization
NCC	Nacional Cyber Competence Centre
NCIA	NATO Communications and Information Agency
NIS	Network Information Security
NfP	Non-for-Profit (Business model for organisations)
NHs	ECHO National Hubs
OLA	Operative Level Agreement
PA	Project Agreement
PAC	Project Advisory Committee
PC	Project Coordinator
PD	Partnership Development
PIC	Project Implementation Coordinator
PQP	Project Quality Plan
PR	Public Relations
PSC	Project Support Cost (for Services)
PSO	Project Security Officer
QDMC	Quality and Data Management Committee
QMS	Quality Management System
R&D	Research and Development
RACI	Responsible, Accountable, Consulted, Informed matrix
RFP	Request For Proposal
SCOR	Supply Chain Operations Reference Model
SDG	Strategic Direction and Guidance
SGs	ECHO Service Groups
SLA	Services Level Agreement
SOP	Standard Operating Procedure
SPP	Strategic Planning Process
SPSG	Strategic Planning Simulation Game
STMC	Scientific and Technical Management Coordinator
TAS	Time Accounting System
TC	Total Cost
ToC	Table of Contents
TOM	Target Operating Model
UPEP	Union of Private Economic Enterprise
VBE	Virtual organisations Breeding Environment
VDO	Virtual Development Office
VO	Virtual Organisation

Acronym	Description
VPC	Voluntary Partner Contribution
WP	Work Package
WPL	Work Package Leader
ECHO Governance Model related acronyms	
ECHO	European network of Cybersecurity centres and competence Hub for innovation and Operations
AC	Audit Committee
MSIEC	Multi-Sector Innovation and Exploitation Committee
E-CCS	ECHO Cybersecurity Certification Scheme
E-CSF	ECHO Cybersecurity Skill Framework
E-EWS	ECHO Early Warning System
E-FCR	ECHO Market Place for Cyber Range providers
E-GCS	ECHO Governance Consultancy Services
E-GM	ECHO Governance Model
E-MAF	ECHO Multi Assessment Framework
GA	General Assembly
IA	Internal Audit
ECHO Work Packages, Tasks and Deliverables related acronyms	
D3.1	Deliverable 3.1 (of T3.1): Governance needs and objectives
D3.2	Deliverable 3.2 (of T3.3): Governance Alternatives
D3.3	Deliverable 3.3 (of T3.3): Governance model description
D3.4	Deliverable 3.4 (of T.3.3): Governance model implementation plan
D3.5	Deliverable 3.5 (of T3.4 and T3.5): ECHO Operations status report (repeatedly updated 2020-2024)
D3.6	Deliverable 3.6 (of T3.2): ECHO Information sharing models
FAR	First Annual Report (of T3.4, D3.5, see [D3])
T3.3	Task 3.3: Governance models definition
T3.4	Task 3.4: Governance Operation
T3.5	Task 3.5: New partner engagements
WP1	Project coordination and management
WP2	Multi-sector needs analysis
WP3	ECHO Governance Model
WP4	Inter-sector Technology Roadmaps
WP5	ECHO Early Warning System
WP6	Federated Cyber Range
WP7	Network-wide integration, installation and test
WP8	Demonstration Cases
WP9	Dissemination, Exploitation, and Innovation Management
WP10	Ethics requirements

Table 3: Glossary of acronyms, initialisms, and abbreviations

2. Governance model design framework

The overall methodology framework was described in the D3.2, *Chapter 4: Methodology Description*. The planned activities for D3.3 and updates are according to the overall T3.3 methodology framework of several approaches' application logically structured in the following sequence:

1. Business Process Management analysis with identification of the organisational landscape and detailed process description;
2. The application of parts of COBIT (Control Objectives for Information and Related Technologies) framework for:
    a. Definition of the Design Baseline;
    b. Goals cascade[5];
    c. Development of Responsible, Accountable, Consulted, Informed (RACI) matrices.
3. Process and network analysis, using tools such as Business Process Management Notation (BPMN) and application of social network analysis algorithms."

The process of D3.3 development reveals the need for these initial activities to be limited and further developed during the next 2 years in preparation of the updated D3.12. and D3.13.

During the Workshop on Governance Model Description, 17-18 December 2020, Telco Meeting a decision to limit the scope of analysis was taken. The main items of the decision are as follows:

- The form of agreements and legal status of National Hubs (NH) and Service Groups (SGs) will be discussed and updated in D3.13 (due M48), based on a Workshop on partnership development in early 2022;
- The funding sources to be identified as follows, but not limited to: Fees; External programme funding; Revenues from services and products delivery. The financial part to be detailed in D3.13. in cooperation with WP9, based on Catalogue and customer relationship management workshop in mid-2022;
- Limit the level of details to high-level for Strategic Planning Process (SPP) SOP and ECHO Charters, as well as for processes of Catalogue Management and Customer Relations Management and Innovation (R&D) Management Process (Charters if decided will be developed under WP1 and related SOP will be drafted as annexes in D3.5 at M48 to reflect GM operation);
- The detailed development of Charters and SOP will be based on analysis of the demo cases in WP8 and common understanding from WP9 for exploitation strategy.

[5] The goals cascade is an important concept in COBIT. It supports the translation of stakeholder needs into actionable strategy. The mechanism is used to translate these needs into customized enterprise goals, IT-related goals, and enabler goals. The goals cascade is a top-down approach.

Process design methodology is presented in Annex 1 – COBIT and CMMI frameworks short description with BPMN notation in Annex 2, and process design framework in Annex 3, organizational design framework in Annex 4.

2.1. Processes Identification

Process Identification aims to define the relations between processes in general and structure them within the framework of governance and management.

The Strategic Planning Process (SPP) is the main process which envelopes all other three processes of Partnership Development (PD), Catalogue Management and Customer Relations (CMCR) Management and Innovation (R&D) Management (IM) processes. Each of the three processes – PD, CMCR, IM provides functional strategic planning documents, execution and monitoring activities within overall strategic planning process of the ECHO CNO. The sections bellows present these activities in more details.

The main SPP is defined according to the common understanding for strategic planning within five stages as it is shown on Figure 2.

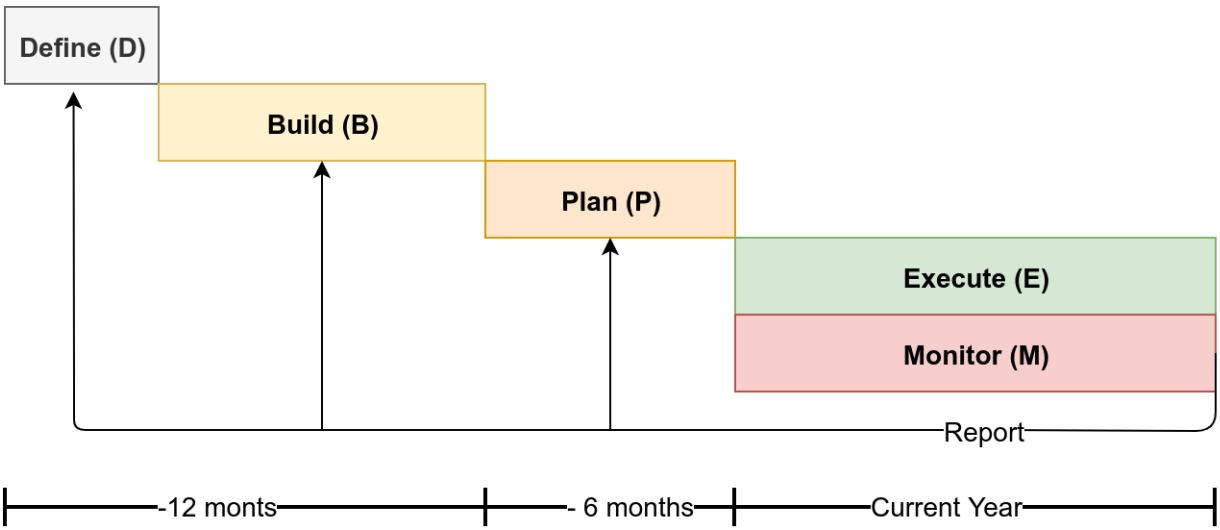


Figure 2: Strategic Planning Process framework

The Products of five phases are the following documents:

- Define – Planning Guidance (Strategic Directions and Guidance);
- Build – Strategic Plan and Change Management Plan;
- Plan – Business Plan for the next year
- Execution and Monitoring phases are executed in parallel and at the end, the Annual Report is prepared.

Define and Build phases are moved 18 months before the start of the year of one year of Execution phase in order to have enough time for preparation of the yearly Business Plan.

The SPP formally finishes with preparation and approval of the Business Plan, but the results of the Execution and Monitoring are also included, because the Annual Report provides an important input for the planning for the next cycle of the SPP, as well as for change management and improvement.

Until the new Planning guidance, specifically with a new Strategic Direction and guidance are issued the SPP for the several years after the first 18 months is mostly business planning in the framework established with elements of the change management plan envisioned according to the Strategic direction and guidance.

Business planning, based on demand assessment, capacity assessment and matching demand and capacity is covered in WP9 along with the exploitation strategy.

2.2. The Processes Landscape

From an organisational point of view the processes landscape should be considered as it is shown on Figure 3. The composition of the ECHO Collaborative Networked Organisation (CNO) was agreed in D3.2.

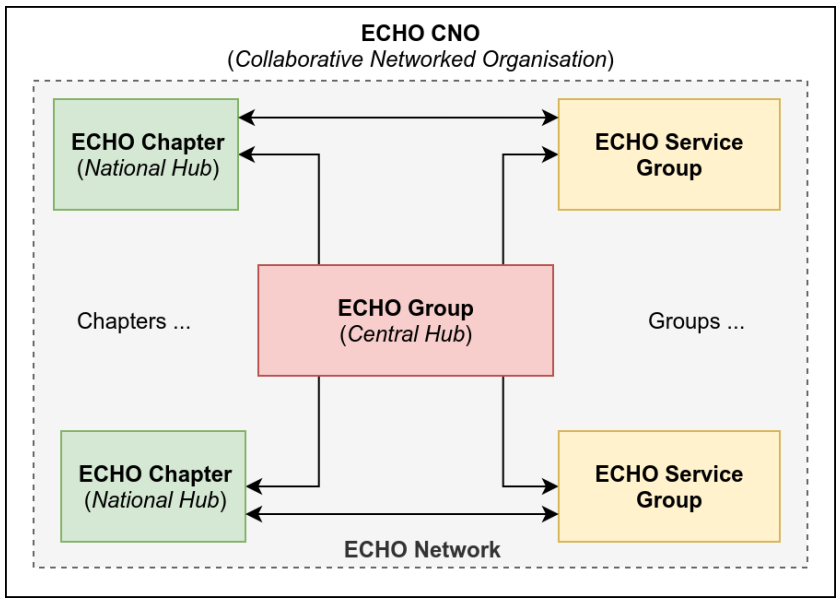


Figure 3: ECHO CNO

The ECHO Collaborative Networked Organisation (CNO) can be considered as a matrix Virtual Breeding Environment with National Hubs (chapters) having the main responsibilities for resources and membership management on one side, and the other side – Service Groups, formed on EU level for providing services within the ECHO Catalogue. The E-EWS, E-FCR, E-CSF, etc. can be considered as a base for the future service groups.

Another organisational snapshot of the ECHO is provided by Figure 4, which shows in more details the relations between ECHO Group and other multiple elements of the ECHO Network.

In regard to organisational landscape, the SPP main phases are further divided on main activities and data required for strategic planning as follows:

- ***Define:*** During this stage, the following issues should be resolved and data should be gathered for:
    - Strategic Position: Market and Customers;

- Resource Framework;
- Main Policies and Programmes within 3-5 years horizon;
- Priorities of Programme areas (trade-offs);
- Provide guidance for the process of Planning within organisational units (ECHO entities).

- ***Build the Framework:***
  - Collect opinion and data from National Hubs and Services Groups;
  - Plan on National and Service Level;
  - Compile the Strategic Plan for 3-5 years period;
  - Communicate to Members and Stakeholders;
  - Approve the Strategic Plan.
- ***Plan*** *for the next year, approve the Business Plan and sign Operation Level Agreements with National Hubs and Service Groups.*
- ***Monitor*** *the performance, update the documents and change management plans.*

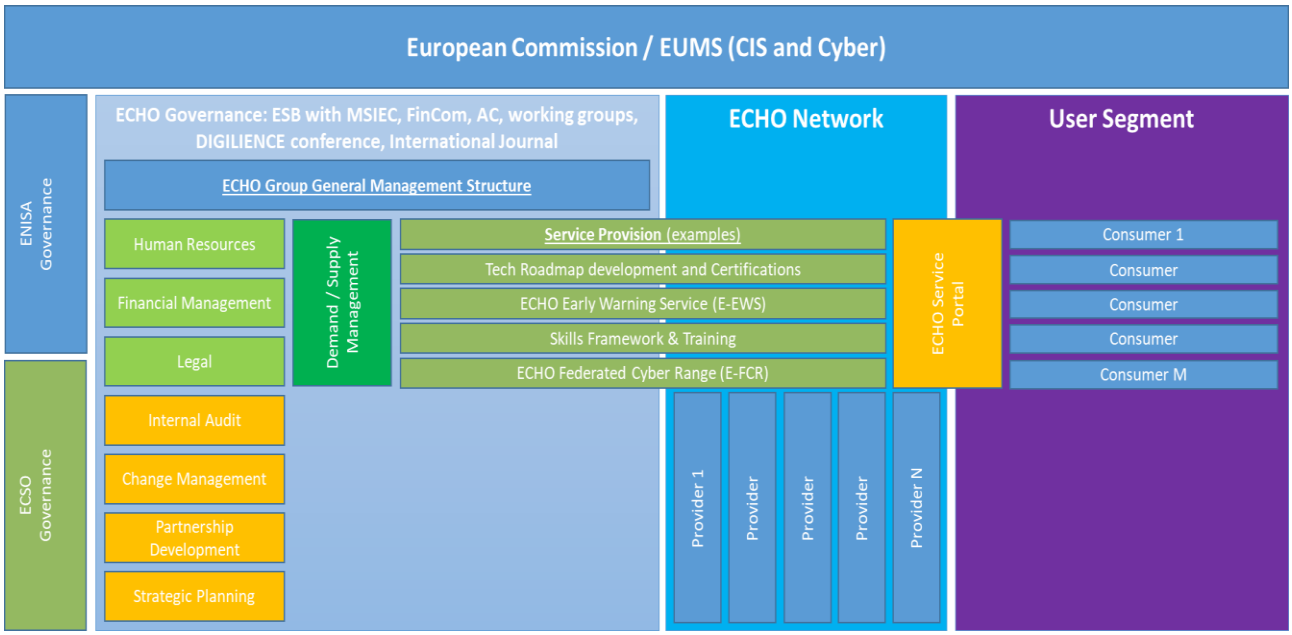


Figure 4: ECHO Target Operating Model

In order to follow the requirement to design a flexible and responsive to the environment Collaborative Networked Organisation the SPP Build and Plan phases includes coordination between ECHO Central Hub, National Hubs and Service Groups (in case we select a business model without full scale ECHO Group and Service Groups the role of ECHO Group is played by the GA and partners are the “micro” SGs, so the central elements are ECHO Chapters of national partners). The Planning phase finished with agreements between the Central Hub and the NHs (or directly among chapters), as well as between the Central Hub and the SGs

(or directly among partners, facilitated by chapters). Thus, providing transparency and accountability among parties.

2.3. Initial Processes Identification

The SPP can be classified as a core process, which add value to the value chain of providing effectiveness to the CNO. The Figure 5 presents the framework of the initial process identification.

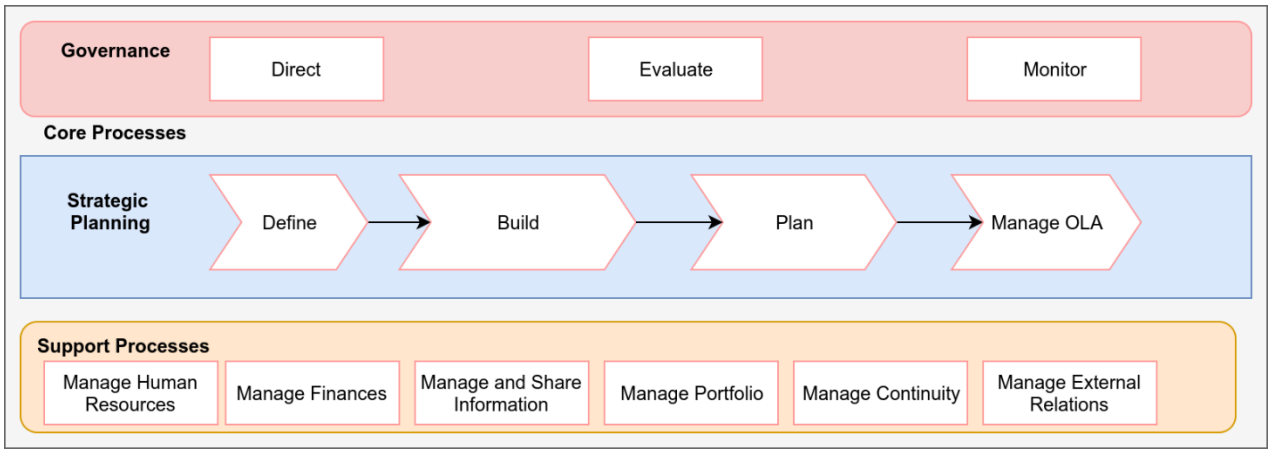


Figure 5. Initial process discovery

The core process of SPP is described as a set of phases. The governance and supporting processes are given according to the COBIT reference model and are detailed in following sections.

The initial identification in Figure 5 does not provide organizational prospective. This perspective is shown in process diagram in Figure 6.

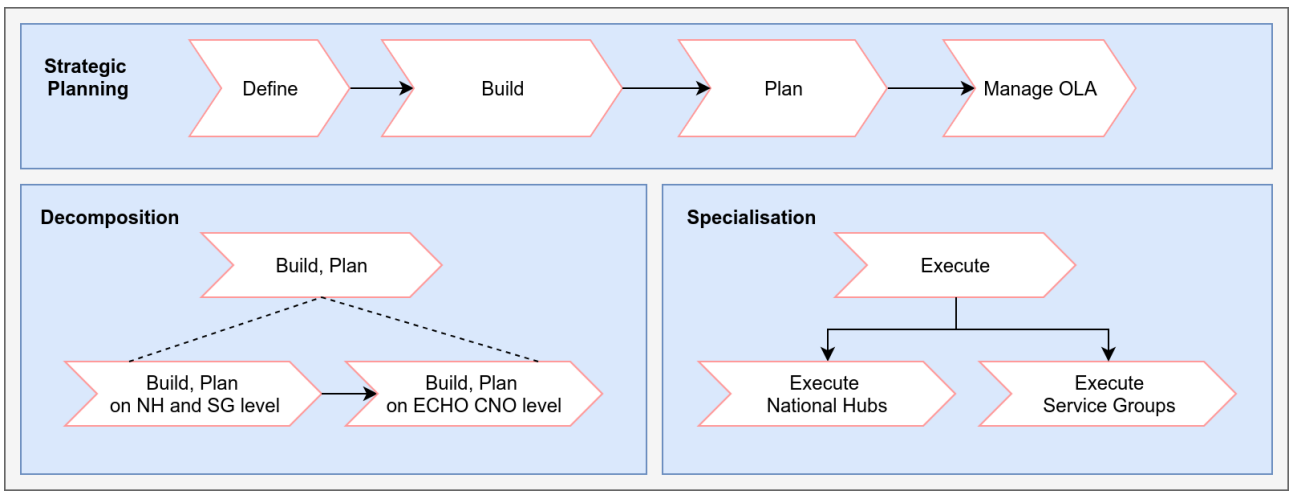


Figure 6: Decomposition and Specialisation of processes

Both Build and Plan phases of the SPP are decomposed in two sub-phases passing first on National and Service level of ECHO CNO. The NHs and SGs are specialised during the Execution Phase according to the specifics of these two organisational bodies.

2.4. Strategic Planning Process

The purpose of Figure 7 is to present the main phases of the Strategic Planning Process (SPP). The process landscape as a structure of general organisational bodies is also considered, as well as possible mapping of ECHO Project documents and deliverables to the future main strategic documents of the ECHO CNO.

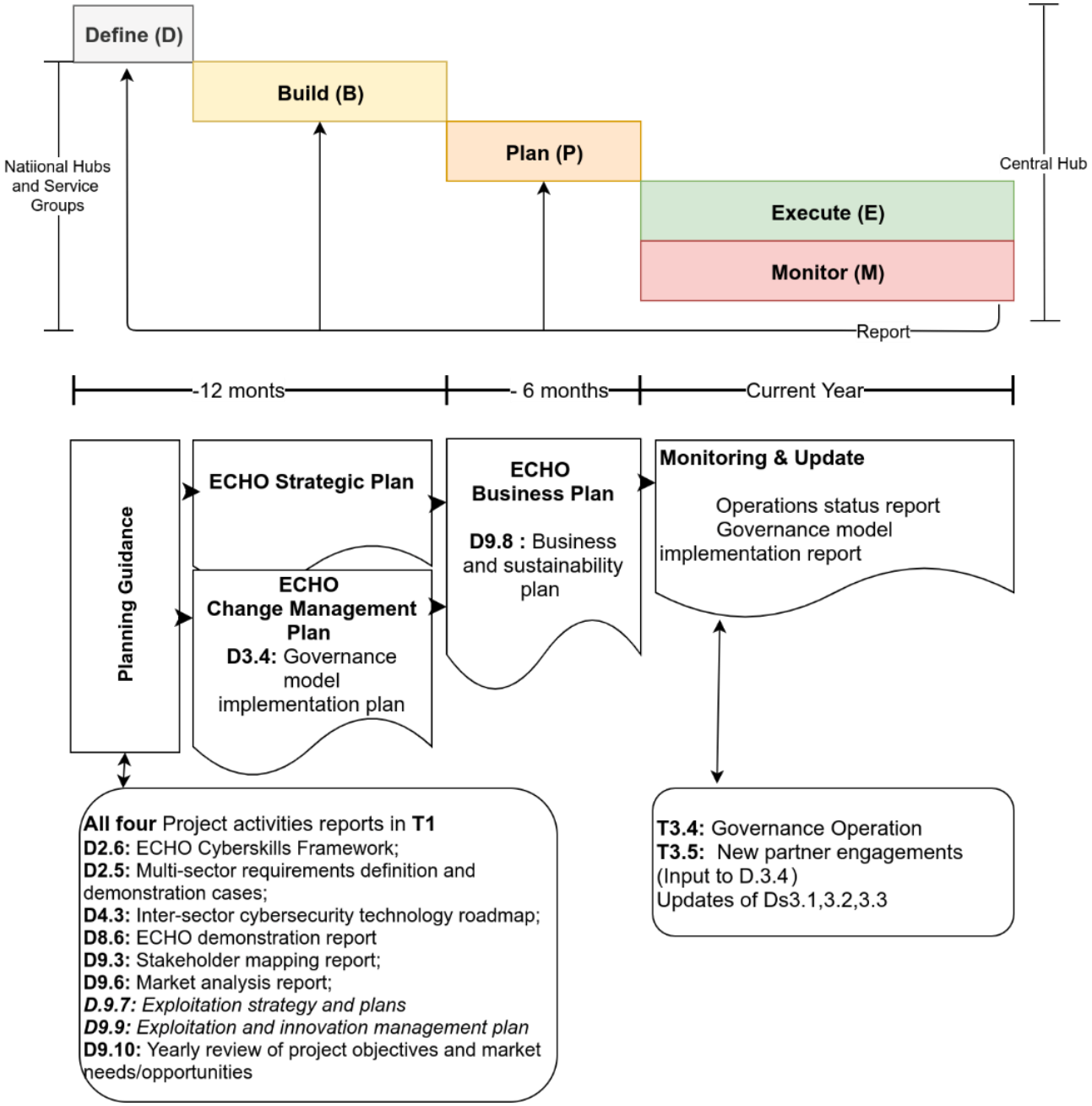


Figure 7. Strategic Planning Process description

The goals and the resource framework are identified within the list of the ECHO documents for the first year cycle, given in the figure of the overall SPP. After the first planning cycle these documents will be updated on the basis of the monitoring reports and marketing positioning.

The **Define and Build Phases** are forming a **Strategic Stage -** specific stage - it has to be conducted as a standalone stage during the establishment of ECHO CNO, when the overall strategy and Strategic Framework are accepted.

The Strategic Framework has to be built and can be mapped to the ECHO Deliverables and Task as they are listed in the rectangle below the Planning Guidance.

After the initial set-up and first year plan implementation, the execution of the two phases – Define and Build should repeat each year, but us an update to the Strategic plan in the process of development of the next Business Plan. With strategic change in the environment or once in 5 years full Define/Build implementation is envisioned in order to reflect the new Strategic Direction and Guidance from the BoDs.

The information from the **Monitoring Phase** from the current year is used as input for the next year planning.

Having in mind **the structure of ECHO CNO,** the SPP is starting at ECHO Central Hub with definition and approval of Guidance and is passed to the National Hubs and Services Groups (multiple elements of the ECHO Network).

The **SPP is top-down first, followed by bottom-top involvement** approach with main actors of National Hubs and Services Groups under the coordination of the ECHO Central Hub.

The Planning Guidelines, Strategic, Change Management and Business Plans are agreed in Central Hub through voting of representatives in GA and Advisory Committees (the structure of the Central Hub and the list of its supporting Committees are given below in Section 2.2).

Involvement of National Hubs and Services Groups to the Business Plan is accepted by agreement between ECHO Central Hub and each National Hub and Services Group.

The monitoring of the **Execution** is done by **Monitoring System** and on its output the Annual Reports for each National Hub and Service Group are prepared and then accepted by the ECHO Central Hub. The ECHO CNO Annual Report is provided by the ECHO Central Hub.

Time frame

If the timeframe is accepted the Transition Planning from consortium organisation to the ECHO CNO should be ready and the transition should start with the **Design and Build Phases *12 months before the end of the ECHO Project - M36: in January 2022 (or even M30 for awareness).***

The Figure 9 presents more detailed diagram of the SPP. It should be noted that the ECHO Central Hub, National Hubs and Services Groups are considered to be autonomous with relatively high level of freedom to take their own decision within the coordinated framework of the Planning Guidance and other ECHO CNO documents. Thus ECHO Group, Chapters and SGs are presented on different paths.

2.5. Strategic Planning and other processes

The SPP envelopes other three key processes identified in D3.2, Chapter 9. The scheme of the relationship is given in Figure 8

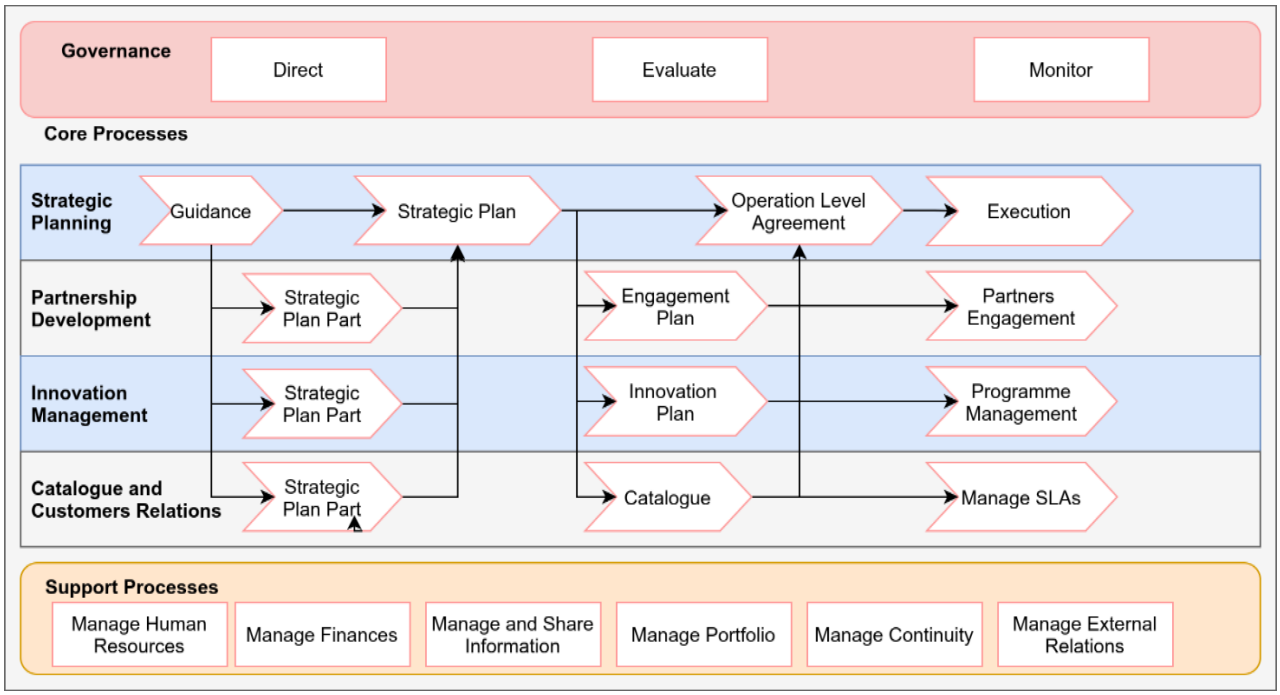


Figure 8: Key processes relationships

All processes provide functional parts of the Strategic Plan in their respective areas. For the Business Plan they also provide needed inputs.

It can be argued that the functional parts of the Strategic Plan and the Business plan have to be managed through the ECHO Central Hub Advisory Committees as leading party, with coordination to NHs and SGs.

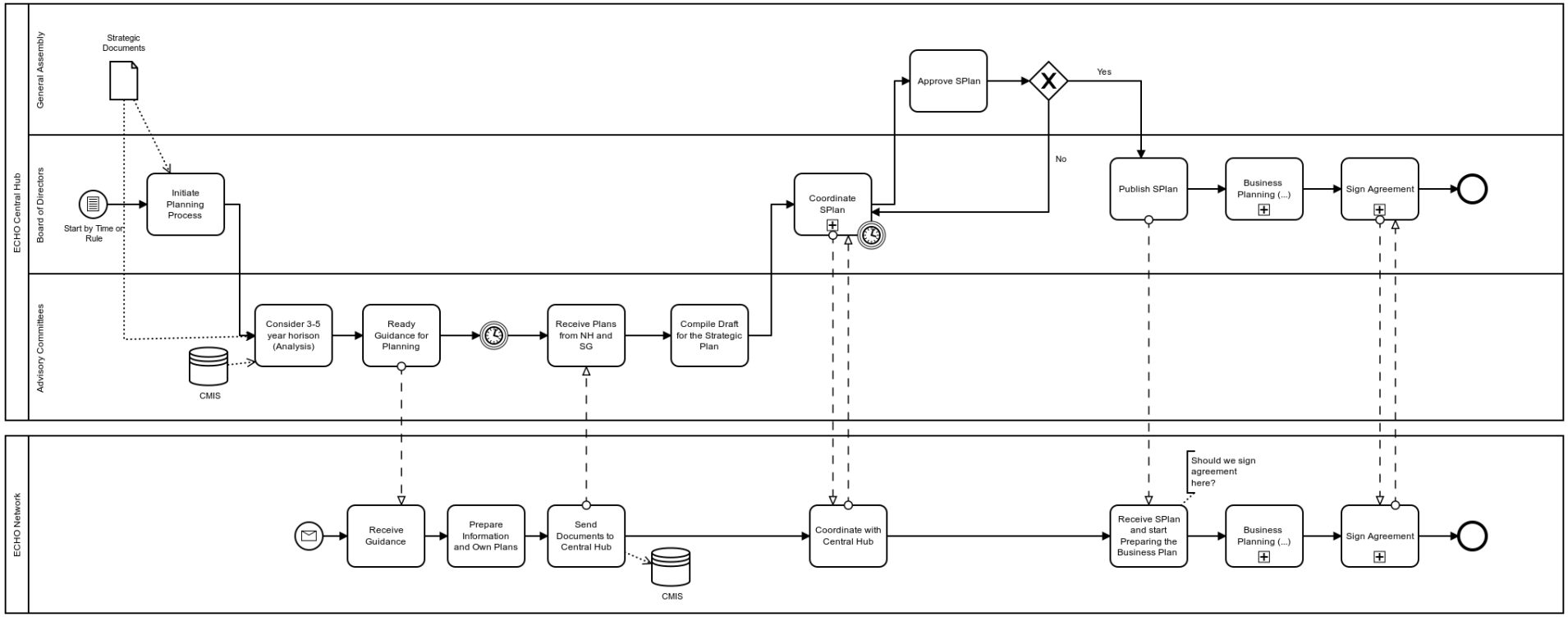


Figure 9: Strategic Planning Process Diagram

2.6. Partnership Development Process

The Partnership Development process general scheme is presented on Figure 10 and its main documents and activities are mapped to the main Strategic Planning Process phases (D-Define, B-Build, P-Plan, E-Execute, M-Monitor and Update). Detailed design is under T3.5. with a simulation game organized early 2022.

Inputs from Strategic Planning Process

The process of Partnership Development (PD) has its inputs from the ECHO Strategy and Goals, Catalogue Management and Customer Relations (CMCR) processes and from PD needs and reports, provided by the National Hubs and Service Groups.

Process inputs as ECHO Deliverables

Following Deliverables and Tasks can be identified as inputs to the PD:

- T3.5: New partner engagements
- D9.16: Communication and Stakeholder Engagement Plan **[D30]**;
- D9.3: Stakeholder mapping report **[D34];**
- D9.6: Market analysis report **[D37];**
- D9.10: Yearly review of project objectives and market needs/opportunities **[D27];**

The ECHO Central Hub

The strategic activities, important for the ECHO CNO, as a whole, are guided, discussed and approved within the units of the Central Hub.

Partners Engagement Strategy is a functional strategy, part of the ECHO general strategy and it is focused on how ECHO CNO engages, accepts and certifies its potential partners, by providing transparency and publicity of the benefits received and efforts required for the ECHO membership.

The partnership strategy is developed in a same way as the general strategy during the Design and Build Phase.

Certification Requirements give the metrics for certification of new members for each type of membership – it is designed and built according to the ECHO Strategy as a guidance and as practical recommendations from National Hubs and from Service Groups.

The **Certification Requirements and Partners Engagement Plan** is prepared as a part of the Business Plan for each year.

The **certification procedure** is prepared by the National Hubs, but it is **approved** by the Central Hub and the membership agreement is signed with the certified partner.

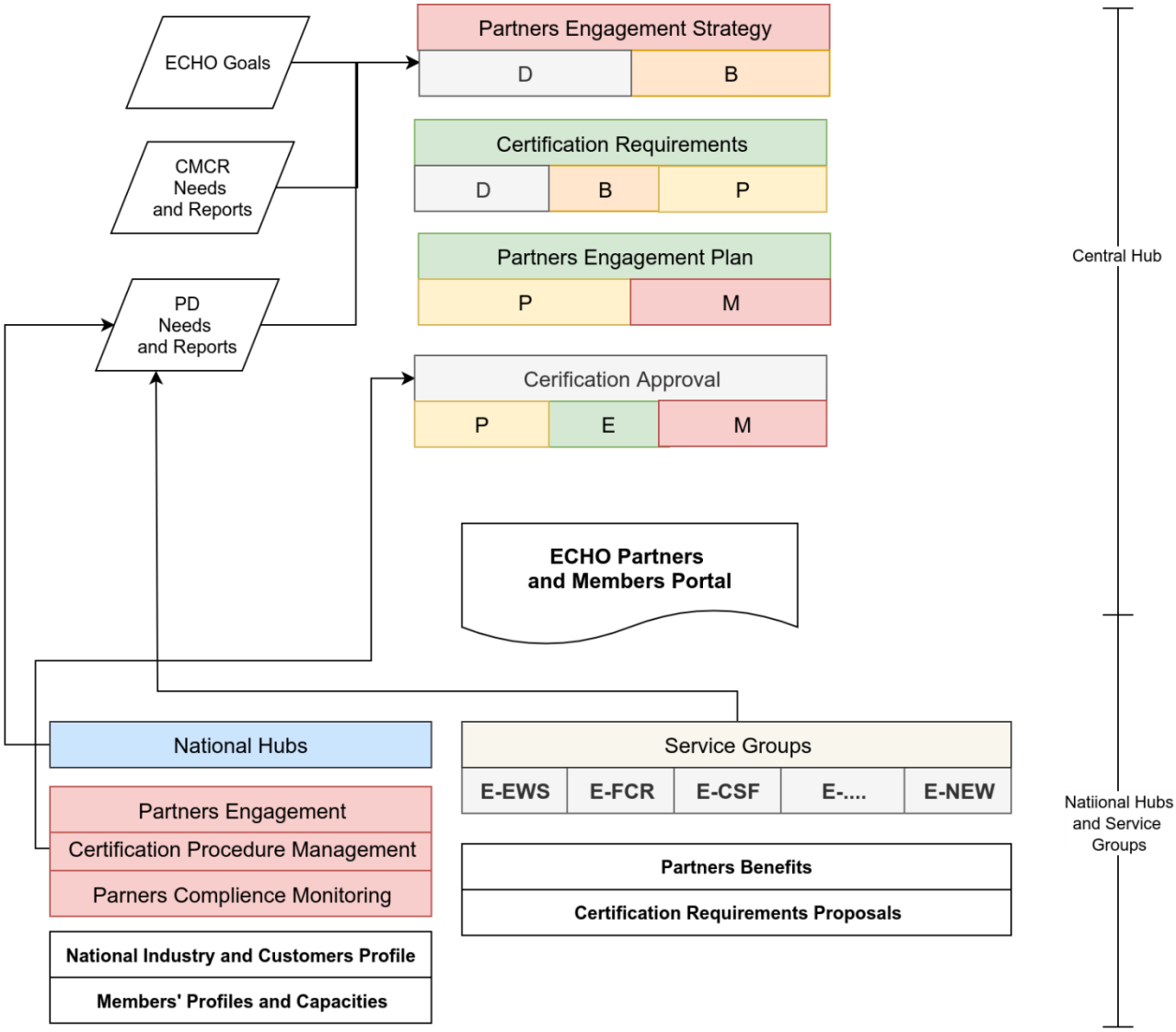


Figure 10. Partnership Development process description

The following process activities can be addressed to the NHs in regard to COBIT Framework:

- EDM02.01: Evaluate value optimisation;
- EDM04.01: Evaluate resource management;
- EDM05.01: Evaluate stakeholder reporting requirements.

The ECHO Partners and Membership Portal are maintained by the Central Hub. The Portal contains all documents related to the Partnership Engagement and to the Certification Procedure. The Portal can be used also for monitoring the membership status, activities and compliance to the capabilities dedicated to the ECHO CNO.

The National Hubs

National Hubs execute plans for Partnership Engagement, manage Certification Procedure according to the ECHO CNO requirements and monitor the membership status of participating organisations from the respective Nation.

The following process activities can be addressed to the NHs in regard to COBIT Framework:

- APO02.01: Understand enterprise direction.
- APO08.01: Understand business expectations.
- APO11.01: Establish a quality management system (QMS).
- APO12.01: Collect data.
- MEA01.01: Establish a monitoring approach.
- MEA02.01: Monitor internal controls.

The Hubs also maintain within the Portal the profiles of its participants, as well as profiles for the National Industry and potential partners and customers. This information is used also in strategic positioning during the SPP.

The work on Partners Engagement documents and processes is on-going within the ECHO. Engagement Team in close coordination of Multi-Sector Innovation and Exploitation Committee (MSIEC) and WPs is working on Partners Engagement Strategy, description of main processes and roles of organisational bodies. The need of additional requirements for membership in the ECHO Assets (e.g. E-FCR, E-EWS, E-GCS) are identified and capability level assessment is in its final draft. The types of membership, benefits and partners' commitment are given in Annex 6 – Membership categories as an excerpt from ECHO Partnership Handbook

The Service Groups

Services Groups provide information about the market position (strategic and current) of the ECHO CNO on services markets, capacity needed for meeting the demand and for service customers' satisfaction. The possible membership benefits and requirements are cleared for strategic and annual horizon.

The following process activities can be addressed to the SGs in regard to COBIT Framework:

- APO02.01: Understand enterprise direction.
- APO05.01: Establish the target investment mix.
- APO08.01: Understand business expectations.
- APO10.01: Identify and evaluate supplier relationships and contracts.
- APO11.01: Establish a quality management system (QMS).
- BAI04.01: Assess current availability, performance and capacity and create a baseline.
- MEA03.01: Identify external compliance requirements.

At this point these design decisions are to be used for the design of SPP and ECHO Chapter as well as to define requirements to ECHO Group and SGs in this update. Final design of the PDP (Partnership development Process) under T3.5. will be reflected in D3.13.

2.7. Catalogue Management and Customer Relations Management process description

The CMCR process general scheme is presented on Figure 11 and its main documents and activities are mapped to the main Strategic Planning Process phases (D-Define, B-Build, P-Plan, E-Execute, M-Monitor and Update). Further design of the process is scheduled for 2022 through simulation game with WP9 and E-Assets identified to contribute to the Catalogue of services.

Inputs

The CMCR process has its inputs from the ECHO Strategy and Goals, CMCR process itself and from Partnership Development (PD) needs and reports, provided by the National Hubs and Service Groups (e.g. ECHO Network).

Process inputs as ECHO Deliverables

The following Deliverables can be identified as inputs to the CMCR:

- D9.3: Stakeholder mapping report **[D34]**;
- D9.6: Market analysis report **[D37]**;
- D9.7: Exploitation strategy and plans *(ready in M42)*;
- D9.9: Exploitation and innovation management plan *(ready in M24)*;
- D9.10: Yearly review of project objectives and market needs/opportunities **[D27]**;
- D3.4 Governance model implementation plan *(ready in M30)*;

The Central Hub

The strategic activities, important for the ECHO CNO, as a whole, are guided, discussed and approved within the units of **the Central Hub**.

ECHO Catalogue Planning is a functional planning process, part of the ECHO general strategy **of services delivery.** It is focused on how ECHO CNO manage the mix of provided services and their capacity.

The Catalogue Plan is developed in same way as the general strategy during the Design and Build Phase.

Catalogue Planning is based on inputs from the goals of strategic planning, change management plans and functional feedback from the possible Partners engagement and by the CMCR process feedback. The key input is from ECHO Assets to be transformed in ECHO SGs/VOs around set of services (portfolio of services in development, active services and retired services – active services being the actual Catalogue).

The similar COBIT Framework process activities to be referred are as follows:

- EDM02.01: Evaluate value optimization;
- EDM04.01: Evaluate resource management;
- EDM05.01: Evaluate stakeholder reporting requirements.

Based on customer needs, possible enhancement of services capacity and ECHO overall strategy the Catalogue is established and Service-level Agreements (SLAs) are signed with Service Groups' Customers.

The Catalogue is published in members' on-line space and capacity of services are monitored.

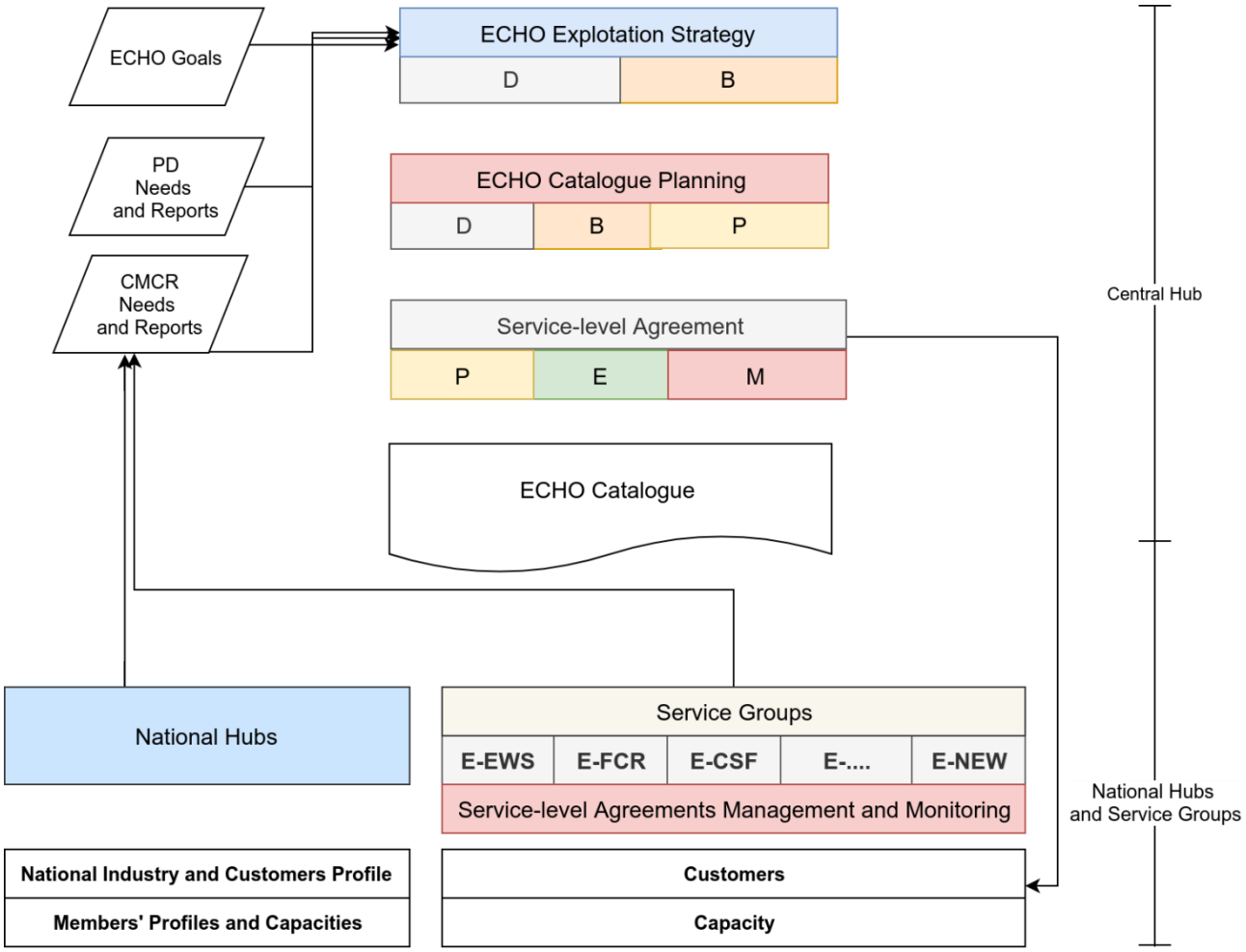


Figure 11. Catalogue Management and Customer Relations process description

The National Hubs

The possible COBIT Framework process activities which can be referred to the SPP on national level are as follows:

- APO02.01: Understand enterprise direction.
- APO08.01: Understand business expectations.
- APO12.01: Collect data.
- MEA01.01: Establish a monitoring approach.
- MEA02.01: Monitor internal controls.

National Hubs have the same activities as these described in Partnership Development Process. The important part for the CMCR is the Industry profiles as possible customer to the Catalogue Services, as well as potential partners in services development.

The Services Groups

Services Groups provide information about the market position (strategic and current) of the ECHO CNO on services markets, capacity needed for meeting the demand and for service customers' satisfaction. The possible membership benefits and requirements are cleared for strategic and annual horizon.

The possible COBIT Framework process activities are as follows:

- APO02.01: Understand enterprise direction.
- APO08.01: Understand business expectations.
- APO10.01: Identify and evaluate supplier relationships and contracts.
- APO11.01: Establish a quality management system (QMS).
- BAI01: Manage Programmes and Projects
- BAI02: Manage Requirements Definition
- BAI03: Manage Solutions Identification and Build
- BAI04: Manage Availability and Capacity
- BAI05: Manage Organisational Change Enablement
- BAI06: Manage Changes
- BAI07: Manage Change Acceptance and Transitioning
- BAI08: Manage Knowledge
- BAI09: Manage Assets
- BAI10: Manage Configuration
- MEA01: Monitor, Evaluate and Assess Performance and Conformance
- MEA02: Monitor, Evaluate and Assess the System of Internal Control
- MEA03: Monitor, Evaluate and Assess Compliance with External Requirements

The management of SLAs is one of the main function of the Service Groups.

Here we use the above decisions to define the requirements to the SGs / Central hub and detailed design of the CMRM Process is under WP9 with design of Central hub under WP1 and for the SGs under respective WPs – WP2-WP6.

2.8. Innovation (R&D) Process description

The Innovation (R&D) Management (IM) process general scheme is presented on Figure 11 and its main documents and activities are mapped to the main Strategic Planning Process phases (D-Define, B-Build, P-Plan, E-Execute, M-Monitor and Update). Design of the process is under WP9, supported by the WP3 organized simulation game in 2022.

The COBIT Framework process activities to be referred are very similar to the CMCR process:

- EDM02.01: Evaluate value optimization;

- EDM04.01: Evaluate resource management;
- EDM05.01: Evaluate stakeholder reporting requirements.

Inputs

The process of IM has similar inputs like CMCR process, but the focus here is on innovation potential evaluation, establishing of innovation mix (or portfolio) and planning for future R&D activities.

The specific inputs for IM process are D9.11 Procedure for internal IP reviews and D9.12 IP awareness trainings.

The Central Hub

The strategic activities, important for the ECHO CNO, as a whole, are guided, discussed and approved within the units of **the Central Hub**.

ECHO Innovation Planning is a functional planning process, part of the ECHO general strategy**.** It is focused on how ECHO CNO manage the mix of provided services, their capacity and innovation activities needed in order to establish ECHO as a market and services leader.

The **ECHO Innovation and Research Agenda** is a suggested high-level strategic document.

The Innovation Plan is developed in same way as the general strategy during the Design and Build Phase.

The Innovation Activities

The suggested classification of Innovation activities is as follows:

- **Incubation of new services** - e.g. new Services Groups, delivering new services or products to the customers - this should be done in close cooperation between the ECHO Central Hub and newly established Service Group organisation for service incubation. Currently this is the main focus of WP2 and WP4;
- **Improvement of existing service** – a project for implementation of innovative technologies, practices and knowledge - this also should be done in close cooperation between the ECHO Central Hub and the Service Group organisation implementing the innovation;
- **Innovative projects** - projects for service incubation, service improvement or educational events and activities. These projects can be longer or shorter than a year, they are based on the ECHO Strategic Plan and can be started by a Partner (or group of Partners). It is under development by WP4 as a technology roadmap;
- **Innovation events and entrepreneurships education** – education courses and events for discussion and demonstration of ECHO cybersecurity innovation potential to the stakeholders, partners and customers - this has to be done with close cooperation with the National Hubs. It is under development by WP9 and WP2 area of cyber skills framework;
- **Knowledge Management System –** suggested in order to implement a knowledge base related to the IT research, standards and projects. The Knowledge Management System can be part of more general Governance and Management Information System to be developed in close cooperation with WP4 and WP9.

The National Hubs

The nature of NHs role here is almost similar to the NHs roles in CMCR, that's way there are similarities in reference model activities:

- APO02.01: Understand enterprise direction.
- APO08.01: Understand business expectations.
- APO12.01: Collect data.
- MEA01.01: Establish a monitoring approach.
- MEA02.01: Monitor internal controls.

National Hubs propose during the planning period and executes educational events, courses, etc. in close cooperation with ECHO Group and other multiple entities of the ECHO Network.

The NHs monitor the membership status of National Hub participating organizations. The NHs also maintain the profiles of its participants, as well as profiles for the National Industry and potential partners and customers. This information is used also in strategic positioning during the SPP planning in innovation and R&D area.

The Services Groups

Services Groups provide information about the market position (strategic and current) of the ECHO CNO on services markets, capacity needed for meeting the demand and for service customers' satisfaction. The possible membership benefits and requirements are cleared for strategic and annual horizon.

3. Strategic Planning Process design

This chapter is dedicated to the description of the ECHO CNO RACI Matrix along the SPP. The processes and activities described in previous two chapters are used. These processes are referred in general into the first three sections of this chapter and then responsibilities for their execution are assigned and illustrated by a RACI matrix.

The Strategic Planning Process is selected for detailed presentation in this document for several reasons. The process role for initiating and implementing the transition from project organization to higher-level integration is crucial. The transition plan (to be developed within D3.4.) focuses on defining the steps and activities to lead the change to ECHO Network, and the engagement of partners in this depends highly on proper identification of the Current Operating Model (COM), Target Operating Model (TOM), what is the ECHO strategy and the gaps that need to be addressed. That is why the Strategic Planning Process was selected for detailed description within this document, and for testing during D3.4. in order to develop a shared first draft of the ECHO CNO Strategy.

The example of development of Standard Operating Procedure (SOP) and RACI matrix is given in Chapter 3 of D3.3. as an approach. The use of reference model of COBIT is also shown in this example. The reference model and processes profiles will be used in detailed development of SOPs and Charters of ECHO CNO in next two D3.3 updates in M36 and M48. In order to develop overall framework of the Organisation only high-level procedures are used.

The first three sections below describe procedures and roles of Central Hub, National Hubs and Service Groups in the Strategic Planning Process. First, the overall framework of the Strategic Planning Process is given. Second, the specific procedures and documents for other three processes are presented, as well as other important procedures are discussed. Then the RACI matrix is developed and is summarized to the organisational bodies. Finally, consideration for transition from ECHO Project to ECHO CNO are given as structures and documents.

The fourth section considers further change management from the point of view of the change implementation and change management plan through focus groups and case scenarios.

3.1. The Central Hub

The Central Hub is already considered in Chapter 2 and it has the following organisational structures according to the decision described in Chapter 9 of D3.2:

1. General assembly (GA);
2. Board of Directors (BoD) with a Secretariat;
3. Committees reporting to the BoD (and GA):
   a. Membership Committee;
   b. Technology and Innovation Committee;
   c. Stakeholder Committee;
   d. Financial Committee;
   e. Audit Committee;
4. Executive Management:
   a. Chief Executive and Chief Operational Officer (CEO/COO);

b. Chief Financial Officer (CFO);
c. Chief Partnership Officer (CPO);
d. Chief Technology Officer (CTO);
e. Chief Customer Officer (CCO).

The roles of the NHs and SGs are also introduced here.

3.1.1. The Strategic Planning Process - high-level procedures

The Strategic Planning Process (SPP) consists of five phases and the main high-level procedures within these phases are identified as procedures and documents as follows:

Define:

- The Strategic Planning Guidance development (setup goals and resource framework) – as it is shown in Chapter 2 the procedure is in solely responsibility of the Central Hub. The output of the procedure is the Guidance sent to the National Hubs (NHs) and Service Groups (SGs).

Build:

- Positioning and NHs and SGs strategic plans preparation;
- Coordination of the Strategic Plan;
- Approval of the Strategic Plan.

Plan:

- Business planning of NHs and SGs;
- Business planning for the Central Hub – as resources and activities;
- Coordination of the Central Hub, NHs and SGs business plans;
- Approval of business plans;
- Signing Operational Level Agreements for the next budget year.

Execution:

- Execute Business Plans and Operational Agreements;

Monitor:

- Report KPI on monthly, quarterly and yearly basis;
- Annual reporting.

3.1.2. Specific procedures related to the core processes

The specific procedures related to the core processes in regard to the governance and management scope of the Central Hub are as follows:

Partnership Development:

- Partners engagement;
- Partners acceptance and certification of the membership status;
- Partners monitoring.

Catalogue Management and Customers Relations Management:

- Service catalogue management;
- Service-level agreement management;

Innovation (R&D) Management:

- Portfolio management of investments;
- Programme, project and events management.

3.1.3. Specific procedures related to the organisational set-up

3.1.4. Central Hub RACI matrix

It should be mentioned that NHs and SGs can be considered as autonomous bodies outside the structure of the Central Hub and their activities and decisions are coordinated on the agreements basis, but they are included in the RACI matrix here in order to show their networking role in the organisation, as well as a bridge to further NHs and SGs description.

The meaning of the abbreviation in the matrix are as follows: **R** – Responsible, **A –** Accountable, **C –** Consulted and **I –** Informed.

Procedures	General assembly	Board of Directors	NHs and SGs	Membership Committee	Technology and Innovation Committee	Financial Committee	Audit Committee	Risk Management Committee	Chief Executive	Chief Financial Officer	Chief Partnership Officer	Chief Technology Officer	Chief Customer Officer
Strategic Planning Guidance development		A		R	R	R	R	R	R	R	R	R	R
Positioning and NHs and SGs strategic plans preparation		A	R										
Coordination of the Strategic Plan		A	R	C	C	C	C	C	R	R	R	R	R
Approval of the Strategic Plan	R	A											
Business planning of NHs and SGs			R						A				
Business planning for the Central Hub		I							A	R	R	R	R
Coordination of the business plans		A	R	C	C	C	C	C	R	R	R	R	R
Approval of business plans	R	A		C	C	C	C	C	C	C			
Signing Operational Level Agreements		A	R						R	R	R	R	R
Execute Business Plans and Operational Agreements		I	R						A	R	R	R	R
Report KPI on monthly, quarterly and six-moth basis		I	R						A	R	R	R	R
Annual reporting	R	A	R						A	R	R	R	R
Partners engagement	I	A	C	R	C	C	C	C	R		R		
Partners acceptance and certification in membership status		A	C	R	C	C	C	C	R				
Partners monitoring	I	I	R	R					A	C	R	C	C
Service catalogue management	I	I	R	C	C	C	C	C	A	C	C	C	R
Service-level agreement management	I	I	R	C	C	C	C	C	A	C	C	C	R

Procedures	General assembly	Board of Directors	NHs and SGs	Membership Committee	Technology and Innovation Committee	Financial Committee	Audit Committee	Risk Management Committee	Chief Executive	Chief Financial Officer	Chief Partnership Officer	Chief Technology Officer	Chief Customer Officer
Portfolio management of investments	I	I	R	C	C	C	C	C	A	C	C	R	C
Programme, project and events management	I	I	R	C	R	C	C	C	A	C	R	C	R
Establishment and change of NHs and SGs	R	A	R	C	C	C	C	C	R	R	R	R	R
Election of BoD and Advisory committees	R		C	C	C	C	C	C	A	R	R	R	R
Appointment of the Executive Management officers	I	A								R			
Escalation procedure for members		A	R	C			R	C		R	R		
Escalation procedures for customers		A	R	C			R	C		R	R		
Development and maintenance of GMIS		A	R	R	R	R	R	R	R	R	R	R	R

Table 4: RACI matrix of the Central Hub

The summarisation and description of roles and responsibilities is given in the next section.

3.1.5. Description of roles and responsibilities

The description of the roles and responsibilities below is tentative and do not contain or consider representation and voting rules for different bodies or budgeting and resource aspects.

The General Assembly (GA):

- Establishes National Hubs and Service Groups by accepting their Charters.
- Elects five members of the Board of Directors for two-year mandate by the proposals of GA members;
- Approve the selection of the Chief Executive Officer (CEO) and members of the Advisory Committees;
- Approve ECHO CNO Strategic Documents – ECHO Strategy and the Strategic Plan;
- Approve Annual Budget and Business Plan for the next year;
- Approve Annual Report and goals for the changes and improvement.

The Board of Directors (BoD):

- Steer and oversee the preparation of NHs and SGs Charters and submit them to the GA;
- Elect Chairman of the BoD among its members. The Chairman is responsible for organising of the Board's meetings and registering them into the GMIS;
- The BoD takes its decisions by simple voting rule;
- Propose the appointment or changes of the ECHO CEO and Advisory Committees to the GA.

- Organise and monitor preparation of the ECHO Strategic Planning Documents, Annual Report and Change Management Plan, as well as their submission to the GA;
- Approve the Strategic Planning Guidance;
- Organise and monitor the preparation and submission to the GA of the Annual Budget and the Business plan;
- Approves all Executive Management positions;
- Approves new Partners, members' certification and changes in membership status type;
- Decides on issue related to conflicts resolution;
- Direct and oversee the development, improvement and maintenance of the GMIS;
- Direct and oversee the Operational-level agreements establishment with NHs and SGs.

The Advisory Committees

The Advisory Committees provides scientific and methodological support for decision-making in their respective area of expertise.

The Advisory Committees provides support to the BoD and executive management in following areas:

- Membership requirements for different types of partnerships;
- Resource framework establishment;
- Identification of the strategic position of the ECHO CNO;
- Set-up of KPI;
- Risk management and auditing;
- Development of organisational procedures.

The Committees also can suggest activities and measures for organisational improvement and change.

The Chief Executive Officer (with support from Executive Management officers)

- Represents the ECHO CNO in all external relations and signs agreements on behalf of the organisation;
- Organises and leads the development of the Strategic Planning Documents with support from other executives;
- Is responsible for preparation and submission of following documents to the BoD and GA:
    - Strategic Plan,
    - Business Plan,
    - Annual Budget of the Central Hub;
    - Annual Report;
    - Risk Management and Auditing;
    - Change Management Plan;
- Signs membership agreements with new Partners after membership approval of the BoD.
- Signs Operational Agreements with NHs and SGs;
- Is involved in development and maintenance of the GMIS and is accountable for its management.

The CEO and other chief officers steer, support and monitor procedures and activities related to service management and portfolio mix of investments and technology development, but they are not directly responsible for these activities. The NHs and SGs are the main actors of management and delivery of services and new products and technologies. The following two sections describe these roles and responsibilities.

3.2. The National Hubs (ECHO Chapters)

The minimum required organisational bodies for the National Hubs (later called ECHO National Chapters) are as follows:

1. Strategy Committee;
2. Director or Coordinator (Chief Executive Officer);
3. Secretariat (Executive Management):
    a. Chief Financial Officer (CFO);
    b. Project Management Officer (also acting as liaison for planning and reporting committees);
    c. Appointed contacts (Liaisons) for partnership development and membership management.

Regarding analysis in previous chapters it is suggested the name “Strategy Committee” to be replace both for NHs and SGs bodies, with the name Partners Assembly. It can consist of all Partners, which are members of the NHs and can also act as management steering committee which directs and monitor the executive management.

The main focus of the NHs is gathering and management the cybersecurity resources into network on the National Level within the EU member states. The emphasis fells on Partnership Development and Partners Engagement and membership monitoring and management.

The important point within the NH goals is to become main centres for approaching important Stakeholders from government, administration and industry and to seek opportunities for involvement in national policymaking, mutual cybersecurity projects, events and training.

Last, but not least the publicity and marketing for ECHO CNO activities to the general public is also central for NHs.

3.2.1. The Strategic Planning Process - high-level procedures

The following procedures can be attributed to the Strategic Planning Process (SPP) and its phases within the NHs:

Define:

The NHs are not involved in Define phase – they are only receiving the Strategic Planning Guidance.

Build:

The participation of NHs to this phase is related to the activities described in COBIT reference model as APO 02: Manage Strategy and the main high-level procedures can be identified as follows:

- Understand enterprise context and direction
- Assess current and target capabilities
- Gap analysis.
- Define and build the strategic plan and road map for the NHs.

Plan:

- Prioritise and allocate resources
- Prepare budget and NHs Business Plan for the next year

Execution:

- Sign Operational Agreement with Central Hub;
- Execute and manage the Agreement.

Monitor:

- Report KPI on monthly, quarterly and yearly basis;
- Maintain, update and monitor Members' Profiles
- Annual reporting.

3.2.2. Specific procedure related to the core processes

The specific procedures related to the core processes in regard to the governance and management scope of the NHs are as follows:

Partnership Development:

The NHs are involved in this process as Sponsors for ECHO Membership candidate organisations and individuals.

The Sponsor is the Appointed contact from NHs members which support the candidate through the Partners Engagement and Partnership Acceptance Procedures. It can be considered as national level within the Central Hub.

Catalogue Management and Customers Relations Management:

Participation to this process is the same as to the Partnership Development – sponsoring members for participation to the SG and respectively to the change of Membership status of the candidate to Full Partner and certification as Service Group member.

Innovation (R&D) Management:

Manage participation to ECHO Programmes, projects and events related to innovation and R&D.

3.2.3. Specific procedures related to the organisational set-up

The specific procedures for NHs are similar like this of the Central Hub and not be described additionally. Detailed description will be provided with development of SOPs in M36 and M38 (January – March 2022).

The participation of the NHs to the procedure of Development and maintenance of Governance and Management Information System (GMIS) is important and includes registering and updating data about following documents:

- NH Members Profiles – containing all data acquired and decisions made during the Partner Engagement and Approval procedures, as well as data about Partner current status and capabilities.
- Industry profiles – results from marketing analysis and from analysis of the NH external environment about national industry related to the cybersecurity.
- National stakeholders and partner's engagement opportunities, containing also information for funding opportunities for programmes and projects on national level.

3.2.4. RACI matrix for the National Hub

The developed NH RACI matrix is shown in

Procedures	Partners Assembly	Director	Chief Financial Officer	Project Management Officer	Sponsors	Partner (NH Member)
Understand enterprise context and direction	C	A	R	R		
Assess current and target capabilities	C	A	R	R		
Gap analysis	C	A	R	R		
Define and build the strategic plan and road map	C	A	R	R		
Approve and sent NH strategic documents to the Central Hub	R	A	C	C		
Prioritise and allocate resources	C	A	R	R		
Prepare budget and NHs Business Plan	C	A	R	R		
Sign Operational Agreement with Central Hub	A	R				
Execute and manage the Agreement	I	A	R	R		
Report KPI on monthly, quarterly and six-month basis	I	A	R	R		R
Maintain, update and monitor Members' Profiles		A	C	C	R	R
Annual reporting	C	A	R	R		
Member candidates sponsoring	I	A			R	
Manage participation to ECHO Programmes, projects and events related to innovation and R&D	I	A	C	R		

Table 5: RACI matrix for National Hub

The meaning of the abbreviation in the matrix are as follows: **R** – Responsible, **A –** Accountable, **C –** Consulted and **I –** Informed.

3.2.5. Description of roles and responsibilities of the National Hub

The roles and responsibilities of the National Hubs and its organisational bodies are summarised in brief below.

Note: All partners from all countries are accepted and certified by the Central Hub, but their participation to the network governance and management is fulfilled through the National Hubs.

The Partners Assembly:

- Consists of all Partners members of the National Hub;
- Steers the strategic and business planning of the NH;
- Approves NH's strategic and business plans;
- Elects Sponsors for Partnership Engagement procedures among its members;
- Approves Annual Report.

The Director (CEO):

- Represents the National Hub and ECHO CNO to the national authorities and business;
- Facilities and supports signing the agreements between ECHO CNO and national organisations;
- Is responsible for strategic and business planning of the NH throughout all phases;
- Prepares and submits for approval NH's Strategic and Business Plan;
- Signs the agreements between Central Hub and National Hub;
- Appoints all executive officers and NH's staff;
- Monitors and reports NH activities;
- Sets-up, monitors and updates Member Profiles;
- Manages participation to ECHO Programmes, projects and events related to innovation and R&D;
- Prepares and submits for approval the Annual Report.

The Director is supported by other executive officers and can appoint additional staff if it is needed, planned and agreed with Partners Assembly.

The Sponsor is responsible for facilitating the engagement procedure for the new Partners, providing coordination and support both for the candidate and for the Central Hub.

The Partners participates in decision-making process through the Partners Assembly and are responsible for adequate and timely reporting for changes in their profiles.

3.3. The Service Groups

In regard to the Strategic Planning Process, the NHs and SGs are almost similar as activities.

The SGs are established to deliver services and this is the reason to suggest that their structure will be different to NHs.

Therefore, the minimum required organisational bodies and roles of NHs, already identified in previous section, have to be extended with minimum two additional roles – Chief Technology Officer and Service Manager.

3.3.1. The Strategic Planning Process - high-level procedures

The SPP procedures of SGs are similar to the NHs. The similarity can be found in steps and methodology of strategic and business planning. Differences can be found in subjects of planning – in contrast to NHs, SGs have to plan for activities related to management and delivery of services.

3.3.2. Specific procedure related to the core processes

The specific procedures related to the core processes in regard to the governance and management scope of the SGs are as follows:

Partnership Development:

The membership requirements for SG participations are specific and are proposed by the management of the group.

Catalogue Management and Customers Relations Management:

- Service-level agreement management;
- Managed continuity, availability and capacity;

Innovation (R&D) Management:

- Implementing technology roadmap;
- Manage participation to ECHO Programmes, projects and events related to innovation and R&D.

3.3.3. Specific procedures related to the organisational set-up

The specific procedures for SGs are similar to the Central Hub's specific procedures and thus are not described again here. More detailed description will be provided with development of SOPs in M36 and M38.

The participation of the SGs to the procedure of Development and maintenance of Governance and Management Information System (GMIS) is important and includes registering and updating data about following documents:

- Service requirements definition repository;
- Quality management plan;
- Partners Acceptance Criteria, Partners capacity and capability tracker;
- Customers profiles and Customer satisfaction surveys.

3.3.4. RACI matrix for the Service Group

The developed SG RACI matrix is shown below

Procedures	Partners Assembly	Director	Chief Financial Officer	Project Management Officer	Chief Technology Officer	Service Manager
Understand enterprise context and direction	C	A	R	R		
Assess current and target capabilities	C	A	R	R		
Gap analysis	C	A	R	R		
Define and build the strategic plan and road map	C	A	R	R		
Approve and sent SG strategic documents	R	A	C	C		
Prioritise and allocate resources	C	A	R	R		
Prepare budget and SGs Business Plan	C	A	R	R		
Sign Operational Agreement with Central Hub	A	R				
Execute and manage the Agreement	I	A	R	R		
Report KPI on monthly, quarterly and yearly basis	I	A	R	R		
Annual reporting		A	C	C		

Procedures	Partners Assembly	Director	Chief Financial Officer	Project Management Officer	Chief Technology Officer	Service Manager
Maintain, update and monitor members' information of capacity and capabilities	C	A	R	R		
Service-level agreement management;	I	A	R		R	R
Managed continuity, availability and capacity of services		A			R	R
Manage participation to ECHO Programmes, projects and events related to innovation and R&D	I	A	C	R		

Table 6: RACI matrix for Service Group

3.3.5. Description of roles and responsibilities of the Service Group

The responsibilities and roles within Service Group are similar to the National Hub in regard to the strategic and business planning, representation to Partners Assembly, signing the agreements with the Central Hub and Partners. Nevertheless, the nature of the processes and work of the SGs and membership procedure make the Service Groups very different from the National Hubs.

The main task of SGs is to sell and to deliver service and this requires implementation of additional management processes at minimum Service-level agreement management and Managed continuity from the COBIT 2019 Framework objects Deliver Service and Support. Future development of the GM model in D3.4 and D3.3 updates, when the vision for services delivery and innovations management will be clearer within ECHO, probably will include other process from COBIT objects of Build Acquire and implement related to development of new services and managing the innovation portfolio mix.

Therefore, it can be argued that the complexity of the SG management is higher than in NH.

The requirements to the Partners onboarding SG should also be higher than requirements for participation to NH. The candidates should provide evidence that they have required experience, capacity and capabilities for delivery of service. Estimation of Partner's capacity is also important from the management point of view – this is an important variable in service delivery. Therefore, SG's Partners have to be Full Active Partners according to the current ECHO classification (See Annex 6).

Therefore, requirements management is also important part of SG's management and it should be considered shared responsibility between each SG and the Central Hub's Advisory Committees. The reason to involve Central Hub is to provide discussion, transparency agreement and stability of network-wide requirements.

Specifics in work and processes, on the other hand, requires at minimum two more roles related to technology and service delivery – these of the Chief Technology Officer and Service Manager.

3.3.6. Development of ECHO Strategic Plan (first draft)

The above detailed Strategic Planning Process will be applied to develop a first draft of ECHO Strategic Plan during the activities of D3.4. This will be used as a demo case and will pursue two important goals:

- *Test and refine the process*. The process will be tested through a simulation game, with individuals from the ECHO partners stepping into the roles and functions as defined above. Through a simulation game, they will do a first run of the process, and the feedback will be used for further refinement (to be reflected in future updates of this deliverable)
- *Develop first draft of ECHO Strategic Plan*. It is vital for the transition process to have a certain level of detail with regards to how to achieve the vision, and this will be provided through the first draft of the Strategic Plan.

The Strategic Plan should define:

- The ECHO strategic objectives and how they link to one another; the links and contributions of objectives on the different levels of the organization – ECHO Central Hub, ECHO Chapters, Service groups. This will be done through Strategic Maps;
- The performance metrics to ensure effectiveness of the processes in achieving the ECHO strategic objectives. This will be done through the Balanced Score Cards methodology;
- Implications for each of the project partners, and requirements to activate the ECHO Strategic Plan.

Based on the experience of the Strategic Planning process implementation through a simulation game to involve all partners the next step is to organize similar exercise for the Partnership development process under T3.5. and both SPP and PD process to be reflected in D3.12.

For 2022 under T3.4. and with WP9 the other 3 key processes – CMCRM and IM will be further developed through simulation games and reflected in D3.13. at M48 (January 2023).

The assessment of the level of maturity of the 4 key processes and established organizational entities of the ECHO network will be reflected in D3.5. at M48 (January 2023) under T3.4 ‘Governance operations’.

3.4. The need for details during the definition phase and agreement points

On the basis of the Strategic Planning Process developed in current deliverable the Strategic Planning Simulation Game (SPSG) was developed as scenario and possible courses of actions.

The scenario suggested increasing demand of ECHO services, based on the increased ECHO CNO’s reputation and new broader scope of the NIS 2, requiring from all types of enterprises new, higher level of cybersecurity.

The SPGS was held on 22-23 April 2021. Other important activities and events were held to introduce and implement the SP process. Some of them are:

- Workshop and Focus Group on Governance Model Implementation, 21 January 2021;
- Interviews with managers May 2021;
- Workshop on Governance Model Implementation Plan, 10 June 2021;
- Event and group discussions on reasons and readiness to join future ECHO CNO; General Assembly 15 July 2021;

- Strategic Plan and Business Model Workshop, 29 October 2021.

The experience gained and implication derived from SPGS and from these events are described in details in D3.4 and in D3.10 (the update of D3.2). It can be stated that the proposed Strategic Planning process is well-suited and answer the need of the possible future CNO. On the other hand, it lacks certain parts in assuring the partners of benefits of participation to the network. The SPP also needs some details in Definition phase.

Several important conclusions for improvement of the SPP are summarised below.

The most important is that the simulation game shows that there are high-level of interest and desire to participate in ECHO transition and change. Nevertheless, the main lesson-learned is that the *level of complexity should be lowered. In case of the Strategic Planning Game the complexity came from relatively long period and engaging on two main phases of the Strategic Planning Process, thus trying to apply two very broad methodologies.*

In more details we can summarise that the planning process is achievable within the methodological and organisational framework, but special emphasis should be set on the awareness, training and knowledge development within the partners.

Second important conclusion is that the strategic planning process do not answer the questions related to representation of Partners within the main bodies of the Central Hub and its Committees. This should be answered during Business model development process and by setting-up the criteria for Partners' contribution assessment and benefit sharing.

In addition, the Strategic Planning process should be made more detailed and each activity should be supplemented by documents – formal or not in order to present tasks and expected results. The chairs of the committees can also participate to the BoD sessions.

In regard to the relationships and connections to other key processes and especially to the membership and Partnership Development process following important aspects should be mentioned:

- Clear the benefits for Partners through Business model development and promotion;
- Set-up more detailed criteria for selection;
- Develop escalation procedure.

The Business model aspect are also important for the CMCR and IM processes in regard to defining possible cost and revenue streams, market share, quality and capacity of the services and competitive environment of the organisation.

It can be stated that the current document envisaged this connection in the Identification phase (see Chapter 2).

The important prospective of the Business model development, agreement and organisation design are given in Chapter 4 and Chapter 5.

4. Business model design

In the period after delivery of D3.3. there were efforts to introduce the SPP and even PDP to partners through D3.4. development with questionnaires, focus groups, simulation game, workshop. Main conclusion is to prepare well defined Business model and (BM) organize early 2022 an event for agreement on the BM in addition to the GM agreed as a prerequisite of the decisions of the partners to join ECHO CNO.

4.1. Business model options for ECHO Network

In 2021 four alternatives of the ECHO CNO Business Model were analyzed by the T3.3 Development Team in the process of development the SPP (presented in more details in D3.10.):

- **"Option 0"** ("Do nothing"): No formal arrangements for organisation after the end of the ECHO project. The assets and other resources are exploited and used within Partner-to-Partner or multi-Partner agreements;
- **"Option 1"** (ECHO Chapter centred network): Loose network of national (e.g., ECHO-based) networks and Virtual Organisations (or other legal forms) for exploitation of main ECHO assets and services (there is no Central Hub in this option; it may include also individual companies);
- **"Option 2"** (Assets joint exploitation network): Network with a Central Hub providing for effective joint exploitation of ECHO assets and services;
- **"Option 3"** (Market exploitation and innovation network)**:** ECHO network with a Central Hub, investing in the exploration of new markets and development of new innovative products, etc.

We could exclude Option 0 from consideration, because it does not suggest specific common Business Model.

Key conclusions to shape the final decision in Spring 2022 on the selection of the Business Model as part of the Strategic Plan are:

- There is enough awareness of the opportunities and strong desire to join defined during the project CNO after its end;
- The cost of discussed alternatives (even for the option "loose network") is mostly related to high fixed cost for personnel, so flexibility is required;
- The full scope of structures envisaged in alternative A0 for National Hubs / Central Hub can be costly, the realistic participation fees will be not enough and there are two options to solve the problem:
- by keeping an office with bare minimum personnel of one appointed organiser and one elected CEO; all other cost – for events, travelling, etc. should be covered by Partners on case by case basis;
- by funding the offices with agreeable share from services revenues, as a charge for the CNO market access and other defined and agreed opportunities;
- Key role of the network will be information sharing for effective decision making, so it will require a well maintained (and probably centralised) informational system with well diversified channels of collecting information;

- The innovation potential is high and can be one of the key added value elements of the Network, so effort to fund these efforts could provide extended revenues;
- The opportunities for the NHs (Chapters) are well recognized and the Network can provide real base for growth if ECHO CNO put specific emphasis on national level;
- The real discussion on cost and benefits for partners could be further developed and cleared, only if based on the assets' exploitation strategies, as well on marketing and innovation strategy and data.

Final selection of the Business model will be accomplished through a workshop held not later than in April'22 after discussion between the decision making (DM) principals of the ECHO partners in order to implement the BM as a core of the GM through the scenarios of the demo cases in 2022. In this document invariant key elements of the Business model are designed, plus focus on ECHO Chapter as a core organizational element (VOs/SGs are designed by participating partners based on the framework provided and ECHO Central Hub is based on a federation / delegation between Chapters).

Regarding the need for details and clear procedure, the following example procedure for the Business model development is given below in accordance with the methodology described in Section 2.

The Chapter 4 and Chapter 5 can be considered as an example document for methodological framework of Business model development. The list presented at Section 4 can be used as example inputs documents for BM development.

Standing Operating Procedure on Business Model development, improvement and acceptance

Purpose of the ECHO CNO

The ECHO CNO develops its Business model as a tool for organisational and business planning. The Business Model is also a clarification document for Customer Identification and Management, Partnership and Membership Development and assessment, as well as for Innovation and R&D Planning.

The Business Model is defined, amended and improved within the SPP process and is linked to the Strategic Plan (Mission, Vision, Strategy), business planning process and ECHO CNO organisational development.

In regard to the Business model the following cost and revenue centres are identified:

Revenue (Profit) centres:

- Service Groups – ECHO assets assuring service provision through Catalogue of services;
- Project offices (in service groups): Capability development (Catalogue of project management services with project support cost (PSC) and internal engineering services (IES);

Cost centres:

- Governance – level of the Central Hub – General Assembly, BoD and Committees;
- Management – both on central level and on national and service groups level;
- General management function – HR, Finance, Office management – for all organisational bodies – BoD and Committees, ECHO Network (ECHO Group, Chapters, SGs).

The Business Model key aspects has to define how the break-even within following categories:

- Customer base and customer segments;
- Catalogue of services;
- Organisational structure of the ECHO Network;
- Customer rates (CR) for categories of personnel;
- Activity Based Costing (ABC) for services (SLAs) and projects (PAs);
- Recognising the Governance model – key decisions in the business process (WP3);
- Recognising seed funding, outside direct customer funding (specific institutional customers, providing funding for the development of the ECHO Network as a strategic asset on national and EU level).

Measures of success

Success of Business Model is the level of clarity and agreement achieved within the process of strategic and business planning. Following KPIs are used in measuring the BM success:

- The customer base and market share analysis accuracy – measured as yearly comparison of planned and achieved results;
- The cost structure and cost management accuracy (including Customer rates) – as yearly based comparison;
- Yearly reports and surveys on Strategic and Business Planning – members' satisfaction.

If the change of levels of the above KPIs is greater than 10%, the Business model and Business planning requires reconciliation within the procedure described below.

Applicable Documents and Standards in ECHO CNO operation

The documents applicable to the procedure are as follows:

- ECHO CNO Mission, Vision and Strategy;
- Governance and Management Model;
- Marketing Analysis and Technology Roadmaps;
- ECHO Assets Exploitation Strategies;
- Customer and Catalogue of services Guides;
- Business Model development guidelines (presented here as Chapter 4 and 5);
- SOPs on ECHO key processes.

The Procedure

The Business model development and acceptance

The Business model agreement procedure should be applied once at the foundation of the CNO and if changes of the CNO's environment or performance are identified.

1. The Board of Directors (BoD) starts the procedure of BM development and acceptance;
2. The BoD assigns the task of developing the guidance (if there is no such accepted guidance) for Business model development and planning to the E-GCS;
3. The E-GCS provide guidance on following aspects within one month:
    a. Strategic goals and planning of the ECHO CNO;
    b. Description of cost and revenue structure;
    c. Expected data inputs and outputs from the ECHO CNO bodies.
4. The E-GCS consults the guidance development with the Advisory Committees if needed on memberships, market analysis, technology and R&D issues.
5. The guidance draft is presented to the BoD, and when accepted is send to the network.
6. The respective organisational bodies provide required inputs – market analysis, expected cost, cost rates, possibilities for innovations, projects and external funding, etc.
7. The BoD with support of the E-GCS and Advisory Committees aggregates the data, analyses and opinions of the organisational bodies and provides within two months the Business model draft to the GA;
8. The GA decides on adoption (or amendment) of the Business Model draft with simple majority.
9. For initial Business model development all respective ECHO Consortium documents and deliverables are applicable.

Regular review (it is performed by Internal audit – follow up organizational element of T3.4./T3.5. teams)

The conditions and issues in regard the BM and business planning are reviewed on yearly basis.

1. Three months before the end of the fiscal year the BoD initiates the review of business model and planning;
2. The E-GCS team review the KPIs levels and their fluctuations, by comparing the planned and achieved results.
3. The review includes the analysis of all cost and profit centres – Central Hub, National Hubs and Service Groups, through the records supplied by the GMIS;
4. If the review shows significant (10% and more) deviation of panned levels the E-GCS team contacts the organisational body and consider the issues with its CEO;
5. The identified problems are reported to the BoD presenting both the E-GCS analysis and bodies' responses.

Problem identification and resolution

Each organisational body on central, national and service groups level can initiate process of BM and planning discussion if some issue is identified in regard to the Business Model key aspects described above. In such case the following procedure should be followed:

1. The BoD considers the issue and tries to resolve it through consultations with the Secretariat, E-GCS, Advisory and Stakeholders Committees and the organizational body;
2. If during the consultation the issue is identified as with network-wide significance, the BoD asks for opinion the respective Advisory Committee (i.e. if the issue is related to competition and customer base, the BoD will request market analysis from Technological and Science Committee), the Service Group or National Hubs;
3. If common decision is not agreed during this discussion by the BoD and organisational bodied, the analyses, opinions and options for resolution are presented to the GA, which decides on the issue with simple majority.

Whom to consult?

The WP3, WP9 and WP1 teams can be consulted on Business model development and acceptance procedure. It will start with a dedicated meeting and will culminate in a workshop with decision making representatives of the partners to agree on the Business Model under WP1 leadership, supported by WP3 and WP9.

4.2. Business model alignment with EU R887/2021

Following above mentioned conclusions the effort was to align the Business model with the EU Regulation (R887/2021) on ECC, Nacional Cyber Competence Centres (NCCs) with a guidance to consolidate the Cybersecurity Competence Centres (CCCs) around ECC and the Network of NCCs.

On the Figure 12 we consider 4 pillars of the Cyber Resilience Ecosystem. These 4 pillars are on two levels – national and EU.

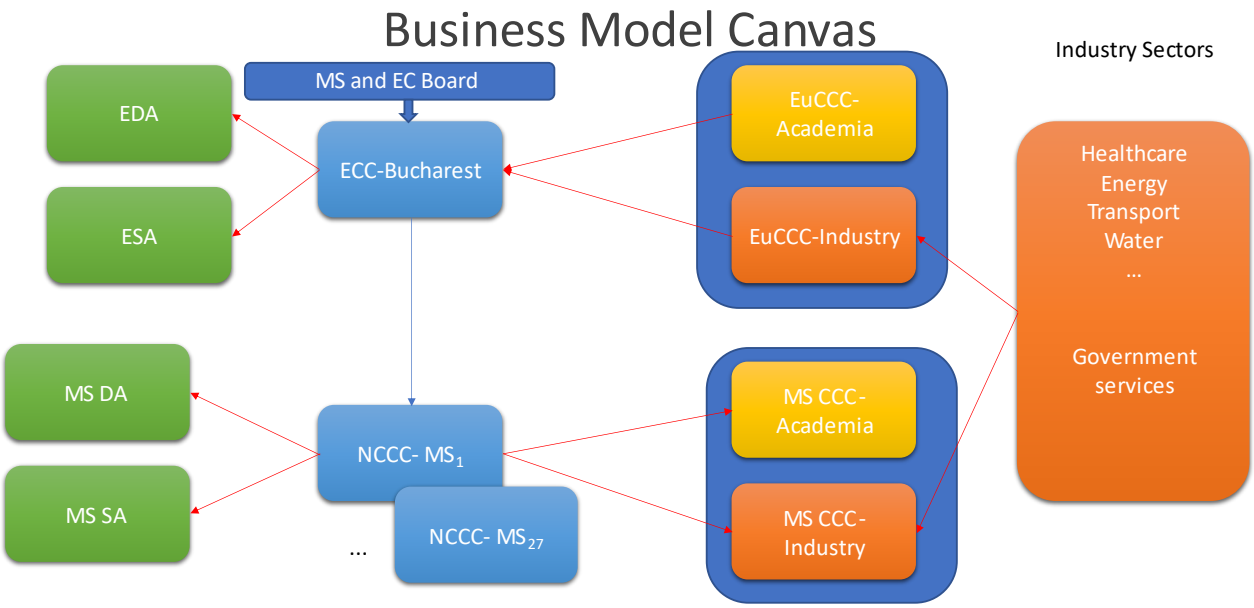


Figure 12. Alignment of the ECHO CNO elements with the R887/2021 network and other EU developments in Cyber domain (incl. defence and space).

The first-on-the-left column is about Defence and Space with EDA, ESA and respective MSs' defence and space agencies, dealing with cybersecurity in defence and space.

This pillar is out of our consideration, but we need to recognize it is closely related with the developments in NATO and our Strategic partners – USA and Canada. As such this pillar is expected to be robust and natural back-up for the developments in other 3 pillars.

Second pillar from the left is established centrally under EU R887/2021 with funding base, coming from Digital Europe/ Horizon Europe (DE/HE) programs with special funding lines on cyber security (and digital transformation, digital competencies). It will institutionally collaborate with other EU agencies as ENISA, JRC, CERT-EU in order to delineate activities from EC perspective and will develop and implement the EU policy and strategy in Cyber domain for competitiveness and strategic autonomy.

Our ECHO project is in the third pillar, recognizing that for specific sectors as transport, energy, health, financial, telecom, manufacturing we could have specialized fourth pillar in parallel with the third one – self-

organizing the CCC outside Defence and Space and EU core under R887/2021. So, will skip the fourth pillar and will focus on the third one in relation to the second one.

The CCC on both National and EU level (as well as in the partner nations outside EU we cooperate with) is segmented as academia, administration and industry. Our goal is with the ECHO project to establish synergy between these three segments with processes and organizational instruments that add value in increased effectiveness, efficiency, economy of scale and innovation potential in order to improve our competitiveness and strategic autonomy.

Administrative segment is normally organized top down under the Cyber Security Council on the government level to implement multi-stakeholder approach and cover NIS, cyber-crime, cyber defence, protection of critical infrastructure's IT core. Cyber defence (and cyber offensive actions as part of the active defence are outside the pillar we are interested in).

So, in the third pillar we need to define the role of industry (for profit) and academia (non-for-profit) organisations as part of one community, operating under the Non-for-Profit (NfP) business model and in relations with the administration, providing public funding (incl. with EU origin – for example DE/HE programs) to the community. Obviously, the BM for the CCC organized in ECHO Network through ECHO Chapters of partners, supporting establishment of VOs/SGs is a complex one to guarantee full transparency and accountability for the public funding and not to compromise profitability of the partners operating in market competitive environment for profit. Our analysis identifies the key invariant elements of the Business model are Funding, Catalogue, Customer base, Costing.

In principle ECHO CNO is a transformational network in the area of cyber security, so it is to provide competencies in 4 areas: process design, organizational design, technology and human capital development in the Cyber domain on the NfP basis for members and external customers. This what partners agree to share over and above their activities on competitive basis in order to support their competitiveness and from the public interest point of view to improve the competitiveness of the EU Ecosystem as a whole and to achieve strategic autonomy of EU in cybersecurity.

Key question is: do we need the third (and fourth) pillar at all? The answer is Yes, because based on economics wisdom self-organization and independence of business from the administration even in highly regulated environment as cyber security is the main engine for innovation and growth. In this construct the academia element of the third pillar is a platform for "safe and fair" collaboration between self-organized business entities and administration (including first pillar on defence and space).

One option to energize the process of breeding this CCC is to establish academia based CCC with a goal to facilitate business collaboration, motivated through public funding of the NfP activities. It means that in the business models we need KPI from public side (administration) and private side (profit-oriented businesses) with trust that academia could be an honest broker between administration and business on one side and among businesses on the other side. Such a way trust arrangements and synchronized KPI for the funding agents are central for the BM.

So, as depicted on the Figure 13 the scope of activities and organizations involved is very broad on two spirals and requires effective cooperation between 4 types of entities for the transformational effort in cyber security in order to reach competitiveness and strategic autonomy with compliance with the good governance practices.

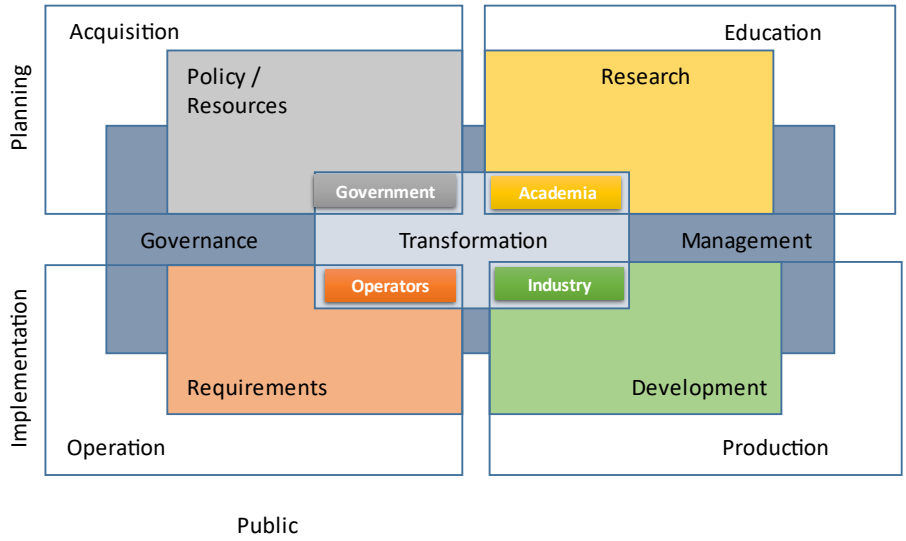


Figure 13. Spiral transformation in Cyber domain: Activities and actors

In **Spiral of Preparation** we need to fund research in support of policy development and resource planning as well requirements definition with careful support to development of innovative solutions in the pre-competitive phase. As shown on the Figure 13 these are 4 interrelated activities with research being the core of others:

- Research – academic institutes;
- Policy and Resources – administration and policy level;
- Requirements – operators;
- Development – industry.

In **Spiral of Execution** we need to start in advance development of people for the new systems, support the effective acquisition process, matched with the production of required solutions, in order, to be transformed in capability and to provide service by the operators. Acquisition is on competitive basis among all able to "produce" required solution and still training of people is of critical importance operator to acquire real capability and effectively operate it to deliver the service. This defines the four activities on the second level of the spiral of transformation (innovation):

1. Education and Training – academic institutes;
2. Acquisition – administration;
3. Operation – operators;
4. Production – industry.

Acquisition is the central element covering the DOTMPLFI model to combine Doctrine, Organisation, Training, Materiel, People, Leadership (and education), Facilities and Interoperability.

Analysing this model of transformation is easy to see the crucial role of Research, Education and Training as a key contribution from Academia and close collaboration with other agents of change. It is another argument to start building the CCC on the basis of academia community for Research, Education and Training (testing and certification as well).

ECHO CNO is to bring on board representatives of all these communities with focus on industry and academia, as the administration/operator (and defence and space as a specific sector) are organised on government

side. So, the Government is represented as an "observer" through participation of some structures in ECHO Network as the ECHO Network is represented in an advisory role in the key Government "councils" in Cyber domain.

Such a way we will have a strong Ecosystem, working on pre-acquisition phase of development of the cyber products and services and providing NfP support to all other phases.

Even as a NfP organization we still have two types of elements, that working together achieve break even.

1. Profit centres:
    a. Service Groups (Virtual organizations): Service provision (Catalogue of services);
    b. Project offices (in service groups): Capability development (Catalogue of project management services with project support cost (PSC) and internal engineering services (IES);
2. Cost centres:
    a. Governance (General Assembly and BoD, Committees);
    b. Management (ECHO Group, ECHO Chapters);
    c. General services (HR, Finance, Office management) – for all elements: BoD and Committees, ECHO Network (ECHO Group, Chapters, SGs).

For the Business Model the key aspect is to define how the break-even is achieved with clarity on:

1. Defined customer base (WP9);
2. Defined Catalogue of services (WP9);
3. Defined organisational structure of the ECHO Network (WP3);
4. Using customer rates (CR) for categories of personnel (WP3);
5. Using Activity Based Costing (ABC) for services (SLAs) and projects (PAs) (WP3);
6. Recognizing the Governance model – key decisions in the business process (WP3);
7. Recognising seed funding, outside direct customer funding (specific institutional customers, providing funding for the development of the ECHO Network as a strategic asset on national and EU level) (WP3)

Practically, we could consider the 4 pilot projects and even Cyber Public-Private Partnership (cPPP) funding ECSO as an example of seed funding to trigger the development of the CCC, with very active role of academia.

As the main features of the business model are service based delivery and customer funding approach- it is essential to define the type of contracts and contracting instruments: SLAs and PAs with Fixed Price Proposal (FPP) and Cost Reimbursable Proposal (CRP).

Being NfP organisation, the ECHO Network preferred approach is to use Fixed price proposals (FFPs), paid in advance with CRP used as an exception when there are legal limitations for the customer to accept FFP.

Break-even is achieved through balancing of the demand and capacity in operation – in three years period, with assessment on an annual basis. Management of the break-even requires an Operating Fund (OF) to keep excess or to cover the deficit. On top it is important to define how the Governance body manage the risk and

recover operating fund every 3 years, if required. Obviously, it is through contribution from the business partners, based on GA decision and through financial instruments of the EC/MSs, based on recognition of the role of the ECHO Network.

Other key requirement for the Business model is to define link with the Strategic Plan (Mission, Vision, Strategy) and business planning process. It is why the SPP was so important to be designed first and to test it with the stakeholders. Actually, the approval of the Business model is an essential part of the governance and agreed BM will reflected in the Strategic plan (as well as Transition (change management) plan (drafted by WP3) as part of the WP1 drafted SP) at M48.

The Business model will be operational when we are able to provide financial planning, execution and reporting mechanism with clear delineation between governance and management – so this aspect is to be reflected in the proposed Business model for agreement in Spring 2022.

In ideal situation the Business model (BM) is to be approved together with the three-year Business plan (demand and capacity with earned revenue to support the ECHO Network), but as this is envisioned by WP9 to be ready at M48 we propose the BM to be agreed on the basis of solid design methodology used in WP3 and initial assessment provided by WP9 for the real operation of the ECHO Network as a business entity (exploitation strategy). This could happen in Spring 2022 with the decision-making representatives of all ECHO partners at the workshop.

4.3. Key instruments of the business model

Key instruments of the Business model, identified above are presented below.

Funding is provided from the external customers, but through membership fee, donations and to the extent possible – governments and EU institutional funding (both Governments and EU could be external customers on customer funding base). It means we have two main categories of funding:

1. From customers for delivering services / execution projects (customer funding):
    a. Services under SLAs (contract);
    b. Capability development and project execution under Project Agreements (contract);
2. Seed funding – from fees and donations:
    a. Fees from Members of the ECHO CNO, participation in events;
    b. Government subsidies;
    c. Voluntary donations;
    d. EU institutional funding.

Use of seed funding is mostly for learning and development (L&D) and Internal processes to improve competitiveness of the ECHO Network as well as for research and development (R&D) of critical areas, not funded by customers.

The seed funding could be supported by the reasonable overhead from the SLA and PA – mostly for innovation and market related R&D.

To start in 2023, we need to rely on at least on several chapters in MSs with ECHO partners joining these chapters and based on initial seed funding from fees and potentially local national funding to structure the ECHO Network of chapters with Central hub and Network level SP, BP/FP at least as a combination of the chapters' plans and readiness to pursue through ECC/NCC funding for further development in the new environment of EU R887/2021. In short without top-down funding from EC most probably the ECHO Network will develop itself bottom up from ECHO Chapters with the membership fee and in kind contributions for partners joining the ECHO supported national CCCs.

From accounting perspective funding could be defined as an **Internal – from customers and from fees and donations:**

- Services under SLAs (contract);
- Capability development / project execution under Project Agreements (contract);
- Fees from Members of the ECHO CNO, participation in events,

and as an External:

- Voluntary donations;
- Government subsidies;
- EU institutional funding.

The Catalogue is an essential for the value proposition with clear offer to customers – market or institutional (as ECC/NCC (European centre of competence / national coordination centre), national cybersecurity entities).

According to ITIL[6] (IT infrastructure library) framework the service portfolio is consisting of all the services:

- In development services;
- Catalogue (active services);
- Retired services.

For us, being a new organization, the Catalogue is central element with what was developed ready to be offered during the 4 years of ECHO project. Of course, what is important externally for the Catalogue – we need to demonstrate that our offer is:

1. Reflecting ECHO specialization (in tools and sectors);
2. Defined to be used in SLA (well specified services to be used for SLA negotiations with the customers);

[6] The ITIL (**Information Technology Infrastructure Library**) is a framework designed to standardize the selection, planning, delivery, maintenance, and overall lifecycle of IT (information technology) services within a business. The goal is to improve efficiency and achieve predictable service delivery.

3. Costed with all added value aspects of ECHO Group/Network (overhead) in order to be able to negotiate a price tag for the SLA.

Services are delivered through Service groups (Virtual organizations), that are:

- Defined around E-assets;
- Providing specific services, listed in the Catalogue;
- Maintaining in-development and retired services in the area of specialization.

It means that VOs/SGs organized around the service delivery provide through the Catalogue enough information, so the ECHO Chapters playing the role of account management entities to be able to negotiate SLAs with the customers in respective MS (using through the Network the opportunity to have VO/SG covering partners from different MSs).

National Chapters involved in ECHO Network define:

- Coverage of EU, with responsibilities to nations not covered by the ECHO Network;
- Localised offer – Customised Catalogue through the National Chapter;
- Offer outside the EU, based on responsibilities defined inside the Network.

In addition to well defined services the Chapters cloud negotiate services, based on providing cybersecurity competences of specialists from CCC (partners in ECHO Chapters) using BOA (Basic Ordering Agreement) between the partner and the Chapter to provide expertise, service, product in the area of ECHO Network competence / mandate.

Customer base is dependent on the services provided. Customer segments are in two dimensions:

- Internal EU and External to EU;
- Government, Industry and Academic sector.

There are Sectors, covered:

- transport, energy, health, financial, telecom, manufacturing;
- Government, Space (defence).

Arrangements with the customers are organized through:

1. SLA / Project agreement for market customers;
2. Seed funding (membership fee, donations, subsidies) for specific institutional customers.

Market assessment is critical to assess the potential revenue from customers by analysing potential revenue by sectors (customers) for different products or services in the catalogue (Catalogue X Customers).

There are several key areas to provide support to customers and generate revenue:

1. Cyber security awareness and Cyber security hygiene training and certification of personnel (WP2);
2. Cyber security certification schemes for the new IT solutions (WP2);
3. Consulting government and industry cyber security strategies, processes, organizations development (WP3).

On the other side with the main focus of ECHO we could consider the **two areas of providing services** developed around:

1. EWS for sharing critical information in improving situational awareness and readiness to protect the ICT assets from cyber-attacks (WP5);
2. FCR opportunities to support training and certification (WP6).

Using the WP9 initial assessment of the market, it is required to have detailed assessment by every Chapter of National Market accessible locally to inform the business planning.

Let us consider we have n identified services and m identified customers with potential revenue of $R_{n,m}$ for the year ahead.

Costing is a central aspect of a business model. As in our domain the main cost is for personnel, we have to identify Customer Rate (CR) that brings us to break-even, but in order to define the CRs we need good projected revenue assessment (Sum of all $R_{n,m}$, with $n \in \{1, 2, \dots, N\}$ and $m \in \{1, 2, \dots, M\}$) organisational structure with Personnel Establishment (PE) and mechanism to calculate (cost) the total cost of earning the revenue expected.

The Total cost (TC) is calculated by the following formula:

$$\mathrm{TC} = \mathrm{P} + \mathrm{II} + \mathrm{EI} + \mathrm{O},$$

where, P – is the personnel cost; II – are Internal investments budget (internal E&T, R&D, support investment), its usually includes 20% of P ($II = 20\%\ P$); EI – are External investments (product or service based) expenditures (the amount of the EI is defined by a market research for available external services and products, required to deliver ECHO Network serviced); O – the Outsourcing cost (activity based) – usually $O = 20\%\ P$.

Key for costing is the labour cost for different categories of personnel. We consider the following personnel contracting categories:

1. Full time employee (full overhead) cost: $FP = SF + FOH$, where SF – is salary; FOH - Full overhead;
2. Consultant – up to 10% of Full time employee (FTE) per each temporary employee (limited overhead) the cost are calculated as follows: $CF = SC + LOH$, where SC – is salary; LOH – Limited overhead;
3. Voluntary partner contribution (VPC) – up to $10\%\ of\ personnel$ – no cost except limited overhead support: LOH.

Personnel Grades categories are as follows:

1. A1-7 for professional experts;
2. L1-4 for legal staff = A1-A4;
3. B1-7 for admin staff.

At the same time, we use personnel functional categories:

1. Management – average A5 (20%);
2. Production – average A3 (70%);
3. Support – average B7 (10%).

B1 has a basic salary – BS, with $B7\ salary = A2\ salary$ and every step in the grade $adds\ 10\%\ till\ A2\ and\ 15\%\ after\ till\ A7$.

It is possible to define key ratios for the Personnel:

1. $BS = competitive\ basic\ salary\ for\ the\ IT\ sector\ in\ MS$;
2. $FOH = 30\%\ SF$;
3. $SC = 120\%\ SF$;
4. $LOH = \frac{1}{2}\ FOH$;
5. $CR = \frac{P}{number\ of\ personnel}$.

Real costing is based on performed activities for Governance, Management, Production and Support type of processes. Based on opportunity to assign activity to a specific customer there are different categories of activities:

- Billable activities directly adding value to the customer (in ECHO SGs)
- Non-billable activities are supporting the organization as a whole or regionally (ECHO Group, ECHO Chapters, partially ECHO SGs)

In principle only production activities are billable, but others could be defined as billable work when well defined in the project/service activity in order to be able to book in the Time Accounting system as contributing to the specific SLA/PA. Sometime personnel performing billable activities is called billable, but in principle everyone performs billable and non-billable activities, so it is not fare to divide the personnel on billable and not-billable as we do for the activities.

P is calculated by using ABC (Activity Based Costing) for services and projects. It means we identify activities in the key Governance and Management processes and Production processes (to reach PA, SLA deliverables through value creation). Next step is to optimize according to the competences of the personnel in the activities and other cost elements in order to get the total cost of ECHO Network operation.

The Time Accounting System (TAS) is essential to provide transparency and data for costing. Performance of the TAS is based on:

- Loading every SLA or Project Agreement as activities to book on;
- Loading every Internal development (R&D, E&T, GS) activities to book on;
- Mark the loaded activities as billable (related to specific customer) and non-billable (overhead category).

Break-even model requires an Operating fund (OF) to balance differences of income and expenditures in certain period. Operating fund is balancing between:

- Invoicing the income on SLA or PA as: $TR = \sum R_{n,m}$, where TR – Total revenue or Income; $R_{n,m}$– revenues from customers $n \in \{1, 2, \dots, N\}$ for $m \in \{1, 2, \dots, M\}$ provided services;
- Payment of invoices on procurement and personnel benefits – TC (Total costs).

So, OF = TR -TC. Break-even is managed on SLA or PA level per customer and in general for the ECHO Chapter, SGs and ECHO Network. Governance and management of the Operating fund is part of the overall Governance model.

Costing is based on Customer Rates (CR) concept. It requires to define the value creation processes and use of the concept of customer value creation by personnel:

1. Direct personnel;
2. Indirect personnel.

Concept of hours spent on customer value creation is linked with the Personnel establishment (PE - organizational structure and categories of staff):

- Billable hours;
- Non-billable hours.

CR provides comparison year after year and express effectiveness and efficiency – earning revenue with less staff and in particular less indirect staff (less non-billable hours).

CR could be used to compare Chapters if we accept that CR are calculated on Chapter basis. For the decision-making exercise in Spring 2022 to agree on the Business model a CR Calculator is required and will be developed under T3.4. (D3.11 and D3.13 Development team).

Presented Business model for ECHO CNO as NfP organization around ECHO Chapters with partners as members and ECHO Central hub (to be defined as physical or virtual) and opportunity to form VOs/SGs from the partners in the CCC, covered by the ECHO Network is focused on break-even in three-year period, being service based and customer funded organisation with potential seed funding for development.

Real implementation of the Business model, even after its approval by the General Assembly (GA) and Project Board (PB) of ECHO Consortium will require forming the GA and election of the leadership of Chapters and Central Hub from the GA. Implementation of the business model is no an administrative process, but a leadership endeavour with many decisions to be taken by the elected leadership and GA accordingly.

To the big extent ECHO CNO is on two levels – around the Chapters on National levels and federating the chapters on EU level around the Central Hub with delegation of authority initially vested in Chapters to the Central hub.

Implementation in addition to forming the GA and electing the leadership includes initial cycles for Strategic and Business planning to accomplished as part of the transition (change management) process.

4.4. Planning and Control of the execution in the defined Business Model

The planning and control is an instrument to implement the BM in the real world, when we have real customers, real capacity in ECHO Network with real stakeholders taking decisions through the selected Governance model and monitoring execution by the management team.

In Phase 1 we have strategic decisions (for the period of at least 5 years), based on agreed Business model and environment to operate it:

1. Demand Assessment by customer segments, based on the Catalogue (WP9);

2. Capacity assessment by E-assets (SGs) and partnership development (WP9);
3. Strategic Plan and organizational charter (WP1).

In Phase 2 we could operate the BM through the annual decisions or activities:

1. Business Plan (WP9):
    a. Operations – Demand/Capacity match (WP9);
    b. Personnel Establishment (WP1);
    c. Internal investments plan (R&D and Innovations management (WP9);
    d. L&D and Personnel development, working environment (WP1);
2. Financial plan (WP9);
3. Execution (RFP (request for proposal): Fixed Price Proposal (SLA), Cost Reimbursable Proposal (CRP))
4. Reporting (KPI Dashboard) up to Annual report (WP9);
5. Communications (internal and external) (WP9);
6. Customer satisfaction assessment (WP9).

Key decisions on the Governance level to support the above planning and control activities and products are:

1. SDG (strategic direction and guidance), Strategic Plan, Partnership development plan (membership);
2. Annual Goals & Objectives (G&O), Governance model operation budget;
3. Directives and internal rules;
4. Demand Assessment;
5. Customer rates;
6. BP – business plan, FP – financial plan, PE – personnel establishment;
7. Innovation plan;
8. Leadership selection and confirmation.

Audit and control add some more elements:

1. Customer satisfaction report;
2. Appraisals of the leadership;
3. Internal audits;
4. External audits;
5. Correction plans (Change management and continuous improvement plans) in response to audits;
6. Annual report;
7. Governance Dash-board of KPI for the Strategic and for the Business plan.

4.5. Organizational design for the Business model

Organisational design follows the design of the key processes and agreed Business model. Main focus is to optimize the organization of the Network for higher effectiveness, efficiency and economy of the operation in providing innovation and competitiveness of the EU (National) cyber security services and as a result higher level of cyber resilience in EU (national level).

We have a primary task to transition the ECHO Consortium to a growing ECHO Network after the closure of the project (potentially in cooperation with other Pilots and ECSO) in close cooperation with ECC/NCCs to consolidate and strengthen the CCCs on national and EU level. To fulfil this task we design key processes, organizational structure, required technology (GMIS and key production / service provision technologies) and develop people to take the key roles identified for the success of the ECHO Network.

Lead role is given to the design of the processes in spiral approach. With this document we consider SPP documented with PDP, CMCRP and IMP to follow. In parallel we design the key structures – with this document the ECHO Chapter (in the framework of GA/PB interim arrangements for the Consortium) with ECHO SGs and ECHO Group (Central Hub) to follow. Meanwhile we work with residual resources in T3.2. under T3.4. to support transition of the Consortium Share Point Portal to GMIS of ECHO Network and under T3.4./T3.5. through the development of D3.2. and D3.4. updates in cooperation with WP2 (E-CSF) to identify and train the people for the key roles in ECHO Network organizational elements. The detailed design of SGs (processes and organization), production (service provision) technology and people for the specific cyber security products and services are addressed by the E-Asset teams in WP2-WP6 led by WP9 exploitation strategy team.

In this context we have the following organizational elements to be designed:

1. **ECHO Assembly and Board (using as a base GA or PB of the Consortium);**
2. ECHO Group;
3. ECHO SG;
4. **ECHO Chapter.**

RACI with the key processes developed:

1. **Strategic planning;**
2. Partnership development;
3. Catalogue management;
4. Innovation management;
5. Potentially: Business planning under WP1 and WP9.

Decision making workshop for the BM will culminate in a workshop to agree on the BM option with approval of the framework for ECHO Chapter and requirements to SGs, ECHO Central Hub in Spring 2022 in order to be implemented till end of the year as a FOC of ECHO Network inside the ECO Project, before closing the project and cutting off the transition from Project to CNO end of January 2023.

Above in bold are the organizational element and process we offer for approval with this document.

5. Organisational design: ECHO Chapters

5.1. Comparison of ECHO Consortium and ECHO CNO documents and structure

Full list of current (until M36 - January 2022) and future (M36-M48) ECHO deliverables is given in Table 16, Annex 7 – ECHO Deliverables and ECHO CNO documents.

Analysing Table 16 we can conclude that main documents for strategic positioning and planning for ECHO Services are or will be in place until M48 (end of the project in January 2023). Documents for requirement management, design, validation and monitoring of services are also available.

Partnership and stakeholder's relations strategic and operational documents are already developed. Engagement Team soon will finish the operational and procedural documents for full implementation of Partnership Development Process within ECHO Consortium.

Innovation and R&D documents related to positioning and planning are available and until M48 strategic planning and operational management deliverables will be available.

In relation to Catalogue planning and SGs' management documents for Assets Exploitation strategy will be available in M45 as a strategic planning guidance.

The overall Strategic Planning Framework is presented in this document (Chapter 2). The Initial Strategic Plan (WP1 in charge) and Transition (Change Management) plan (WP3 in charge) will be developed in D3.15 (update of D3.4.) at M48.

In regard of organisational structure similarity of the ECHO Consortium and future ECHO CNO we can find high level of compatibility in regard to ECHO CNO's Central Hub. The list of ECHO Consortium and ECHO CNO structures are given in Table 14, Annex 5 – ECHO Consortium organisations and ECHO CNO structure.

Many of the Advisory Committees already exists, as well as many of Chief Officers' roles. The NHs and SGs structure have to be considered, developed and established until M48 at least as initial design, but at FOC stage in order ECHO CNO to be functional (depending on BM selected in Spring 2022).

5.2. Transition from project organization to collaborative network organization

The implementation of the governance model and selected processes described in this document is part of project work under D3.4. with its updates. The governance model implementation envisages transition to a different type of organization with higher level of integration.

- The current *ECHO project organization* is characterized as ad-hoc formed partnership between organizations, with different legal status (companies, research institutions.), own strategies and structures, with varying national and organizational cultures.
- The targeted closer integration envisages the establishment of a collaborative network organisation (*ECHO Network*), with its own legal status, strategy and structure (central hub, regional chapters and service groups), and certain level of alignment of organisational cultures (methodology and simulation games / studies to be implemented by WP3 in order WP1 to deliver the legal status, strategy and structure, agreed by General Assembly / Project Board).

Thus, the transition process to network organization represents a major organizational change at several levels:

- *Partner organisations*: current – as well as newly joining – partner organizations willing to further integrate into the ECHO Network will need to take decisions to be reflected in their own strategies and structures;
- *Newly established network organisation*: in essence, the transition will result in the establishment – including legal registration – of a new organization(s), with its own strategy, structure and processes.

This major change at (at least) two levels needs to be planned and implemented carefully, with consideration of the current starting point at partner organizations, the environment and ultimate goals to be achieved. In order to prepare the transition plan, the development team for D3.4. considered the following:

1. Current state – **Current operating model (COM)**, defined in a number of preceding project deliverables, reflecting project organization and procedures

Current operating model

Ad-hoc project organization combining the expertise and efforts of 30 ECHO consortium partner organizations in 16 countries.

The internal management procedures of the project, such as the consortium governance, project monitoring and project reporting are described in D1.1. (Project Handbook). Assessment of the maturity of the COM made under T3.4. as an Annual report on Governance Model (GM) operation for 2019 and 2020. The third assessment for 2021 will be the base for the ADKAR planning, based on agreed BM for ECHO CNO in Spring of 2022.

2. **ECHO vision** – approved by the partner organisations

2023 and beyond

Develop and establish the ECHO Network as an NGO with Chapters and Central Hub to be the ECHO CCC after the end of the project, supporting evolving ECHO service groups around the assets to be exploited.

3. Targeted state – **Target operating model (TOM)**

Target operating model

Processes, Organizational structure, GMIS and training of involved people in order to establish the ECHO Network as a model of EU Cyber Security Collaborative Network (ECSCON) with a central hub, national (regional) chapters and functional entities (service groups) to provide interface with institutional partners and market customers.

The governance and management model of ECHO Network are defined in this document and will be refined in D3.13.

4. Environment imperatives – **cyber-security strategy and landscape on EU level**

There are a number of important strategic documents and partners on the EU cyber security landscape we need to consider and actively seek alignment with.

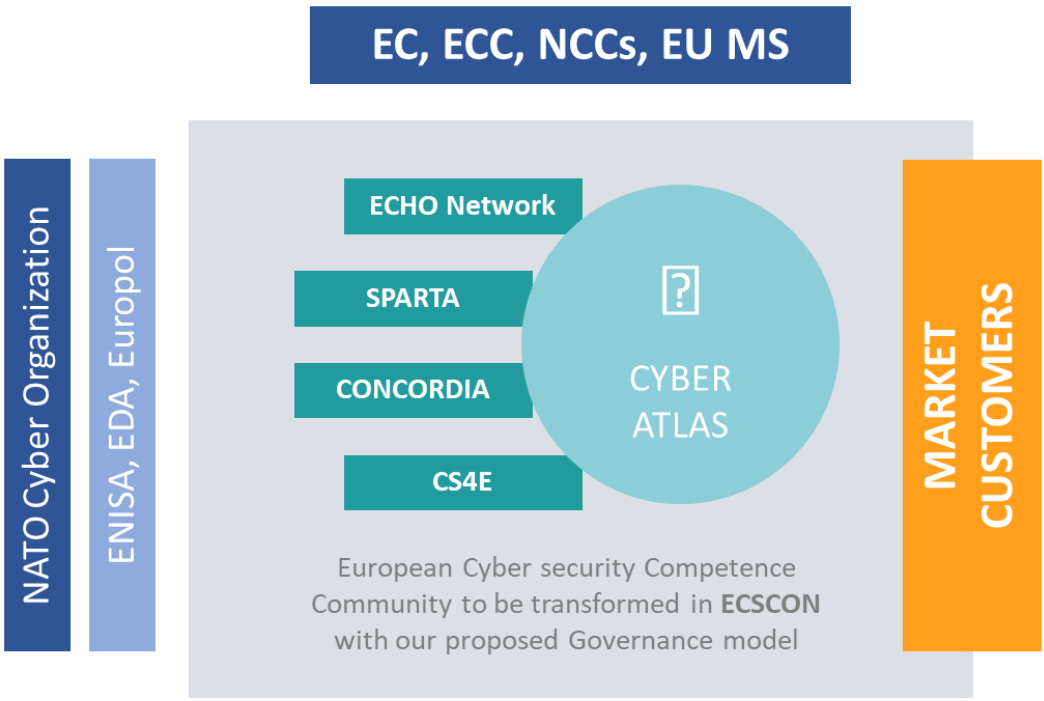


Figure 14: EXCON and EU cyber security context

The EU's Cybersecurity Strategy for the Digital Decade[7] is a key guidance for the development of ECHO Network strategy and operations. In D3.8. last development on EU Cyber regulation is reviewed.

5.3. Implementation Plan

The development of the implementation plan will address the above requirements and will envisage maximum engagement of all partner organizations in order to ensure successful transition from COM to TOM. The implementation plan should answer two important questions:

a) what are the steps needed in order to reach the desired to-be (TOM) state starting from the as-is (COM) from April 2022 to January 2023 passing through IOC end of 2021 (as documented in the Annual report for 2021 on GM operation under T3.4) and FOC at the end of 2022;

[7] High Representative of the Union for Foreign Affairs and Security Policy, "The EU's Cybersecurity Strategy for the Digital Decade," JOIN/2020/18 final § (2020), https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=JOIN:2020:18:FIN. (Adopted on 16/12/2020)

b) how to manage the process to ensure the success of the transition (achieving maturity level 4 by CMMI for the key processes and structures defined in D3.3 – expected level at IOC end of 2021 is 2, so the two steps are to reach level 3 till July 2022 and level 4 in January 2023 for at least 2 processes and 2 structures as in the KPI for WP3).

Setting up a Collaborative Network Organization (CNO) through the transition from a project organization poses various challenges that need to be addressed during the preparation for – and implementation of – the transition plan. Among these are ensuring buy-in in the various project organizations and aligning to a single model regarding: key processes, organizational structure, decision making, performance metrics, responsibilities and authorities. Managing the change from COM to TOM is a critical activity, and is the focus of D3.4. and its updates. Resulting CNO has to be able to engage with ECC and NCCs for funding under HE/DE on cyber security as well as to exploit the market opportunities identified in WP9 after January 2023.

Managing and guiding change in organizations is a proliferous area of scientific and practitioners' focus, and could inform the development of this transition plan. Clarity of the goal and sharing information among all project participants affected by the change, as well as affirmative leadership and dedicated and empowered change management team are among the key factors we will focus on. Leadership for change is provided by PC and PIC, supported by E-GCS (WP3 team) asset under T3.4/T3.5. and validated through WP8 demo of GM functions.

It is important to note the number and differences in experience, ambitions, structures and capabilities of the consortium partner organizations. Preparation of the transition to ECSCON should thus allow for individual assessment of the organizations' preparedness and readiness to proceed with deepening integration, as well as to identify the necessary actions to ensure alignment and smooth transition.

The Transition Plan will:

- Detail the transition plan with specific activities, responsibilities, timeline and milestones (input for T3.4 and for T3.5. in bringing new partners to strengthen our capabilities and capacities);
- Address the key success factors through embedding change management process and techniques. This will be informed by ADKAR methodology as presented in D3.4.

5.4. ECHO chapter initial design

Analysis of the efforts on organizational design and in relation with the proposed approach to the Business model final agreement we identified the ECHO Chapter as the most critical element for the ECHO CNO, invariant to the final decision on the Business Model. Assessment of the developed draft designs of the key processes and identified role for the Chapter is the base for the proposed here organizational design.

Chapters are one or many in every MS with one being the National chapter. Chapters are the core of the National CCC and of course there are at least 3 (4) elements of this community – academia, industry, administration, defence (security) and space. In addition, there are different sectors in industry and specific division of the service providers and service customers (users). The chapters are facilitators for the community development and in relations with the NCC as an entry point to ECC/NCCs EU cyber security Ecosystem.

Chapters are part of the EU (national) network – with/without a central hub (depending on agreement in ECHO). Relations with the SGs (if established) are through the central hub (real, virtual or distributed) and through the national partners in the SGs.

Proposed design is a framework to be implemented in different MSs, according to the national specific elements of the environment. This way the ECHO CNO will be built bottom up (initial idea to work top-down was not supported by the ECHO partners) – establish chapters on National level and form the ECHO Network (with the type of central hub agreed) as a federation of Chapters, bringing respective national members that could decide to form SGs on multinational level in agreement with the Network governance body.

As we have WP3 led by IICT (Bulgaria) with several other partners in Bulgaria – DI, ESI-CEE in academic domain, the first test will be to establish ECHO Bulgarian Academic Chapter to be extended with the arrangements in the industry, administration, security sector and in close cooperation with the notified NCC. We offer same approach to be implemented in other 14 nations, represented with partners in ECHO Consortium and to assess the results under T3.4. (with extending the membership through T3.5.) in 2022.

Following decision taken in the process of GM design (D3.2., D3.3., D3.4.) the ECHO Chapters will be an NGO with focus on E&T, R&D, certification, providing a platform for information sharing and advice on cyber resilience to the members of the community and external customers as well as to be a focal point for the NCC in relation to the community involvement in HE/DE programs.

In this context the organizational design of the Chapter framework includes the answers to the following questions:

1. Membership;
2. Business model;
3. Funding;
4. Leadership;
5. Involvement in SPP;
6. Role in PDP;
7. Roles in CMRM Process;
8. Role in IM Process;
9. Relations with Partners, SGs;
10. Relations with ECHO Central Hub;
11. Relations with the NCC.

National CC communities:

1. **Academic** cyber competence community;
2. **Industry** cyber competence community (sector segments);
3. **Public Administration** cyber competence community (including in the security sector – Defence and Space).

NCC – ECHO Chapter – National CCC relations:

1. 1 or 2 (Academia, Industry) chapters;
2. Role of the Chapter in the Cyber Security Council of the Government (Cyber Security legislation in response to the EU requirements in Cyber security);
3. Consolidation challenge / process.

ECHO Chapter design (based on D3.10).

1. Fee based NfP organization with a potential for project and institutional funding;
2. National Representation of the community (relations with other 3 pilots and ECSO) – relevance to legislation;
3. Bottom-up approach for the ECHO Network (before ECHO Central hub establishment if at all);
4. Initial program of work and its funding;
5. Organizational design;
6. Representation in Cyber Security Council, ECC and relations with ENISA;
7. Relations with EDA, NATO and ESA – direct or through NCC.

As a result, the proposed organisational framework for the Chapter to be established is as follows:

- General assembly (reps of all partners);
- Advisory committees (stakeholders, partnership, technology), elected by the GA;
- Chairman and CEO (elected by the GA);
- COO role, assigned by CEO;
- CFO role, assigned by CEO;
- CTO role, assigned by CEO;
- PDO (partnership development) role, assigned by CEO;
- HR role (incl. talent development) , assigned by CEO;
- PR (public relations) role, assigned by CEO;
- Secretary and administration role, assigned by CEO.

In order to test the design proposed we plan to establish ECHO Chapter – BGR (at least for academia domain, starting with IICT, BDI, ESI-CEE) in relation to NCC-BGR. Motivating some other “pilots” in establishing ECHO chapters – in Belgium, Hungary, Italy, Romania, and potentially in Ukraine and North Macedonia.

Implementation of a National Chapter, consolidating the National CCC and maintaining relations with the NCC is essential to test the overall business model and governance model as other elements – SGs and ECHO Hub in relation to ECC are extensions of the National Chapters and partners in the National CCC on EU scale.

5.5. Design for the ECHO Chapter in Bulgaria

Based on the analysis of the Business model and key processes and organisational entities of the ECHO Network from a Governance perspective and considering the organizational design framework above for the ECHO Chapter, here we propose practical design for ECHO Chapter – BGR.

Key assumptions for the practical organizational design of the ECHO Chapter-BGR (see Figure 15 below), based on proposed above framework are:

- The chapter is organized with a core, based on the academia community with focus on research, education and training;
- The topology of the community is STAR with centre the chapter leadership, secretariat and joining agreements for all the partners, depending on their nature: academia, administration, business;
- Leadership is elected by the General assembly of the Charter, consisting of one representative of every partner;

- Secretariat function s performed on a project base by one of the academic partners, elected by the GA;
- Initially the legal entity of the Chapter is IICT-BAS (largest academic partner with competence in ICT/Cyber area);
- Relations with the NCC are based on an agreement signed between NCC and ICC-BAS on behalf of the ECHO Charter-BGR;
- Relations with the National Defence and Space CCC goes through NCC;
- Members contribute with fees to the FP of the Charter;
- NCC provides institutional funding for the PoW in support to the development of the CCC and improved competitiveness and strategic autonomy as well as project/service-based agreements in the scope of the Chapter's Charter (NfP);

- External customers sign contracts with the Chapter (legally represented by IICT-BAS) for the services and products in the scope of the Chapter Mandate (Charter).

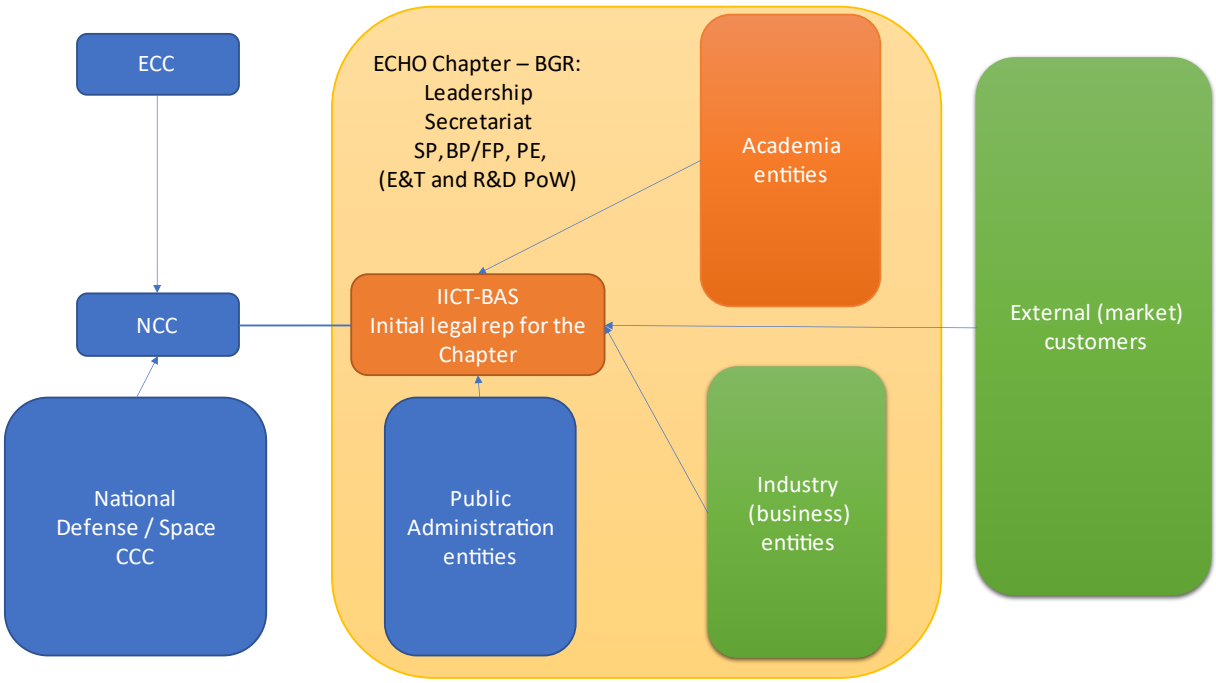


Figure 15. General design of the ECHO Chapter – BGR in relation to the NCC and external customers

In this initial practical implementation of the ECHO Chapter organizational design for Bulgaria, the IICT-BAS is selected as a base, because of the scope of the mandate for the institute (as a National ICT / Cyber resilience institute), its role in ECHO project, hosting the WP3 and established relations with BDI and ESI-CEE – other two academic (administration) and NGO partners from Bulgaria. In addition, the institute is in working

relations with the Union of Private Economic Enterprise (UPEP), as well as with the State Agency e-Government and Institute of Public Administration. The institute in partnership with BDI and ESI-CEE initiated an international conference DIGILIENCE, supported by the Information & Security, An International Journal. In its effort to build CCC, especially in support to SME the Newsletter on Cyber security was established.

The mandated scope of the institute (see Figure 16 below) is providing strong base for initial research and support to education and training (as well as certification) bringing through federation the resources of other partners.

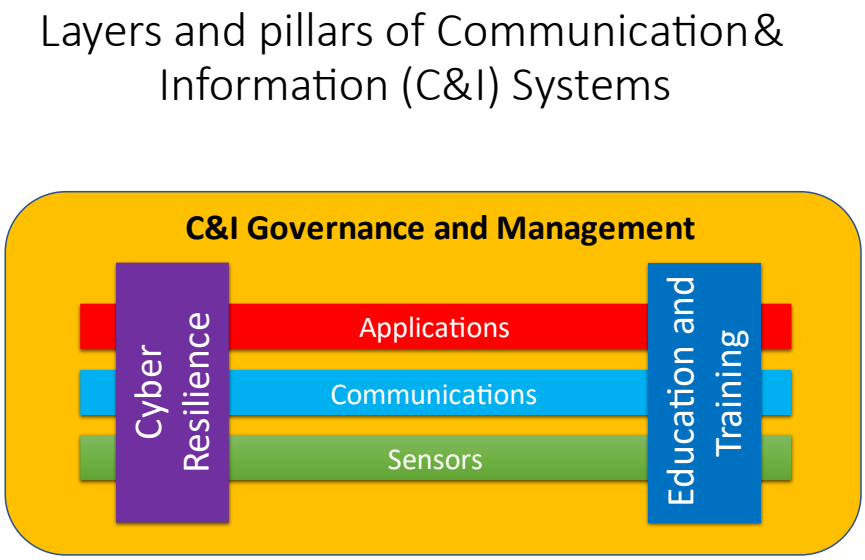


Figure 16. Scope of research and education in IICT-BAS

Based on this comprehensive coverage of C&I competencies the institute is developing itself as an instrument for digital transformation and cyber resilience as shown on Figure 17. A laboratory for digital transformation and cyber resilience is under development as a multi-disciplinary research platform, not just inside the institute, but on national level and development of capacity for EU and NATO projects in the cyber domain.

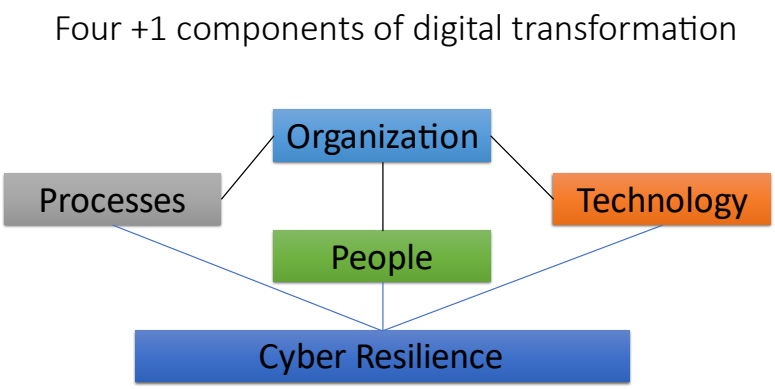


Figure 17. Elements of digital transformation and cyber resilience effort, supported by the IICT-BAS

The core team of WP3 in the institute with participants from other ECHO partners from Bulgaria form the E-GCS asset with focus on Process and Organisation design in the context of GM and BM development process.

There are several teams covering all aspects of ICT (including sensors, autonomous (cyber-physical systems) with PhD and specialists training program for people development in the area of key digital competencies.

Dedicated team on cyber resilience is covering all aspects (process, organization, technology, people) of cyber security in a complex IT systems and organizations.

In this context and following the conclusions in D3.10. (9.9. section) decision in WP3 is to implement the ECHO Chapter – BGR, based on IICT-BAS (in agreement between 3 academic partners in BGR) and to invite partners form Romania, Italy (optionally Hungary, Belgium, Estonia) to implement ECHO Chapter design at their national level (experiment with ECHO Chapter – UKR to test the model outside EU, at partner nation Ukraine is proposed).

Proposed implementation plan is to include:

- Finalize ECHO Chapter-BGR design to be agreed by ECHO PB – January 2022;
- Agree in ECHO Project IICT-BAS to initiate the consultations with NCC to establish ECHO Chapter-BGR as a National hub of the CCC in Bulgaria in line with EU R887/2021 and according to the ECHO GM and BM design – February 2022;
- Form the “initial” ECHO Chapter – BGR between IICT, BDI and ESI-CEE and sign an agreement with NCC–BGR for the consolidation of CCC in Bulgaria – February 2022;
- Develop a joining process for Public administration entities and for Business entities to join the Chapter – February 2022;
- Extend invitation with proposed joining process and agreement to administrative and business entities to join the Chapter – March 2022;
- Add new partners from academia, based on the GM and BM of ECHO and using the results of the National Scientific Program ICT in Science, Education and Security (2018-2021) – March 2022;
- Elect leadership and secretariat for the Chapter, based on the agreed organizational design framework – May 2022;
- Develop and approve Strategic Plan, Business Plan, Financial Plan for 2023 and start operation of the chapter in 2023 – June–November 2022.

6. Requirements for options and design proposals: ECHO Group, Service Groups, Transition plan.

In the previous chapter the focus was on ECHO Chapter design in the overall context of ECHO CNO organizational design. ECHO Service Groups (VOs) and ECHO Group (Central Hub) will be designed, based on decision of the Business Model in Spring 2022 and with the further clarity on Partnership Development Process (PDP), Catalogue Management and Customer Relations (CMRM) process and Innovation Management Process (IMP) in addition to presented in this document design of the Strategic Planning Process (SPP).

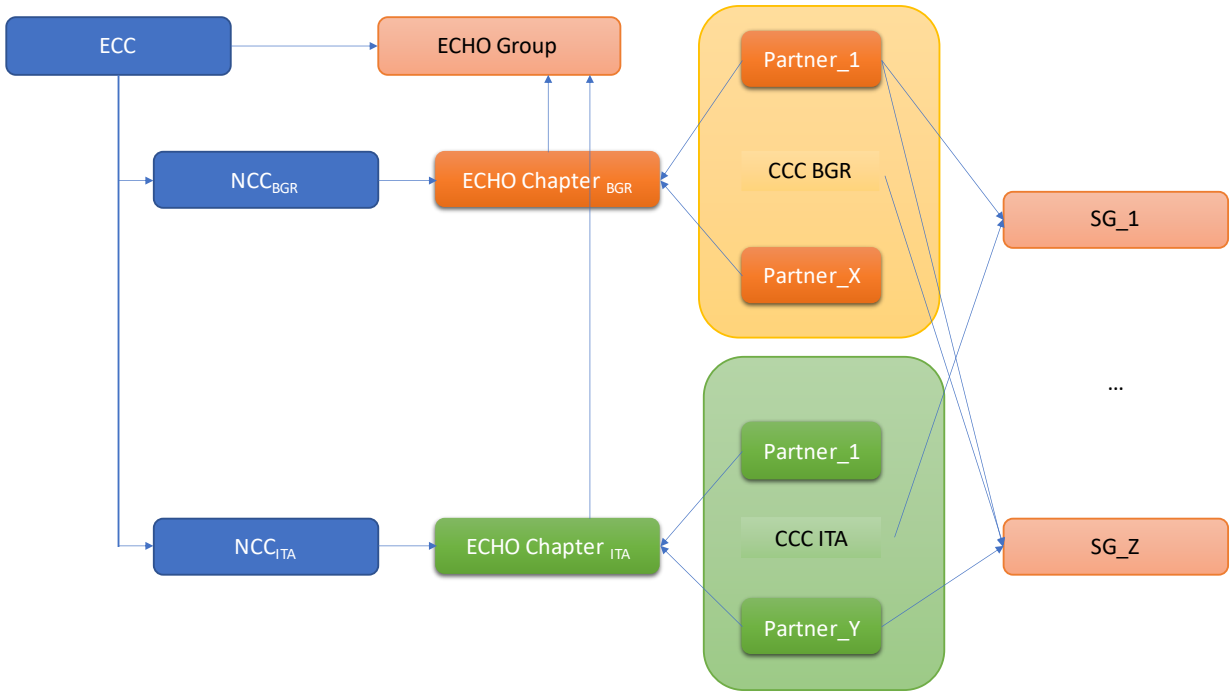


Figure 18. Relations between the organizational elements of the Network of NCCs with ECC and the ECHO CNO elements (ECHO Group, ECHO Chapters, SGs)

In this chapter the focus is to identify requirements to organizational design of these two elements of ECHO CNO (namely SG and Central hub), based on our current knowledge in order to orient WP1 for the design of ECHO Group and E-Assets teams under WP9 (from WP2-6) for the design of respective SGs (as it is shown on Figure 18).

We consider the Network of NCCs with a central hub – ECC as an existing framework with ECHO Chapters and partners from the National CCC as a first step in self-organization around. ECHO project to be further extended nationally and EU wide with forming of SGs as well as forming the ECHO Central hub for coordination – from ECHO Assets exploitation to Innovation management, certification and personnel development.

This will provide guidance for the Transition plan and the D3.4 development team (to working on D3.14 to be followed by D3.15. as updates) for contribution to the design of the key processes and entities under T3.4 and finalize the Transition plan for ECHO Network after the end of the ECHO Project.

In the year ahead with ECC-Bucharest, NCCs, ECSO and 4 projects moving to a consolidated EU CCC with National CCCs in MSs, together with the introduction of the new NIS Directive, the ECHO Project community as project born VBE in cyber security will evolve to be the critical element of the EU Cybersecurity Ecosystem. Further steps will depend on development of the HE/DE (Horizon Europe/Digital Europe) programs and collaboration between the partners of the 4 pilots and ECSO with the ECC/NCCs.

Keeping focus on ECHO Central hub and SGs around two main offers of ECHO – FCR and EWS we need to recognize that the practical work initially will be more on the level of National Chapters with NCCs, supported by the local partners to implement locally the knowledge, generated by ECHO and other pilot projects.

6.1. Requirements for the design of ECHO Service Groups (task for E-assets teams from WP2-6)

From the theoretical point of view, we consider ECHO CNO as Virtual organizations Breeding Environment (VBE). As explained in D3.1 and in D3.8. “The VBE is a long-term association, and its members come from among the organisations meeting the criteria, defined by the VBE creators or administrators. The virtual organisation (VO), on the other hand, is a temporary consortium or association of independent entities triggered by a specific collaboration opportunity, and its partners are selected primarily from among the VBE members.”, so identified E-Assets in WP9, based on the results in WP2–WP6 are base for VOs we call in ECHO Network Service Groups (SGs). SGs could be represented by Chapter (legal entity) or Central Hub (if established as a legal entity), or by some of the legal entities in the VO/SG (based on internal agreement). In any case there is an Operational Agreement for VO/SG to develop, maintain, deliver services (as well as projects or products).

SGs request for design proposal to the ECHO-assets (WP-2,3,4,5,6 led by WP9) include definition of the SG as a specific element of the BM with its:

1. Key E-Assets to be exploited by SG;
2. Implementation of the BM framework for the specific SG;
3. Production structure;
4. Management structure;
5. Support structure;
6. Relations with ECHO Chapter, ECHO Group, including Affiliation Agreement;
7. Legal statute, including Operational Agreement.

According to our general framework for ECHO CNO, it is the ECHO Chapter or partners (of respective Chapter) who identifies an opportunity – opportunity driven, service and product driven or both in order to initiate development of a VO/SG. There could be partners from many MSs involved, that normally is facilitated by the Chapters and if required the ECHO Central Hub is involved.

Once established the VO/SG is a member of the ECHO Network on its own in addition to the members of the VO/SG, who are partners in ECHO Network. In the VO/SG we could attract entities, that are not partners in ECHO Network (and may want not to be partners at all). Under special arrangements and decision of the GA/BoD of ECHO CNO a member of VO/SG could be an entity outside EU.

It is important to stress that in the VO/SG is expected to have "production" (providers) entities, but in principle, based OLA in addition to SLA we could have a user (even customer) as part of the VO/SG, that is an example of strategic partnership between providers and users in improving the services / products to rise the competitiveness and strategic autonomy of EU.

The legal statute of the SG is defined by the legislation of the host Nation for the Chapter initiating the SG establishment.

Recognising that ECHO CNO as a whole is NfP organization we consider VO/SG designed to be for profit with defining the relations between the Chapter and SG being of different nature on the matter of profitability, based on the legislation of the Host Nation of the Chapter. Even in case the SG is focussed on R&D, E&T and Certification on NfP basis there are formal relations with the initiating ECHO Chapter defining the fee for Chapter as part of the costing model of the SG (one of the options is informal donation support from SG to the Chapter).

There are four specific VO/SGs we could pursue to activate as an instrument for the continuous improvement of the ECHO Network itself:

- Governance consulting SG to support a Strategic planning, change management, continuous improvement processes in ECHO Group and extend these services to the external customers (E-GCS) in cooperation with ECC/NCCs – WP3;
- Training services on cyber resilience (and digital transformation at large) and ECHO Network development itself to support personnel development in the network and CCC on national or EU level, support our important partners outside EU in close cooperation with ENISA and NCCs (E-CSF) – WP2;
- Certification services for cyber security products and services – internally for ECHO Network and for the external clients in close cooperation with ENISA and NCCs (E-CCS) – WP2;
- Multisector Analysis Framework services to support assessment of the vulnerabilities of complex systems with an advice to improve the cyber resilience on the level of processes, organization, technology and people in close cooperation with ENISA and NCCs (E-MAF) – WP2.

Other VO/SGs are focussed on specific technologies / solutions to provide certain product and professional cyber security services, that are more technology focussed, instead of methodology / knowledge oriented as above 4 examples.

Our proposal at this stage is to form the SGs as VOs, represented by a leading partner or the leading ECHO Chapter.

6.2. Requirements for the design of ECHO Hub (task for WP1 team)

ECHO Network is with "central element" ECHO chapters, but in order to "organize" the network is still important to have physical or virtual entity for decision making and coordination of the 4 key processes we identified for our CNO (SPP, PDP, CMCR, IMP).

On one side is physical central hub or at least Virtual Development Office (VDO) as VDO is analysed in D3.8. "*VDO (Virtual Development Office) model* provides a *central entity*, namely the Virtual Development Office (VDO), which is tasked to create, coordinate and manage the network of enterprises, supplying some interface with the market and guaranteeing the consolidation of relations of confidence between the actors of the community in a strategic alliance for a long time.

The VDO acts as a unique interlocutor toward the ecosystem of businesses; it favours both the wish of cooperation and the collaboration every time that a collaboration opportunity appears. If one compares a VDO with a VBE, a higher degree of coordination can be observed in the former due to the presence of the VDO entity.

The VDO is proactive by promoting research, innovation, and marketing within the network, particularly due to its nature of a for-profit company, and the collaboration needs to reach a profitable dynamic.". On the other side is a network of Chapters with a GA supported by arrangements between chapters without any permanent and physical entity.

Requirements for design proposal of the ECHO Hub to WP1 (Project management), supported by WP3 (T3.3) include definition of:

1. GA and Governance Board of ECHO Network with an ECHO Group (secretariat) concept;
2. Relations of ECHO Hub with ECSO, other 3 pilots;
3. Organizational design of ECHO Group (secretariat);
4. ECHO Governance and Management Information System (special role of T3.2. to implement the Information Sharing Model and transform the ECHO Project Share Pint Portal in GMIS for ECHO Network);
5. Redistribution of authority and responsibilities between ECHO Chapters, SGs and ECHO Group (Central Hub);
6. Interface between ECHO Group and ECC-Bucharest, ENISA and other EU bodies;
7. Legal statute.

Of critical importance are the ECC – ECHO Group, Central hub (in case of selecting business model with a hub) relations for the exploitation of DE/HE opportunities in ECHO Network as VBE.

As we identified during the first three years of the ECHO project – the top-down design approach is not working very well, so with all the requirements identified in D3.3 and D3.12 the final design of ECHO Group is proposed to be implemented under bottom-up approach with involvement of several Chapters established and all partners, joining the ECHO Network based on decision in Spring 2022.

ECHO Group as a transition from WP1 of ECHO Project Management (very top-down construct) to a central hub of CNO, using the model of VBE is proposed to be managed under the ADKAR model with a lot of work already done for "Awareness" under WP3 (T3.1, T3.2, T3.3) with "Decision" scheduled in Spring 2022 and

follow up activities of building Knowledge, “Abilities” and “Reinforcement” under T3.4 (T3.5 for the new Partners). The Transition plan is drafted already in D3.4 (D3.14), but will be finalised in D3.15.

As for the SGs and even ECHO Chapters the WP3’s E-GCS is providing internal consulting services for the partners and WP leaders.

As the Chapters are in principle kind of central hub on national level, we could end up with nomination of one of the Chapters as a virtual central hub with defined mandate and to move this virtual hub on rotational basis among national chapters, until in the process of continuous improvement of the ECHO Network a separate Central hub, outside chapters is established.

6.3. Requirements for the design of the transition plan (in D3.4. updates)

Following the assessment under T3.4 for the operation of the ECHO Project, Network Governance model and its testing under WP7/WP8 demo cases we gain a lot of experience to adapt the transition plan.

Our conclusions are for the main three phases of transition with one preparation phase and the further phase of continuous improvement:

1. Preparation: agreement on Mission, Vision Strategy of ECHO Network (CNO) with selection of the Governance model and adoption of the Business model;
2. Main Phase 1: Establishment of a several ECHO chapters in MSs, represented in ECHO Project in relation with the respective NCC;
3. Main Phase 2: Consolidation of the National CCC with VOs (SGs) on issues (services, products) supported by the national institutions / national market;
4. Main phase 3: Consolidation of National Chapters in a Network (around ECHO Central Hub if decided) in relation with the ECC-Bucharest;
5. Continuous improvement: establishment of various VOs (SGs) to address the HE/DE and other EU wide funding opportunities, including market driven as well access to the world cybersecurity market.

From this perspective for D3.14. the main focus is to propose simple ADKAR based transition plans for:

- Establish SPP in ECHO Consortium, supported by the role players, defined in the GM for ECHO CNO (virtual ECHO Group, based on WP1 and virtual SGs, based on WP2–WP6);
- Establish ECHO chapter in MS (with practical implementation in 2–3 nations in the next 6 months – start with Bulgaria) in cooperation with the NCC;
- Institutionalise the D3.4. development team as an ECHO CNO Transition team with owner of D3.4. as Chief Transformation Officer.

For the last 6 months (August 2022 – January 2023) to be reflected in D3.15 the main focus is to develop simple ADKAR plan for establishment after closure of the ECHO Projects of:

- ECHO Group (or virtual Central hub, could be just one of the participants, taking the lead (even on rotational basis) with the support of others) in cooperation with the ECC-Bucharest;
    - Establishment of the 3 key processes under the ECHO Group, supported by Chapters;
    - Partnership development (WP3/T3.5.);

  - Catalogue Management and Customer Relationship management (WP9);
  - Innovation management (WP9);

- Establishment of several VOs (SGs) around the key services, developed by the ECHO Project and demonstrated through WP7/WP8 and in support of the Business plan provided by WP9.

It is essential to use T3.4. (and T3.5. for the new partners) to document achieved level of maturity for the key processes:

- Strategic Planning Process (WP1, T3.3);
- Partnership development (WP3, T3.5);
- Catalogue Management and Customer Relationship management (WP9, T3.3);
- Innovation management (WP9, T3.3).

and key organizational elements:

- ECHO Chapters (T3.3);
- ECHO Central Hub (WP1, T3.3);
- ECHO VO / SG (WP2-6, T3.3).

As required, we need to achieve at least two processes at maturity level 4 and two organizational elements at the same level 4 (could be two ECHO Chapters for example).

The cut-off from ECHO Project to ECHO Network (CNO) is in the moment the project is successfully closed with the EC and based on the Strategic Plan (WP1) and Business Plan (WP9) the ECNO Network could start operating, based on the organizational design agreed, supported by the relevant agreements among partners and with ECC/NCCs.

In general, the concluding phase of continuous improvement will be of spiral nature, improving existing processes and organizational elements and adding new ones. Every spiral will have three steps:

- Consolidation of the existing and new elements;
- Rationalization among new elements;
- Optimization for maximum effectiveness, efficiency and economy of scale.

In principle the institutional development of CNO is supposed to be eligible for funding through Digital Europe program on EU level and potentially for Chapters/National CCC to be eligible for National institutional funding.

Such an institutional funding will be measured by its contribution to the improvement of the competitiveness of the cybersecurity products and services developed and offered in EU as well as the level of strategic autonomy of EU in cybersecurity domain.

For simplicity and practical implementation, it is agreed that we need to focus in the first 6 months of 2022 to form ECHO Chapters of volunteering ECHO partners nationally and engage the NCCs. As a next step Chapters will facilitate establishment of SGs (even as a VOs, represented by a partner or Chapter) in order to generate revenue, exploiting the ECHO Assets. The aim is to have at least 3 SGs/VOs end of 2022. In parallel one of the chapters could be elected by the ECHO CNO GA to be a first (interim) ECHO Central Hub in order to declare FOC of ECHO CNO at the end of the ECHO Project and start the new spiral of Process/Organizational development of the ECHO CNO in coordination with ECC/NCCs and other pilots / ECSO.

The main conclusion on transition planning is that with all the theory developed we need to move with the initiative of volunteering partners to engage NCCs and establish chapters in the framework of Mission, Vision, Strategy, Strategic Plan (including agreed Business model) of ECHO CNO, using the last 12 months of ECHO Project to support the transformation of project organization into CNO and align it to the EU R887/2021 and other funding opportunities.

7. Conclusions

This document provides an opportunity for the ECHO project leadership to discuss, consult and decide what may be the future of the ECHO project in the framework of the agreed vision of the ECHO Network. Those discussions started with the Strategic Planning simulation, prepared by several focus groups, questionnaires and interviews and used in the development of the *D3.4 Governance model implementation plan*. They will be facilitated further by consultations on approval of the business model and ECHO Charter design with the intention to agree on establishing several National ECHO Chapters in 2022 to engage NCCs and consolidate the national CCCs, starting with the partners of the ECHO project and initiating some simple SLAs/PAs on national base.

Generally speaking, when it comes to the continuation of ECHO activities beyond the time of project end in 2023, there are four options to choose from:

1. *Do nothing* – no joint activities between partners after the closing of ECHO project;
2. *Register joint ventures* around assets to be exploited – E-EWS, E-FCR, E-MAF, E-CCS, E-CSF, E-GCS, …;
3. *Merge with ECSO and other pilot projects* in one organization to exploit the results of ECHO project by partners in forming ECSCON along the Governance White paper agreed by the Commission (under HE/DE funding);
4. *Develop and establish the ECHO Network* as an NGO with Chapters and Central Hub to be the ECHO Cybersecurity Competence Centre after the end of the project, supporting evolving ECHO service groups around the assets to be exploited

Based on the discussion at the Workshop on Governance Model Description, 17-18 December 2020, **our intention is to explore the implementation of *Option 4***. So, the Business model and Chapter design and defined requirements for the design of SGs (VOs) and ECHO Central hub are aligned with this option 4. The business model itself provides 3 options to pursue, and as the final decision will be made in Spring 2022, in this document, we offer design of the invariant elements of the Business model and Chapter design framework.

7.1. The Concept

The selection of *Option 4* is leading us to the opportunity to consult and agree on a vision for the joint development *of EU Cyber Security Collaborative Network (ECSCON)*.

Key decisions for the ECHO network activation (along ECHO project and beyond) and transition planning in top-down approach are as follow:

1. ECHO Network with a Bylaws as NGO to regulate components and relations among them (for WP1);
2. ECHO Group as an executive body, central hub for ECHO Network;
3. ECHO Chapters on national level, separate legal entities under the Bylaws;
4. ECHO Service Groups – based on agreement between partners around ECHO assets;
5. Relations with EC, ECC and NCC, ENISA, EUROPOL, EDA, EUMS;
6. Relations with NATO;
7. Relations with the Market – European and Global (for WP9);
8. Relations with other pilots and ECSO, JRC (Cyber-Atlas);
9. Relations with other stakeholders in Cyber world.

After discussions at the Focus group meeting in January 2021 as part of the development of D3.4. and follow up activities, the partners asked for more clarity on the Business model and implementing bottom-up approach, starting with several Chapters, consolidating the national CCCs and moving up to the ECHO Central hub accordingly.

Based on the agreement for the vision, starting with the approved EU Cyber security strategy, the decision to establish ECC in Bucharest and NIS 2.0 directive under development, the D3.4 development team prepared the Strategic planning simulation game. The purpose of the game was to test the Strategic planning process and provide clarity on further steps in the design of the other key processes and organizational structures to be reflected in D3.12. (M36 – January 2022) and D3.13. (M48 – January 2023).

In this document, the main elements (as presented in Table 7) of the Governance model are further defined (with a focus on SPP, ECHO Chapter and requirements for the design of ECHO Central hub and SGs) in order to provide guidance to responsible teams to test the agreed solutions during the demo cases under WP8.

Processes		Central Hub	National Hubs	Service Groups
Strategic Planning		1	2	3
Change Management		1	2	3
Partnership development		3	1	2
Innovation Management		3	2	1
Catalogue Management		2	3	1
	Structures	GA	PA	PA
		BoD	Director	Director
		Committees	Executives	Executives
		CEO	Partners	Partners
		Secretariat	National	International
		Stakeholders		
		Partners Representation		
Legend:		1 – Lead; 2 – Support; 3 – Consult.		

Table 7: Process and organisational design summary

7.2. The Transformation

Testing of governance model elements' implementation through the demo cases in WP8 is to facilitate the transition process from WPs to ECHO-Assets (WP2-WP6) and as a next step to ECHO service groups/virtual organisations along the process of establishment of ECHO Group (Central hub, in coordination with European Cybersecurity Competence Centre in Bucharest – WP1) and ECHO Chapters (National Hubs in coordination with the respective National Coordination Centres – WP3/national partners) as presented in Table 8.

WPs	Asset	ECHO Network	Function
WP1		ECHO Group	CEO, COO, CTO, CPO, FC, HR, LA, CSO
WP2	E-MAF	ECHO Group/VO	Operational analysis, Risk Management
WP2	E-CCS	ECHO Group/VO	Certification planning / management
WP2	E-CSF	ECHO Group/VO	Training and certification management
WP3	E-GCS	ECHO Group/VO	Strategic planning and change management
WP4		ECHO Group	Capability (technology) planning, CTO
WP5	E-EWS	ECHO FSG EWS	EWS service provision / capability development
WP6	E-FCR	ECHO FSG FCR	FCR service provision / capability development
WP7		ECHO Group	Demo planning
WP8		ECHO Group	Demo management
WP9		ECHO Group	Business planning, Innovation & Catalogue management, Strategic Communications (PR)
Partners		NHs	Partnership development
Partners		SGs	Capability development and service provision
Timeline			
2019-2020	**2021**	**2022-2023**	

Table 8: Transformation of ECHO project to ECHO Network as a CNO

The process of testing will provide input to Internal Audit Missions under T3.4 to assess the level of maturity of established processes and structures. It will also provide information to develop recommendations to be implemented under corrections plans, provided by the owners of assets in support of the transition to the Service Groups or Virtual organizations and of course for Chapters and even Central Hub, ECHO Group.

7.3. Tasks, updates and schedule

With D3.3 delivery we make a critical step from a more theoretical and consultation process to practical planning of the transition (transformation) and testing of the Governance model. The initial design and Transition plan were documented in updates of this document, *D3.4 Governance model implementation plan* as well as assessed in *D3.5 ECHO Operations status report*. The latter will report at the end of the project the development of Governance model operation and assessment of the maturity of the key processes and structures as well the status of partnership development to grow the future ECHO Network.

The delivery and approval of D3.3/D3.4. half-way through the project presented a crucial milestone in the transition from the phase of Study to the Implementation phase (see Table 9).

The project team has performed a thorough assessment and design (including added task for design of the Business model) and is at the onset of the move to planning for the implementation phase. Even though according to the schedule, task *T3.3 governance model definition* finishes at the time of publication of D3.3., remaining work and deliverables in WP3 will be undertaken under *T3.4 Governance operations*, starting with the development of D3.4 Governance model implementation plan due in July 2021 and all the updates scheduled for M36 (January 2022) and M48 (January 2023).

Months	Tasks						
	T3.1	T3.2	T3.3			T3.4	T3.5
M9		D3.6					
M12	D3.1						
M18			D3.2				
M24				D3.3.			
M30					D3.4		
M36	D3.8		D3.10	D3.12	D3.14		
M48	D3.9		D3.11	D3.13	D3.15	D3.5	D3.5
Phases	*Study*		*Assessment, Design and Planning*			*Implementation*	

Table 9: The way ahead for Governance model development in ECHO project

The collaborative environment of demonstration cases will provide even better integration between WPs and build closer collaborative relations between the teams of different WPs and Partners.

As outlined in the Grant Agreement, D3.2 has presented the selection of the most suitable alternatives for the governance model. D3.3 has built on that research (especially Chapter 9 of D3.2.) and provided a detailed description of the envisioned alternative, its structure and processes. D3.3 extended its support for the transition to D3.4 Governance model implementation plan that was supported with the Workshop on Governance Model Description, 17-18 December 2020, Telco Meeting and is the focus of the kick-off / focus group meeting on 21 Jan 2021 and other follow up activities described in D3.4.

7.4. Key lessons learned

The key lessons from the D3.12. development are as follows:

1. As at M36 we have first updates of D3.1, D3.2, D3.3 and D3.4 and there are obvious relations between respective new documents D3.8, D3.10, D3.12, D3.14. It was important to work even closer as a team and to have a delivery schedule providing enough time for these documents in line to inform each other. It is why we need properly to schedule delivery dates for D3.9, D3.11, D3.13 and D3.15 as well as D3.5 well before M48;
2. Updates give opportunity to improve the ToC and focus more on practical aspects, answering the questions from partners and evaluators, Project officer;
3. Forming a development team from all involved partners with named resources is a prerequisite for successful kick-off, so it will be the focus of planning the next round of updates;
4. Using SCRUM methodology along ToC as a product backlog is essential with at least one Sprint every 2 weeks in the beginning;
5. Essential is to use more interactive forms (even under COVID-19 conditions) in order to involve all partners in decision making process, related to process and organizational entities design;
6. Proper escalation to the Project Implementation Coordinator on monthly basis is required if problems not resolved at two consecutive sprints;
7. Engagement of larger constituency of stakeholders, even from other 3 pilots, ECSO, ENISA and others is desirable (in case of D3.4 and further engagement with ECC, NCCs is important as well);

8. Further steps in design of processes and organizational entities will require assigning in a more formal way the roles of the Chapter and ECHO Central hub leadership (from WP1) with WP3 moving more to a consulting role;
9. Key products from WP9 – exploitation strategy, catalogue, market analysis and demand assessment, business plan as well as test or demo operation of several chapters and key service related SGs (WP2–WP6) are essential to finalize the design and to document initial operation of GM and BM in D3.5, so at least draft document from WP9 need to be ready no-later-then August 2022.

With input from D3.8, D3.10, D3.12, D3.14 it will be important the development team of D3.15 to define the Strategic plan with WP1 with a reference to:

a) customer base and market assessment in the mandate of ECHO Network;

b) exploitation strategy and Catalogue management plan;

c) partnership development plan and Innovation management plan;

d) GM operation assessment and to Transition (change management) plan.

Defined Business model framework need to be approved by the GA or PB in Spring 2022.

Define the Governance arrangements (charter, governance directive, organizational design) to be agreed by project partners.

The D3.11 development team, supported by T3.2 team and WP4 need to define the Governance and Management Information System design and adapt accordingly the ECHO Share Point Portal.

Above steps will inform the Business planning (WP9):

a) Catalogue and Demand assessment;

b) Business plan itself;

c) HR development plan (Personnel establishment);

d) Innovation management plan;

e) Financial plan.

Annexes

Annex 1 – COBIT and CMMI frameworks short description

COBIT (Control OBjectives of Information and related Technologies) is a framework that provides an end-to-end business view of the governance and management of enterprise IT and reflects the central roles of information and technology in creating value for enterprises.

The COBIT framework makes a clear distinction between governance and management. These two disciplines encompass different types of activities, require different organisational structures and serve different purposes.

Governance ensures that stakeholder needs, conditions and options are evaluated to determine balanced, agreed-on enterprise objectives to be achieved, setting direction through prioritisation and decision making, monitoring performance and compliance against agreed-on direction and objectives.

In most enterprises, overall **governance is the responsibility** of the board of directors under the leadership of the chairperson. Specific governance responsibilities may be delegated to special organisational structures at an appropriate level, particularly in larger, complex enterprises.

Management plans, builds, runs and monitors activities in alignment with the direction set by the governance body to achieve the enterprise objectives.

In most enterprises, **management is the responsibility** of the executive management under the leadership of the chief executive officer (CEO).

Key processes and practices for Governance and Management are divided in five domains, as it is shown in Table below.

Domain	Title	Description
EDM	Evaluate, Direct and Monitor	Governance processes and practices that provide for directives from governors to establish what the enterprise is meant to do and to monitor their accomplishment of those directives.
APO	Align, Plan and Organize	Management processes and practices that provide for resource planning and alignment with enterprise objectives
BAI	Build, Acquire and Implement	Management processes and practices that provide for building IT-enabled investments and putting them into service
DSS	Deliver, Service and Support	Management processes and practices that provide for operation of IT-enabled investments
MEA	Monitor, Evaluate and Assess	Management processes and practices that provide for the measurement and communication of the performance of IT-enabled investments.

Table 10: Key domains of COBIT

One of the important features of COBIT still is the facility with which other guidance (such as regulations, other frameworks, and best practices) can be used effectively in conjunction with COBIT.

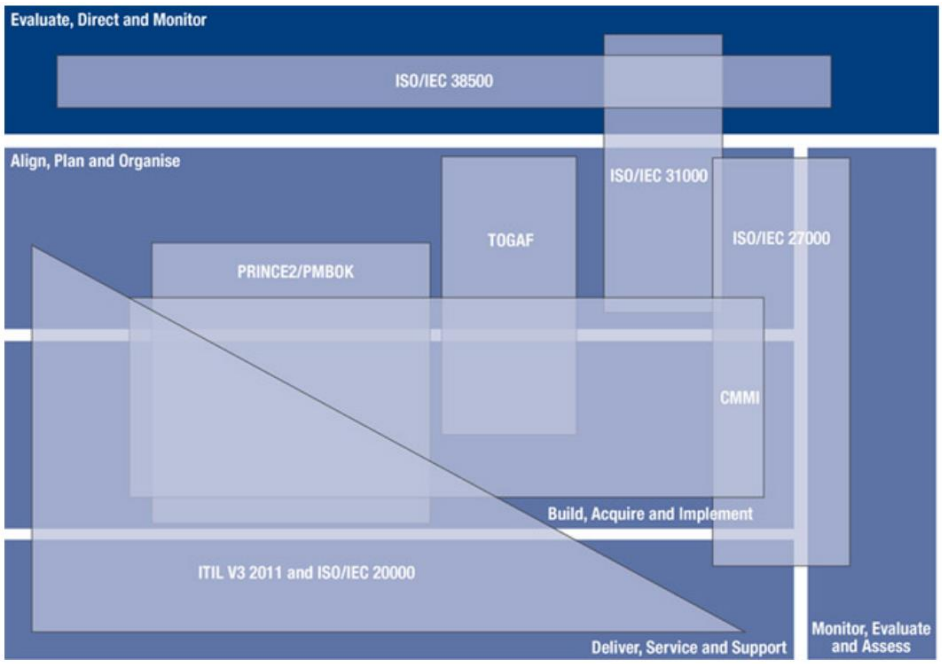


Figure 19: COBIT coverage of other standards/frameworks

Within ECHO, COBIT will be used for the design of the ECHO Governance Model and the CMMI framework will be used to assess the maturity level of the Governance and to plan a roadmap for improvements. Indeed, CMMI is to be used in already established organizations when grounding ideas are very clear.

Capability Maturity Model Integration (CMMI) is a process level improvement training and appraisal program. Administered by the CMMI Institute, a subsidiary of ISACA, it was developed at Carnegie Mellon University (CMU). CMMI provides a set of practices for improving processes, resulting in a performance improvement system that paves the way for better operations and performance. The relations of approaches and standards included and used within COBIT five domains are shown on Figure below.

CMMI is structured in *Capability Areas, Practice Areas,* and *Practices*, as it is depicted on Figure 20. It should be noted that the most relevant connection points between the COBIT and CMMI models are Practices.

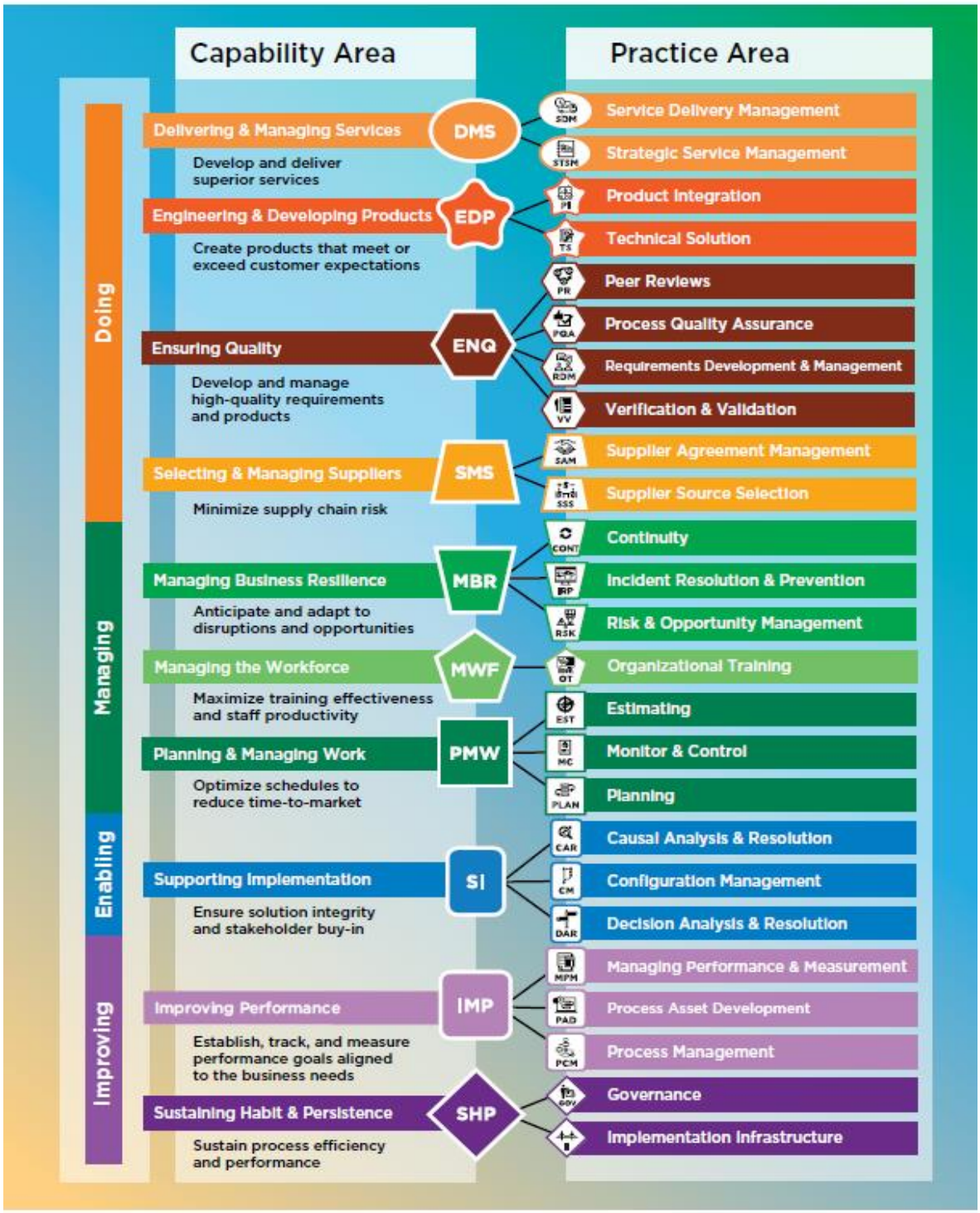


Figure 20: CMMI overview from CMMI-V2-0-Model-At-A-Glance_Digital_ENG_2019-04-29

The CMMI involves following five aspects:

- **Maturity Levels**: a 5-level process maturity where the uppermost (5th) level is a notional ideal state where processes would be systematically managed by a combination of process optimization and continuous process improvement. Maturity levels are: Initial, Managed, Defined, Quantitatively Managed, and Optimizing;

- **Key Process Areas**: A Key Process Area identifies a cluster of related activities that, when performed together, achieve a set of goals considered important;
- **Goals**: the goals of a key process area summarize the states that must exist for that key process area to have been implemented in an effective and lasting way. The extent to which the goals have been accomplished is an indicator of how much capability the organization has established at that maturity level. The goals signify the scope, boundaries, and intent of each key process area;
- **Common Features**: common features include practices that implement and institutionalise a key process area. There are five types of common features: commitment to perform, ability to perform, activities performed, measurement and analysis, and verifying implementation;
- **Key Practices**: The key practices describe the elements of infrastructure and practice that contribute most effectively to the implementation and institutionalization of the area.

Each process area is defined by a set of goals and practices. There are two categories of goals and practices as follows:

- **Generic goals and practices** – part of every process area.
- **Specific goals and practices** – specific to a given process area.

A *process area goals are satisfied* when the processes of a company cover all of the generic and specific goals and practices for that process area.

The determination of a maturity level (ML) rating is straightforward and is derived from the ratings assigned to process areas. The ML determined is the **highest level at which all process areas contained within the ML**, and within all lower MLs, are rated as "satisfied" or "not applicable." Thus, capability levels are cumulative, i.e., a higher capability level includes the attributes of the lower levels. The Table 7, below, defines the basis for capability level ratings:

Capability Level	Process Area
0 Incomplete	An "incomplete process" is a process that is either not performed or partially performed. One or more of the specific goals of the process area are not satisfied and no generic goals exist for this level since there is no reason to institutionalize a partially performed process.
1 Performed	A "performed process" is expected to perform all of the Capability Level 1 specific and generic practices. Performance may not be stable and may not meet specific objectives such as quality, cost, and schedule, but useful work can be done.
2 Managed	A "managed process" is planned, performed, monitored, and controlled. Managing the process achieves both the model objectives for the process as well as other objectives, such as cost, schedule, and quality.
3 Defined	A "defined process" is a managed (capability level 2) process that is tailored from the organization's set of standard processes according to the organization's tailoring guidelines,
4 Quantitatively managed	A "quantitatively managed process" is a defined (capability level 3) process that is controlled using statistical and other quantitative techniques. Quantitative objectives for quality and process performance are established and used as criteria in managing the process.

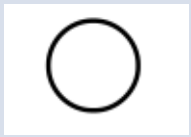
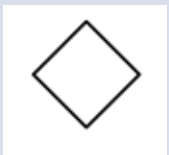
Capability Level	Process Area
5 Optimizing	An optimizing process is a quantitatively managed process that is improved, based on an understanding of the common causes of process variation inherent to the process. It focuses on continually improving process performance through both incremental and innovative improvements.

Table 11: Process Area capability levels

Annex 2 – BPMN Modelling Elements

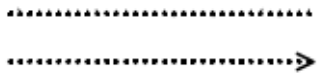
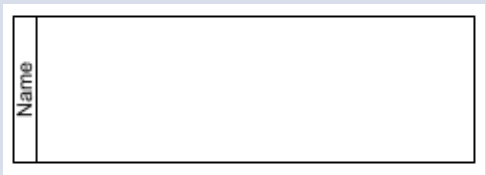
The Business Process Modelling Notation is a standard for process analysis and representation developed by Object Management Group[8]. The notation consists of main elements shown in Table 12. These elements are used to form process diagram which presents the process flow and actors.

Table 12 shows an excerpt from the BPMN v2.0.2 standard (pp. 56-58)[9]

Element	Description	Notation
Event	An Event is something that "happens" during the course of a Process (see page 235) or a Choreography (see page 339). These Events affect the flow of the model and usually have a cause (trigger) or an impact (result). Events are circles with open centers to allow internal markers to differentiate different triggers or results. There are three types of Events, based on when they affect the flow: Start, Intermediate, and End.	
Activity	An Activity is a generic term for work that company performs (see page 149) in a Process. An Activity can be atomic or non-atomic (compound). The types of Activities that are a part of a Process Model are: Sub-Process and Task, which are rounded rectangles. Activities are used in both standard Processes and in Choreographies.	
Gateway	A Gateway is used to control the divergence and convergence of Sequence Flows in a Process (see page 147) and in a Choreography (see page 335). Thus, it will determine branching, forking, merging, and joining of paths. Internal markers will indicate the type of behavior control.	
Sequence Flow	A Sequence Flow is used to show the order that Activities will be performed in a Process (see page 95) and in a Choreography (see page 320).	
Message Flow	A Message Flow is used to show the flow of Messages between two Participants that are prepared to send and receive them (see page	

[8] OM Group, "About Us," accessed January 25, 2021, https://www.omg.org/about/index.htm.

[9] OM Group, "Business Process Model and Notation (BPMN), Version 2.0," January 12, 2021, 538.

Element	Description	Notation
	113). In BPMN, two separate Pools in a Collaboration Diagram will represent the two Participants (e.g., Partner Entities and/or Partner Roles).	
Association	An Association is used to link information and Artifacts with BPMN graphical elements (see page 65). Text Annotations (see page 69) and other Artifacts (see page 64) can be Associated with the graphical elements. An arrowhead on the Association indicates a direction of flow (e.g., data), when appropriate.	
Pool	A Pool is the graphical representation of a Participant in a Collaboration (see page 113). It also acts as a "swimlane" and a graphical container for partitioning a set of Activities from other Pools, usually in the context of B2B situations. A Pool MAY have internal details, in the form of the Process that will be executed. Or a Pool MAY have no internal details, i.e., it can be a "black box."	
Lane	A Lane is a sub-partition within a Process, sometimes within a Pool, and will extend the entire length of the Process, either vertically or horizontally (see on page 304). Lanes are used to organize and categorize Activities.	
Data Object	Data Objects provide information about what Activities require to be performed and/or what they produce (see page 204), Data Objects can represent a singular object or a collection of objects. Data Input and Data Output provide the same information for Processes.	
Message	A Message is used to depict the contents of a communication between two Participants (as defined by a business Partner Role or a business Partner Entity—see on page 91).	
Group (a box around a group of objects within the same category)	A Group is a grouping of graphical elements that are within the same Category (see page 68). This type of grouping does not affect the Sequence Flows within the Group. The Category name appears on the diagram as the group label. Categories can be used for documentation or analysis purposes. Groups are one way in which Categories of objects can be visually displayed on the diagram.	

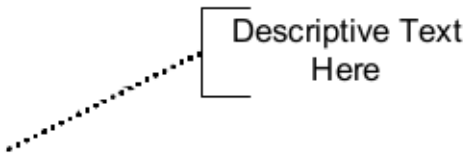
Element	Description	Notation
Text Annotation (attached with an Descriptive Text Association)	Text Annotations are a mechanism for a modeler to provide additional text information for the reader of a BPMN Diagram (see page 69).	

Table 12: BPMN Basic Modelling Elements

Annex 3 – Business Process Management framework

Business process definition

The business processes can be defined as a sequence of events, activities, and decisions within an organisation. The aim of the business process is to deliver a service or a product to its customers.

Events are occurrences that happen in surrounding or internal environment of the process atomically and have no duration. An event can trigger an activity – as an example – receiving a ticket for possible cybersecurity threat within an IT system is the event, which will trigger the activity of checking the ticket by the system administrator.

The process includes decision points or process gateways. These are points in time when a decision is made that affects the way the process is executed. A decision point determines forking and merging of paths, depending on the conditions expressed within a decision. Considering the above example – the decision which will be made by the system administrator in regard to the severity of the threat has two paths possible "Yes" or "No" to take action. In the former case – the administrator will engage on a procedure for preventing the threat and in the latter case – the ticket will be just marked as "read".

A process also involves:

- Actors, including human actors or organizations, which can make their own decisions. Actors can be internal or external.
- Physical objects, such as equipment, materials, products, paper documents.
- Informational objects, such as electronic documents and electronic records.

The process is defined by its inputs and outputs – the product, services, documents, object, etc. which are supplied respectively at the start and at the end of the process activities sequence. The process transforms its inputs to its required outputs. If there are well-defined stages of transformation of the input to the output (intermediate inputs-outputs) then the sequence of tasks which transforms one intermediate input to intermediate output can be grouped in sub-processes.

The analysis of the business processes is supported by the standard of Business Processes Modelling Notation (BPMN), which provides a graphical notation for specifying business processes in a diagram. The main notation elements of the BPMN are given in Table 12, Annex 2.

Business Process Management analysis and lifecycle

The Business Process Management (BPM) framework is a popular and proven methodology for organisational analysis, design and improvement. The BPM is a body of principles, methods, and tools to discover, analyse, redesign, implement, and monitor business processes[10]. The BPM also includes as a main

[10] Marlon Dumas et al., *Fundamentals of Business Process Management*, 2nd ed. 2018 (Berlin, Heidelberg: Springer Berlin Heidelberg : Imprint: Springer, 2018), https://doi.org/10.1007/978-3-662-56509-4.

concept of organisational management a cyclic self-monitored and self-improved process with five main phases shown in Figure 21.

The BPM foundations are based on processes models and performance measures which have to assist the managers in achieving managed processes. It can be argued that BPM is also supported and is "related" to other process-based disciplines, such as Lean Production, Six Sigma, Total Quality Management, **Balanced Score Cards**, **COBIT** and others. In ECHO project we will use COBIT as a framework to define the Governance model and Balanced Score Cards to develop a Strategic Plan.

The process analysis scheme displayed in Figure 21 presents the full cycle of the Business Process Management (BPM) approach for designing, modelling, implementing and improving the business processes within organisation.

Full description of the framework – its origins, methods and other elements is not possible (and not needed) here. Only selected concepts and tools for the needs of the D3.3. (D3.12./D3.13.) are presented and are described briefly below.

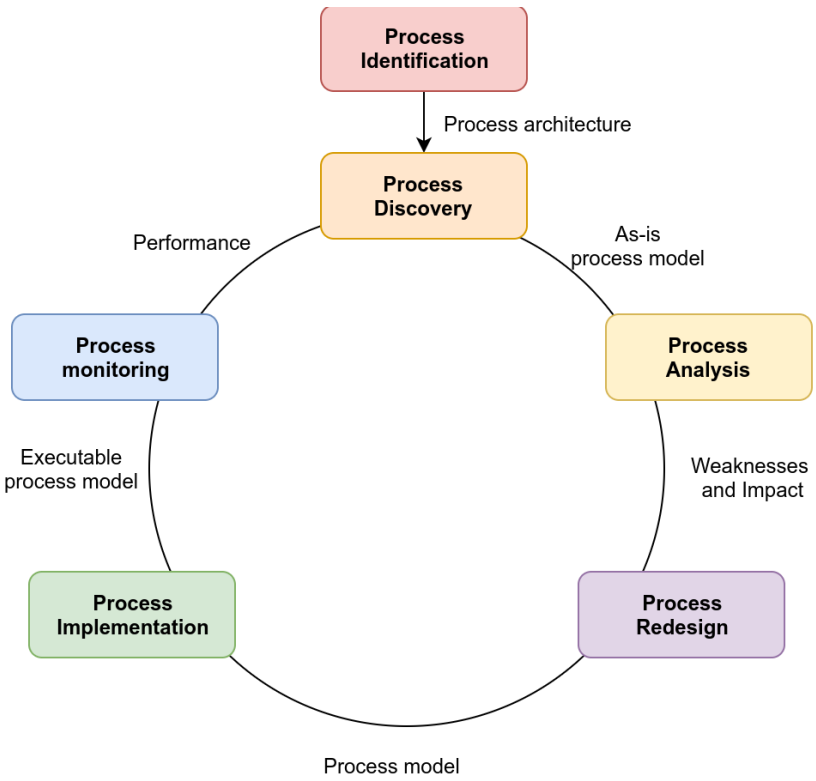


Figure 21: The Business Processes Management framework scheme

The BPM starts with the phase of **Process Identification** – this is a non-repeatable phase for initial identification and selection of processes to analyse, implement and improve. In established organisations, this is done by analysing which processes are important for the management or need improvement. The scope of WP3 falls completely within the phase of the Process Identification phase and prepares the process architecture of the future ECHO CNO for further establishment. As described initially in D3.2. we decided to identify from ECHO project operation and its transformation in ECHO CNO the following processes:

- Strategic Planning (T3.4. with WP1);

- Partnership development (T3.5);
- Catalogue and Customer relationship management (WP9);
- Innovation Management (incl. IPR management) (WP9).

In general, the following Process Identification steps are implemented in WP3 (initially D3.3):

- *Context definition* - The context of the processes was defined in general during the work of WP3: Governance model and T3.3's Governance methodology framework. The part of the first phase Process Identification was completed during the work on D3.2: Governance Alternatives. The baseline provided by D3.2 Chapter 9 is a statement of the design principles and importance of the selected processes. The baseline also provides an initial definition of processes' organisational landscape.
- *Scope and process categories definition* – breaking processes complexity by identifying the scope of activities, involved organisational actors and by categorisation of processes;
- *Analysis of process relations* – defining main inputs and outputs of the processes in terms of documents and identifying the relationships among them. During this step of the analysis the relationships among organisational bodies are considered;
- *Use of reference models* **-** use of ready standardised processes reference model as a basis for process identification. The reference model in the use of D3.3 is the COBIT 2019, and its application is explained below on p. 101.

Processes Identification in existing organisations can be made by analysis of their documents, interviews with managers and employees engaged and other managerial and organizational design technics. Usually, the selection criteria reflect the strategic importance, health and feasibility of the processes. The processes are measured according to their previous performance and metrics.

In a to-be-established, future organisation the important part of structures, documents and procedures do not exist and should be initially identified. Therefore, the Process Identification for ECHO CNO within the D3.3 cannot be considered as a fully accomplished phase, but rather as a guidance to be further refined during implementation. It is going to evolve through the updates (D3.12., D3.13.), especially based on the Annual report on GM operation (under T3.4. in preparation of D3.5.) and using the results of simulation games (T3.3 and T3.4 in preparation of D3.2 and D3.4 and their updates) as well as results of demo cases from GM perspective.

The scope and categories are well-described for the Strategic Planning Process (SPP) and for Partnership Development Process (PD), but there are some uncertainties about the other two processes of Catalogue Management and Customers Relations Management (CMCR) and Innovation (R&D) Management (IM), which will be resolved with the accomplishment of project deliverables related to innovations and assets strategies in WP9.

These uncertainties reflect also on the level of detail of the description of the processes activities and organisational roles.

In order to resolve the structures and to provide starting point for more detailed description tentative procedures for ECHO CNO entities were introduced through simple analogy to COBIT 2019 reference model

on p. 101. Roles and responsibilities were assigned and possible solution for organisational design was developed.

The next step in the Process Identification will be accomplished in D3.12. update in M36, with use of the D3.4., D3.10. results, with an effort for finalize the task in D3.13., based on D3.11., D3.14 results derived from the work of Focus Groups on organisational development, Organisational Capacity Survey and with use of deliverables from other packages related to IM and CMCR.

In D3.12 first detailed models of SPP is introduced and upon agreement on the documents the remaining three processes will also be modelled.

The **Process Discovery goal** *is to gather data and information for processes execution according to developed process models in Process Identification phase***.**

After the decision for transition from ECHO Project to ECHO CNO (considered to be taken in April 2022, based on successful implementation of the Awareness phase of the ADKAR model) the next phase has to be executed in order to analyse the state of the process model implementation and its results (key performance indicators – KPI) under T3.4. on GM operation assessment.

During the **Process Analysis** gathered information from the Process Discovery Phase is analysed qualitatively and quantitatively in order to receive the "picture" of resources, time and efforts used by the processes**.**

In case of the future ECHO CNO the developed SPP model in month M36 will be considered as time, efforts, cost and personnel needed for modelled activities. This information will be available in some extent after D3.14. and after simulation of use cases for SPP. Other deliverables dedicated on market analysis and assets management can be used for D3.13. at M48.

The **Process Redesign** phase aims at optimisation of the modelled and analysed processes.

Two phases of analysis and redesign will be finished and described in D3.13 in M48 for the selected 4 processes on the acceptable level of details.

The preparation for **Process Implementation** phase will overlap in several activities with Process Analysis and Redesign phases during the updates of D3.3 in months M36 and M48. It can be considered as a part of T3.4: Governance Operation, and covered during the development of D3.4: (and its updates D3.14., D3.15) Governance model implementation plan.

The **Process Monitoring** is also part of T3.4. during this phase KPI will be developed and change plan for processes maturisation will be implemented as part of the internal audit missions.

The actual start of the Process Implementation phase will start M40, after formal decision on the Business model, key processes and participation in ECHO CNO by partners as part of demo cases and will be a subject of internal audit missions, but real life implementation will be after the Project end, when ECHO Project will continue as ECHO Network.

Use of reference models

It is difficult during the process analysis to identify processes of an organisation and the levels of a process architecture starting from scratch. Many times the organisational change is done by ad-hoc decisions and new structures and activities are introduced without solid analysis. It might be helpful to use reference models as an aid. It is even more helpful to use reference models in cases of establishment of new

organisations. Of course in case of ECHO CNO we have ECHO Project organization as a base for the process of transformation.

There are many reference models developed by a range of industry consortia, non-profit associations, government research programs, and academia. The best-known examples are the Control Objectives for Information and Related Technologies (COBIT)[11], Information Technology Infrastructure Library (ITIL)[12], Process Identification AXELOS[13], the Supply Chain Operations Reference Model (SCOR)[14] among others.

Reference models standardise the diversity of what can be seen as different processes on the basis of good practices for Business Process Management. The standardisation is applied to characteristics, delivering of products, and how processes performance can be measured.

The use of reference models provides several benefits.

First, reference models can serve as a starting point to identification and classification of major process areas, thus directly supporting the identification of strategic, regulatory or high-level industry-related processes.

Second, reference models may be useful in providing inventory check of existing processes. For example, an organization can use COBIT 2019 to make a processes inventory in use, to mark those they do not use, and to add its own unique or specific processes.

Third, reference models provide a standardised vocabulary that is useful for labelling processes, providing common understanding of governance and management terms, metrics and products within the organisation.

Brief description of COBIT 2019 Framework

One of the most comprehensive framework for analysing enterprise governance and management models is the Control Objectives for Information and Related Technologies (COBIT) framework, developed by Information Systems Audit and Control Association (ISACA)[15].

The COBIT 2019 also can be considered as a very comprehensive process reference model which can be used for Process Identification.

[11] ISACA, *COBIT 2019 Framework Governance and Management Objectives*.

[12] Norita Ahmad and Zulkifli M. Shamsudin, "Systematic Approach to Successful Implementation of ITIL," *Procedia Computer Science* 17 (2013): 237–44, https://doi.org/10.1016/j.procs.2013.05.032.

[13] AXELOS, "What Is AXELOS," About Us, AXELOS, accessed January 18, 2021, https://www.axelos.com/about-axelos.

[14] APICS, "SCOR Supply Chain Operations Reference Model," SCOR Framework, accessed January 18, 2021, http://www.apics.org/apics-for-business/frameworks/scor.

[15] ISACA, *COBIT 2019 Framework Governance and Management Objectives*.

COBIT (as most of the industry frameworks) is a good practices based framework which is oriented toward good governance of IT related activities within an organisation and the framework is in development since 1996.

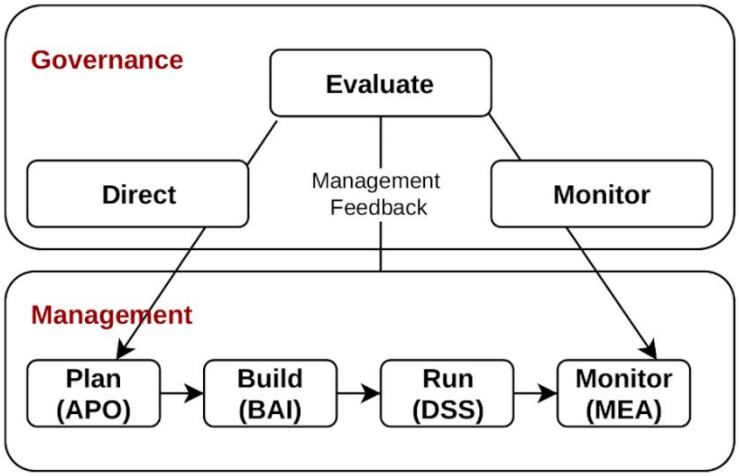


Figure 22: Governance and management objectives relationships (COBIT)

It comprises of five main principles and many interconnected sub-frameworks for implementing the principles and for managing IT processes.

The COBIT framework divides the processes into governance and management areas. The two areas contain a total of 40 objectives in 5 domains, organized as follows:

1. Evaluate, Direct and Monitor (EDM);
2. Align, Plan and Organize (APO);
3. Build, Acquire and Implement (BAI);
4. Deliver, Service and Support (DSS);
5. Monitor, Evaluate and Assess (MEA).

The domain relationships with the governance and management of the enterprise are given on Figure 22 (The source of the figure is COBIT 2019 Framework: Governance and Management Objectives ISACA, *COBIT 2019 Framework Governance and Management Objectives*, 2019.). Each governance or management objective supports the achievement of alignment goals that are related to main enterprise goals. The main enterprise goals are mapped through specific "cascade" to align to the COBIT objectives, which is also the first element of COBIT.

COBIT 2019 defines the following components in order to build the organisation's governance model and system: goals cascade, processes, organisational structures (and responsibilities – in RACI matrix), policies and procedures, information flows, culture and behaviour, skills, and infrastructure[16].

[16] In COBIT 5 the seven components were called "enablers".

Components of the governance model can be either generic or modification of the generic component. Generic components are described in the COBIT Core Model and can be applied in principle to any situation with appropriate customisation.

Focusing on processes' components, each governance and management objective includes several process practices. Each process has one or more activities. Example metrics accompanies each process practice, to measure the achievement of the practice and its contribution to the achievement of the overall objective[17].

The organisation implementing COBIT principles can choose (and modify according to the generic standard) process component in order to implement initiative for their monitoring and improvement. Thus, applying practical guide and measures toward implementation of organisational change, while staying within good practices standard.

The process component in COBIT also has its implementation part – monitoring and improvement of performance, which can be done by defining and controlling for processes' maturity. Here COBIT evaluation is based on use of Capability Maturity Model Integration (CMMI) levels. The use of COBIT Framework and CMMI is already discussed within the Project in ECHO First Annual Report. An excerpt of the report can be seen in Annex 5 – ECHO Consortium organisations and ECHO CNO structure.

Use of COBIT 2019 in D3.3 Process Identification

The use of the COBIT 2019 is as a general framework with other related ISACA documents introducing design, performance, implementation and tailoring to the IT goals and processes.

The specific aspects will be analysed in D3.3 updates if the need is identified to stay close to the standard.

The Figure 23 presents the use of COBIT Framework components as source for Process Identification and other phases described in Chapter 3. For D3.12 focus is on SPP in order to provide a model for implementing the approach for other three processes in D3.13.

[17] ISACA, "COBIT 2019," 2019, http://www.isaca.org/cobit/pages/default.aspx.

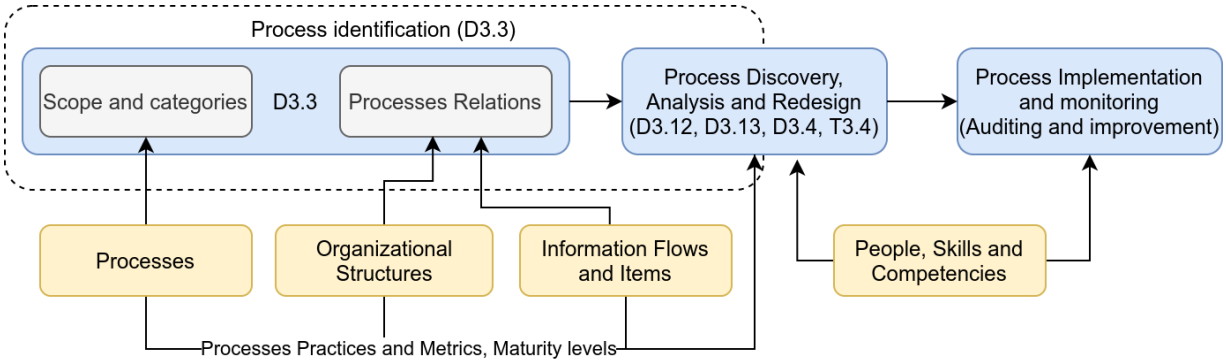


Figure 23: COBIT Components and process analysis phases.

The Team Organisation

As already mentioned in previous sections the Process Identification is not an ordinary task and requires both certain level of knowledge about the methodology of the analysis and certain level of experience within the organisation and with its processes. Thus two fundamental roles were defined in a process identification: The Process Designer (the process analyst) and the Process Owner (the process domain expert).

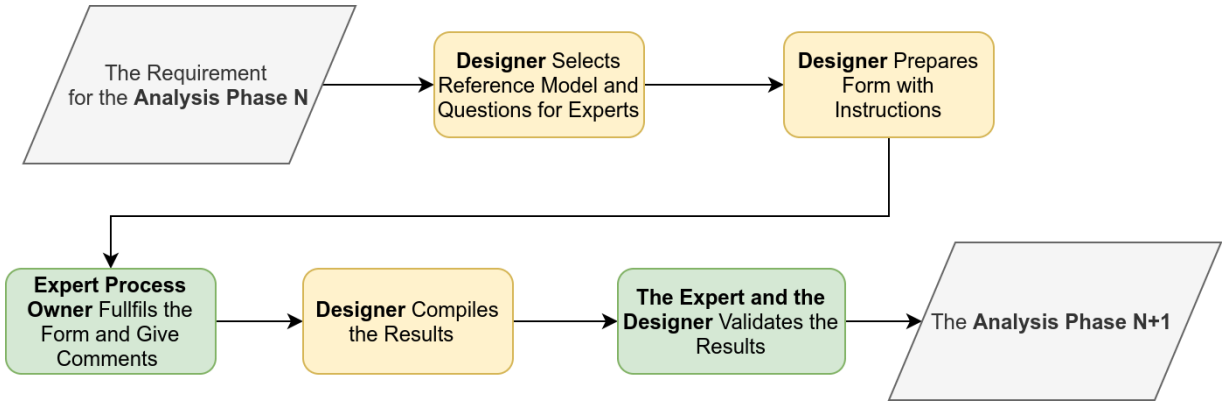


Figure 24: Workflow for gathering and use of Experts Processes Owners' Opinion

The process of developing forms and performing the interviews is shown on Figure 24.

The main issue for organising the teams is the process analysis knowledge needed. It could not be provided by several meeting, thus the forms and clear guidance should be provided to the teams by experts. At the same time after 20 months of ECHO implementation the expectation is that Process owners have good understanding of the respective processes and people involved from other WPs are well aware of COBIT, ITIL, Enterprise Architect and BPMN.

The structured interview type of the identification task was chosen. The interviews were based on forms developed by the Designers. Forms include requirements for description, which then can be compiled in description of each phase results.

The interviews were performed in close cooperation with the Process owner, but was led by the Process designer.

Annex 4 – Organizational design framework.

This Annex presents the organizational design resulting from the application of the process analysis and process discovery outlined in previous Annexes. The resulting organizational design further details the option selected in D3.2. and reflects the level of agreement and understanding of the ECHO partner organizations at this stage of the project implementation.

Organisational structure

The organizational design on the three levels – ECHO Central Hub (ECHO Group), ECHO Chapters and ECHO Service groups – provides enough detail and consensus to allow for the preparation for the initial planning of the implementation of the GM model (D3.4). The transition from project to collaboration network organization involving the initial partner organizations and growing simultaneously with newly joining partners is expected to result in further refinement and amendment of the proposed organizational design, and will be reflected in subsequent updates of D3.3. as deliverables at M36 (focus on ECHO Chapter) and M48 (ECHO Group and ECHO SG – if accepted BM include them).

The general scheme of the ECHO CNO organisational bodies and their relationships is presented on Figure 25. It envisages the establishment of three types of bodies in the context of BM option 3 (in option 1 the central element is ECHO Chapter and for option 2 type of SSGs could exist). Even for option 1 virtual ECHO Group exists as GA, MoD and advisory committees not supported by permanent executive element, but working on voluntary basis, supported by ECHO Chapters, electing them.

The Central Hub (ECHO Group) is the overall governing and coordination level for the whole collaborative network organization.

The National Hubs are established and gather ECHO partners and members on national level, and provide for contact point and alignment with relevant national authorities and organizations, such as NCC, governments with regards to national cybersecurity strategies, national-level customers etc. National Hub could be one for Industry and Academia or to have separate organizations, working in collaboration. Industry hub could have sections for different sectors. Relation with Defense and Space sectors is a separate aspect to be considered.

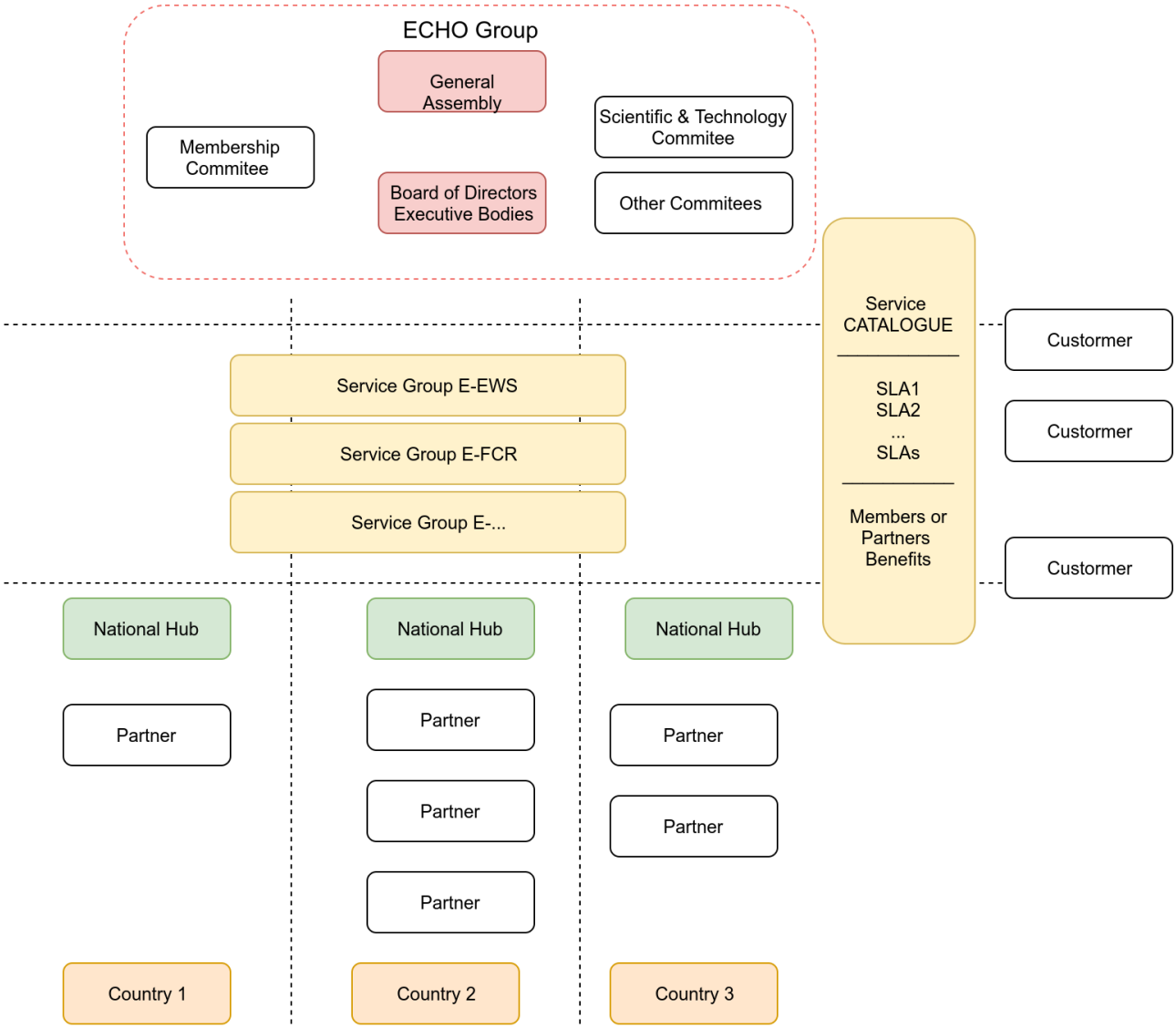


Figure 25. ECHO CNO structure initial identification

The *Service Groups* are formed internationally on the basis of service development and delivery and reflect the specialisation and capabilities in certain areas. The available services are presented to potential customers through the Service Catalogue, which is the basis for provisioning the service delivery through the Service-level Agreements (SLA). It is important to define also the benefits for ECHO members and partner for use of ECHO services. Organizational design of the SSGs is a responsibility of the members, following the general design of the GM for ECHO CNO and agreed Business Model. SSG could be Virtual organization or separate legal entity.

ECHO Group (Central Hub)

The ECHO Group provides overall governance and coordination for the virtual network organization.

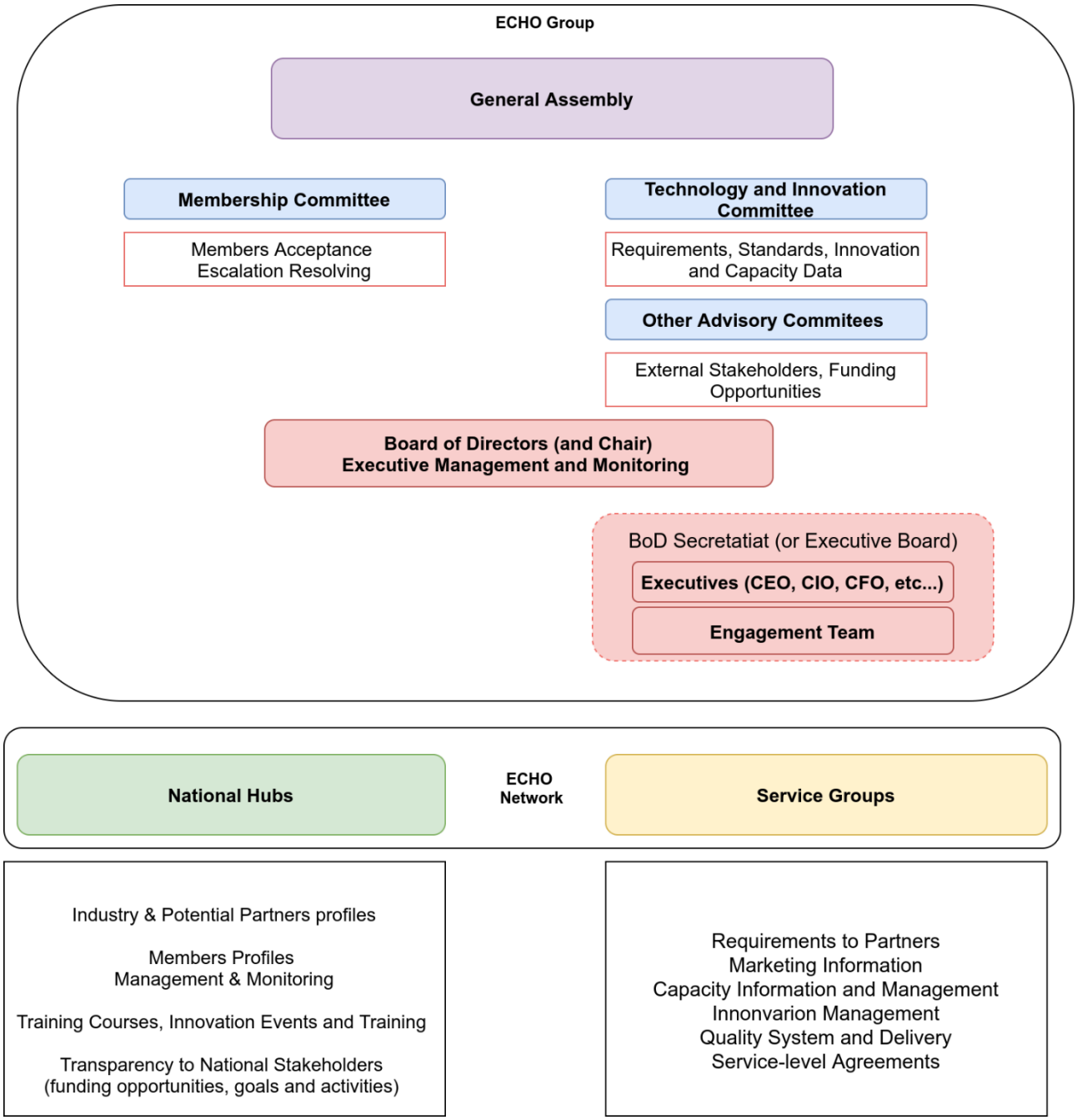


Figure 26. Process areas of governance and management

The envisaged bodies on this central hub level are designed to enable the implementation of such governance and coordination functions, and support the effective and efficient operation of the network.

- *General Assembly* (GA) – is the "legislative" body of the ECHO CNO, supported by the Central Hub with all responsibilities for strategic direction, approval of the strategic framework and monitoring of all other governance and management bodies of ECHO CNO. All ECHO partner organizations are represented in the General Assembly. The decision-taking process and procedures will be defined in legal documents (outside the scope of this deliverable) and under WP1.

- *Board of Directors* (BoD) – is responsible for steering, coordination and monitoring of the strategic planning process. BoD is accountable to GA and is supported by Secretariat of the BoD (or Executive Board) which consists of Chief Executive Officer, Chief Financial Officer and other chief officers with responsibilities for functional areas). The BoD is elected by the GA, and has representative functions to stakeholders, partners and key customers – such as European Commission, ECC, etc.

The work of GA and BoD are supported also by special committees to be established on ECHO Group level. The advisory committees identified are Membership Committee and Technology and Innovation Committee. The D3.2 Alternative 0 suggested also to have Financial Committee and Audit Committee. During the analysis the Stakeholders Committee was suggested as a connection to important international stakeholders, which can provide funds and know-how.

The special committees (*Advisory Committees*) are formed with a special purpose and could be permanent or bounded by certain time period (i.e. exist until achieving a defined goal or completion of a defined task). These are created by request of either GA or BoD, with the approval of the GA

- The *Membership Committee* plays role in member acceptance, evaluation and certification. During the execution and monitoring phases, the Committee should also be the main actor in settling the conflicts between members and ECHO CNO in Escalation procedure. The Membership Committee is a permanent advisory committee supporting the work of BoD and GA.
- The *Technology and innovation Committee* proposes and advises on the Group level requirements and standards with regards to technology and solutions. The Committee is active in scientific research and innovation creation, as well as its dissemination amongst the ECHO members. The Technology and innovation Committee is a permanent advisory committee supporting the work of BoD, and actively interacting with Service Groups.
- The *Stakeholders Committee* plays a role in establishing and maintaining partnerships and relations with relevant stakeholders on each level – Central Hub, National Hubs and Service Groups with EC, ECC, ENISA, relevant national and international organizations, including NGOs. The Stakeholder Committee is a permanent advisory committee supporting the work of BoD and actively interacting with National Hubs and Service Groups.

ECHO National Hubs and Service Groups

The National Hubs and Service Groups have important roles for the definition and delivery of services. Figure 26 presents the main areas of management activities and data selected for these organisational bodies (see the rectangles below National Hubs and Services Groups).

- The *National Hubs* organise ECHO members on country-level. They have a role in identifying national-level stakeholders, customers, and partners, as well as potential new members. The National Hubs have inputs for the development and implementation of ECHO Group strategy and business plan and translate these to local specifics.
    - The National Hubs develop industry and potential partner's profiles, and manage and monitor new members' performance according to the ECHO Group standards and requirements. They are active in providing training courses, innovation events and training for their members, as well as for customers and other stakeholders on national level.

- The National Hubs are responsible to providing transparency in regards to national stakeholders, follow potential funding opportunities and align with national-level cybersecurity and other relevant strategies, policies and initiatives, and disseminate information to members.

- The *Service Groups* are formed around the development and delivery of specific services. Their focus is on actively identifying and engaging customers on national and multinational level. The Service Groups have inputs for the development and implementation of ECHO Group strategy and business plan, and translate these to the specific service area.
  - The Service Groups develop marketing information on the specific services provided. They are defining the requirements for partners to ensure consistent and quality service delivery to customers. Service Groups define their quality system and delivery, innovation management process, as well as Service Level Agreements (SLA).

The National Hubs and Services Groups have similar organizational structures, as defined in D3.2.:

- Strategy Committee;
- Director or Coordinator (Chief Executive Officer);
- Secretariat (Executive Management):
  a) Chief Financial Officer (CFO);
  b) Project Management Officer (also acting as liaison for planning and reporting committees);
  c) Appointed contacts (Liaisons) for partnership development and membership management.

As for National Hub, same for the SG the real work is done by members – of the chapter or service group that are profit centres, when the chapter (National Hub) and SS are cost centres, funded by the profit centres on the agreed mechanism of the cost model of the BM.

Example of Standard Operating Procedure Development

This section describes the Strategic Planning Process (SPP) and its first Define phase, identified during the Process Analysis as well as organisational structure, responsibilities and procedures.

Note: Here the processes and procedures within all SPP Phases are considered in general.

Description

During the Define Phase the analysis of the results from previous periods are analysed, the strategic position of the CNO is identified and guidance for strategic planning is prepared, based on EU Cyber Security Strategy

for the digital decade[18]. The guidance is sent from ECHO Group (Central Hub) to the other ECHO Network entities – National Hubs and Service Groups.

The Phase is dedicated also to communication of the strategies, issues and opportunities to all CNO's organisational elements and stakeholders.

The coordination is provided mainly within the ECHO Group's Board of Directors (BoD), which is the main body responsible for the Phase. The ECHO Group advisory committees serve as consultation bodies, which also provide connections to the ECHO Network through representation.

Scope reference

Following COBIT, the object which is relevant to the Define phase:

- Governance Objective: EDM01 — Ensured Governance Framework Setting and Maintenance

The most appropriate governance practice, which envelopes all activities within Define phase is as follows:

- EDM01.01 Evaluate the governance system. Continually identify and engage with the enterprise's stakeholders, document an understanding of the requirements, and evaluate the current and future design of governance of enterprise I&T[19].

[18] JOINT COMMUNICATION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL The EU's Cybersecurity Strategy for the Digital Decade

[19] The I&T is the abbreviation for Information and Technology in COBIT 2019 Framework.

The Process Diagram

The process contains activities presented as a flow diagram on Figure 27.

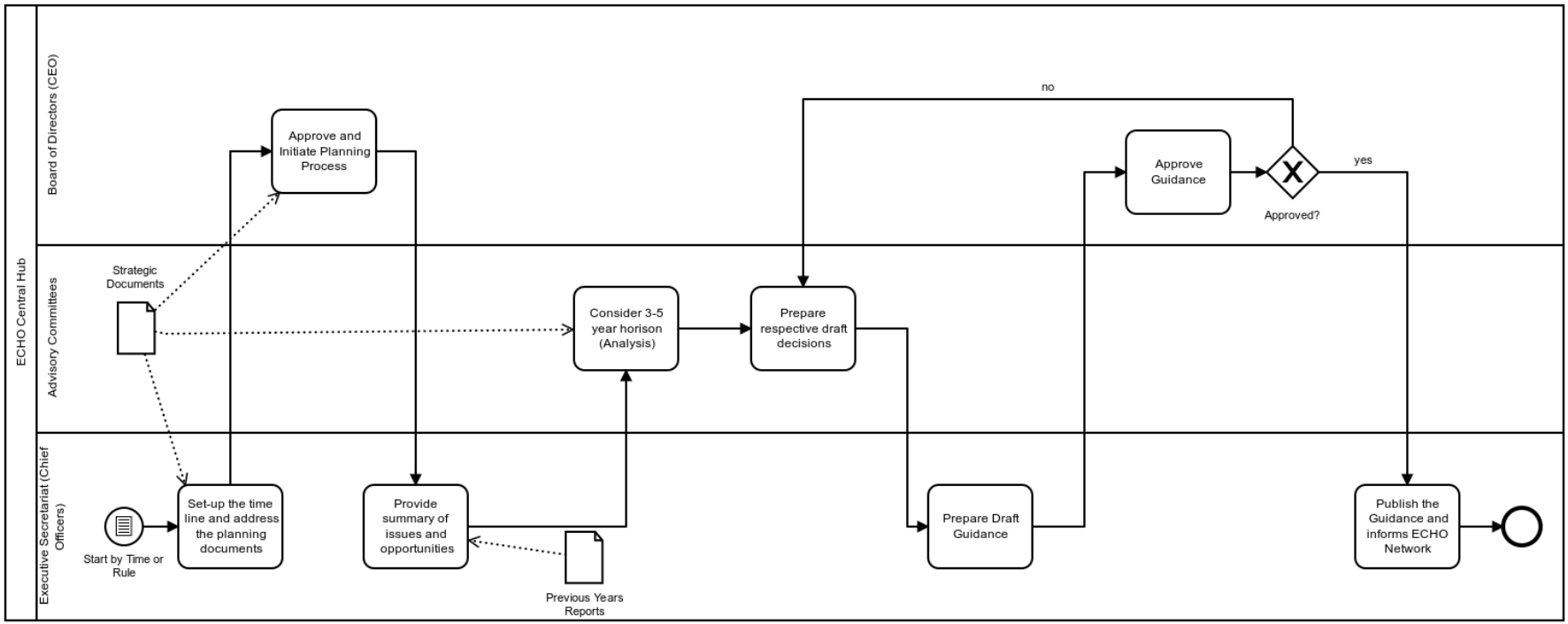


Figure 27: SPP's Define phase flow diagram

The Figure 27. actually represents the first part of the Figure 9.

Responsibilities

The EDM01.01 practice contains following activities according to the CBIT Framework:

A. Analyse and identify the internal and external environmental factors (legal, regulatory and contractual obligations – PEST analysis) and trends in the business environment that may influence strategic plan and changes in the governance design;

B. Determine the significance of I&T and its role with respect to the business;

C. Consider external regulations, laws and contractual obligations and determine how they should be applied within the governance of enterprise I&T;

D. Determine the implications of the overall enterprise control environment with regard to I&T;

E. Align the ethical use and processing of information and its impact on society, the natural environment, and internal and external stakeholder interests with the enterprise's direction, goals and objectives;

F. Articulate principles that will guide the design of governance and decision making of I&T;

G. Determine the optimal decision-making model for I&T;

H. Determine the appropriate levels of authority delegation, including threshold rules, for I&T decisions;

The activities identified during the Process Identification and shown in Figure 27 are as follows

1. Set-up the timeline and address the strategic issues and opportunities on the basis of previous year report; (A to F)
2. Initiate planning process and approve the procedure and timeline;
3. Provide analysis and decisions in respective scope of expertise; (A to E)
4. Suggest changes needed in CNO's Governance and Management model; (F to G)
5. Prepare Planning Guidance;
6. Approve and communicate the Planning Guidance. (G)

Activities and functions	General Assembly	Board of Directors	Secretariat	Membership Committee	All Advisory Committees
1. Set-up the timeline and address the strategic issues and opportunities on the basis of previous year report;		A	R		
2. Initiate planning process and approve the procedure and timeline;		R	A	I	I
3. Provide analysis and decisions in respective scope of expertise;		C	A	R	R
4. Suggest changes needed in CNO's Governance and Management model;		C	A	R	R
5. Prepare Planning Guidance;		A	R		
6. Approve and communicate the Planning Guidance.		A	R	I	I

Table 13: SPP's Define phase RACI matrix

Procedure

Having activities and roles we can summarise the procedure as follows:

The Strategic Planning Process (SPP) starts with preparation of Guidance for strategic planning (Strategic Direction and Guidance).

The Secretariat prepare the Communication which describes time-line, main strategic issues and opportunities and required changes.

The Communication is based on following documents:

1. *The EU Cyber security strategy, ECHO CNO Charter, PEST and SWOT Analysis, Strategic Plan and other strategic documents;*
2. *Decisions and reports of General Assembly (GA) and Board of the Directors (BoD);*
3. *Documents from the National Hubs and Service Groups;*
4. *Reports from previous years;*

The BoD approves the Communication and the Secretariat introduces the approved document to the Advisory Committees.

On the basis of the analysis and draft decisions provided by the Advisory Committees the Secretariat prepares the Draft Planning Guidance.

The Draft Planning Guidance is presented to the BoD for approval.

Approved Planning guidance is published by the Secretariat and is coordinated with National Hubs and Service Groups.

The Planning Guidance contains following sections:

1. *ECHO CNO long-term goals, priorities and targets (WP1).*
2. *Demand and Resource framework for 3-5 year period (WP9);*
3. *Technology roadmap and innovation opportunities (WP4);*
4. *Methodology for long-term planning, including key performance indicators, based on Balanced Score Card (WP3, D3.15).*

The BoD monitors and steers the preparation of the Planning Guidance. The BoD also have power to resolve the conflicts that may inflict during the process and is accountable to GA.

In order to cover all aspects of the Standard Operating Procedure for SPP we should add description of following standard topics in D3.15:

Purpose of the ECHO CNO

Measures of success (KPI) for the organization

Applicable Documents and Standards in ECHO CNO operation

<Developed procedure>

Who to consult?

The Maturity Level perspective

Having this Standard Operating Procedure, developed in general for the Define phase, we have the initial phase description. It gives entry for the first Initial level of CMMI where the processes are “performed”, but are not exclusively tailored to goals, managed and monitored according to the quality, costs and schedule.

In order to achieve the maturity level 2 – Managed process, all mentioned documents in SOP should exist and should provide methodology for developing the Strategic Plans, as well as qualitative and quantitative assessment for goals implementations.

The procedures for Advisory Committees work should be detailed and rules for BoD decisions also should be applicable.

Having this detailed procedures and overview of their implementation through annual reporting and change management plans will lead to maturity level 3 – Defined – of the process, where the general and specific goals will be achieved. If we go in details a little bit further – the general goal of the Define phase is to provide Guidance for strategic and business planning and specific goal could be to timely and effectively organise the Guidance preparation through the use of GMIS and broader involvement of NHs and SGs during this phase.

The *COBIT 2019* references required maturity levels for activities of the EDM01.01 as level 2 for activities from A to D and as level 3 for activities E-G. Therefore, the organisational procedures for development and approval should be “manageable”, but activities which forms the methodology, goals and resource identification should be well defined with quantitative and qualitative measures.

In terms of transition from ECHO Consortium to ECHO CNO this means that in M36 initial level of the Define phase should be achieved by developing of detailed SOP (at least for SPP process with other 3 before M48 – and tested through simulation games with the first one focused on the SPP) . The deliverables which are related to the Define phase should be identified. In M48 maturity level 2 can be achieved with referencing the documents for Guidance development containing procedures for Advisory Committees and BoD decision-making. Further improvement and maturisation of the Define phase can be delivered during first and second years of the ECHO CNO functioning.

In order to be in line with the Grant Agreement we focus to prove level 4 for SPP and PDP, visible progress in Catalogue and Customer Relations Management Process (CCRMP) and Innovation Management Process (IMP) as well as level 4 for at least one ECGO Chapter (NH) with visible progress for ECHO Group (Central Hub) and SGs (if decided).

The Governance and Management Information System

The management of the information flows is an important area of establishment and successful governance of collaborative networked organisations in regard of trust and coordination among their members. Having the initial Process Identification described in general in previous annexes it is possible to identify main areas of information and data required, as well as to assign roles in general for maintenance and availability of the information.

The type of suggested GMIS is the communication-driven decision support system[20] with shared space for documents database and tools for communication and group work. Such kind of system can be easily implemented with the capabilities provided by the MS SharePoint.

It can be argued that communication driven decision support system is already implemented in ECHO Consortium and it can be adapted to ECHO CNO system with an additional amount of efforts under WP3/T3.2. and WP4.

The future GMIS, based on SharePoint has to have following main goals:

- To provide reliable and well grained access control to the information and documents;
- To track the decision-making process – or to record the information used for the decision, as well as the decision itself;
- To track, monitor and report execution of planned activities and use of resources;
- To track, monitor and report members' compliance to their agreements or members' status changes;
- To maintain standardised form for input and output data according to the decision-making procedures.

[20] Daniel Power, "Decision Support Systems: Concepts and Resources for Managers," *Faculty Book Gallery*, January 1, 2002, https://scholarworks.uni.edu/facbook/67.

The GMIS then can be divided in four main modules (or in terms of SharePoint – four main folders): Decision Tracker; Resource Tracker; Final Decisions and Reports; and Archive.

The Decision Tracker main folder have to contain all data used during the decision making process and records for intermediate (if there are any) decisions, as well as minutes of meetings in which the decision is made. The points of recording information in GMIS will be identified during the detailed process diagram development. These points are tentatively acknowledged on Figure 27 and Figure 9 process diagrams.

When final decision is reached it will be transferred to the Final Decision and Reports folder.

The Resource Tracker folder will contain forms for tracking the resource use, planned activities status reporting and risk reporting. The responsible organizational bodies for execution of the planned activities will fill these forms on a regular basis (quarterly, six-months and annually). The full annual reports will be transferred to the Final Decision and Reports folder.

The processes of inserting data and documents from the Decision and Resource Tracker folders to the Final Decision and Reports folders are given in Figure 28 and Figure 29.

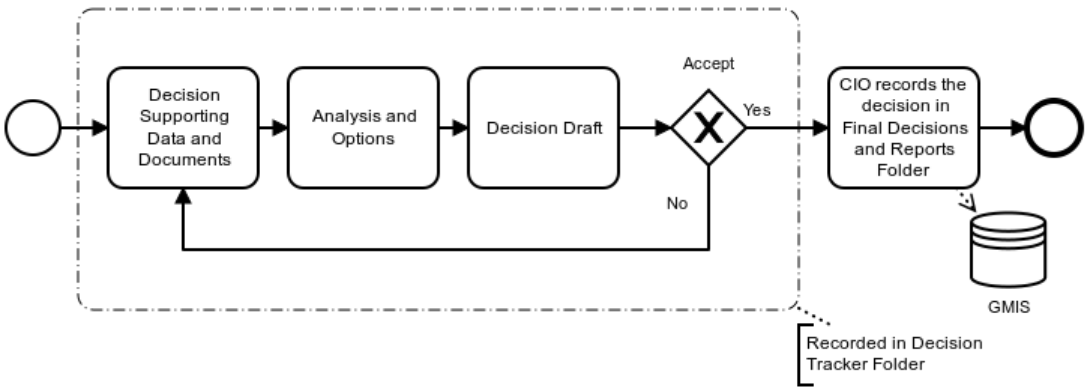


Figure 28: Decision Tracker Folder

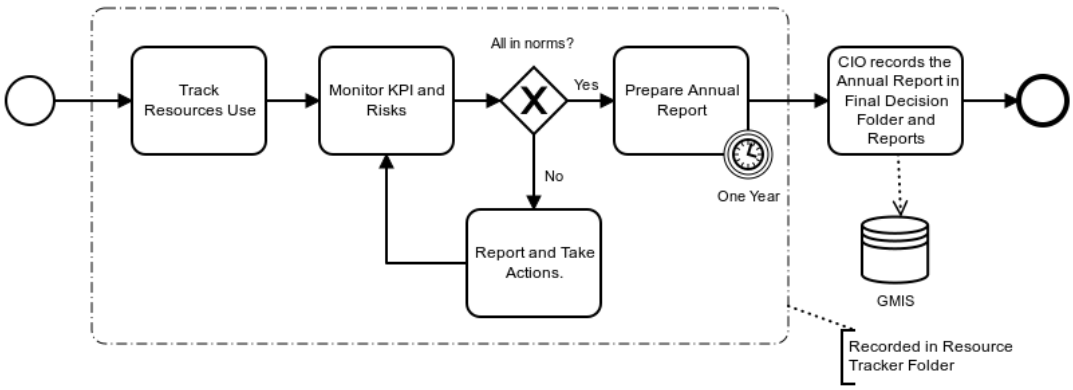


Figure 29: Resource Tracker folder

For the decision making the key decisions are identified in this document main body as part of the business model and its governance. These decisions are to be identified in the Charter of ECHO CNO and respective directives.

For the resources we focus as in the ECHO Consortium the 3 key resources: personnel (HR management system), finance (Financial management system), time (available slots for events). Key for resource management is to have clean data for costing, from the Time Accounting System (TAS). Key for the resource management is link with the two other processes – for Project Management and for Service Management (both external and internal). In ECHO Project SCRUM was accepted as an agile project management model and ITIL will be the model for service management.

The two processes in above diagrams suggest specific responsibility and role of the Chief Executive Officer (CEO) for managing Final Decisions and Reports folder. The specific CEO's right to create and modify this folder will ensure that information is reliable and stable.

In order to support the operations and to provide access levels and trust among parties the sub-directories for Central Hub, National Hubs and Services Groups in each of the three main folders should be created with specific rights to view, create, modify and update the information.

All data and information in GMIS should be considered as ECHO CNO members space and should be restricted only to ECHO CNO Partners.

The Central Hub should be considered as owner of following directories containing following documents and related decisions:

- Charter of ECHO CNO with respective directives and SOPs;
- Planning Guidance;
- Strategic Plan of the ECHO CNO;
- Business Plan of the ECHO CNO (including Financial plan and Personnel establishment / organizational structure);
- Membership related decision;
- Catalogue of Services;
- Innovation Agenda;
- Full Annual Report of the ECHO CNO;
- NHs and SGs Agreements;
- Partners' Operational Agreements;
- NHs and SGs Strategic and Business Plans;
- Proposal for Changes to the BoD.

All these folders have to be created, modified and updated by the executive management of the Central Hub, e.g. CEO, CFO, CTO and other chief class officer in the Secretariat, by supervision of the BoD.

The Proposal for Changes to the BoD folder is related to the change management and improvement and all partners and organisational bodies should have full access in order to create a proposal. Once the proposal is created the CEO should register the proposal in strategic planning (and change management) folder.

The overall consultation and coordination roles fall to the Advisory Committees. General Assembly has the right to oversee the process and to settle possible disagreement among parties through a formal process of information and decision making meetings, prepared by the executive staff (ECHO Group staff).

Each National Hub should own its own directories and respective documents as follows:

- National Industry Profiles;
- Members' Profiles;
- Monitoring of Members' Compliance;
- NH Strategic and Business Plans.

The user space of Service Groups can include following folders and documents:

- Customers' Profiles;
- SG Members' Requirements;
- Service-level Agreements;
- Demand/Capacity and Delivery Tracker.

The individual folders of NHs and SGs should be visible only to their management. The executive management of the Central Hub should have also right to view partially these folders, but without rights to change, modify or delete them.

The discussion above the possible GMIS structure and organisation should be considered from the time perspective. The proposal is based on the one-year time frame. The described directory (documents) structure of the GMIS should be archived on annual or longer time-frame basis. The 3-5 years frame of Strategic Planning Process can be used.

The coordination of each decision can be done through Calendar events, e-mails and Teams meetings, using data and information in respective directories.

Making one step further than identification of main requirements for GMIS as coordination-driven SharePoint based decision support system, we can suggest development of applications for aggregation of data about KPIs, risks, budgets, etc. and other important organisational measures. The application development is possible in SharePoint, but requires well-structured forms for input of data and data meta-model. Such applications will provide Business Intelligence (BI) and Governance Dash Board (GDB) for the functioning of the Governance and Management of the ECHO CNO.

In future development of the GMIS further requirements, meta-data models and interaction have to be considered from the point of view of the results of the D3.6: ECHO Information sharing models and possible interactions between the GMIS and ECHO web platforms development – such as portal and marketspace, planned around ECHO services (see Figure 4).

Annex 5 – ECHO Consortium organisations and ECHO CNO structure

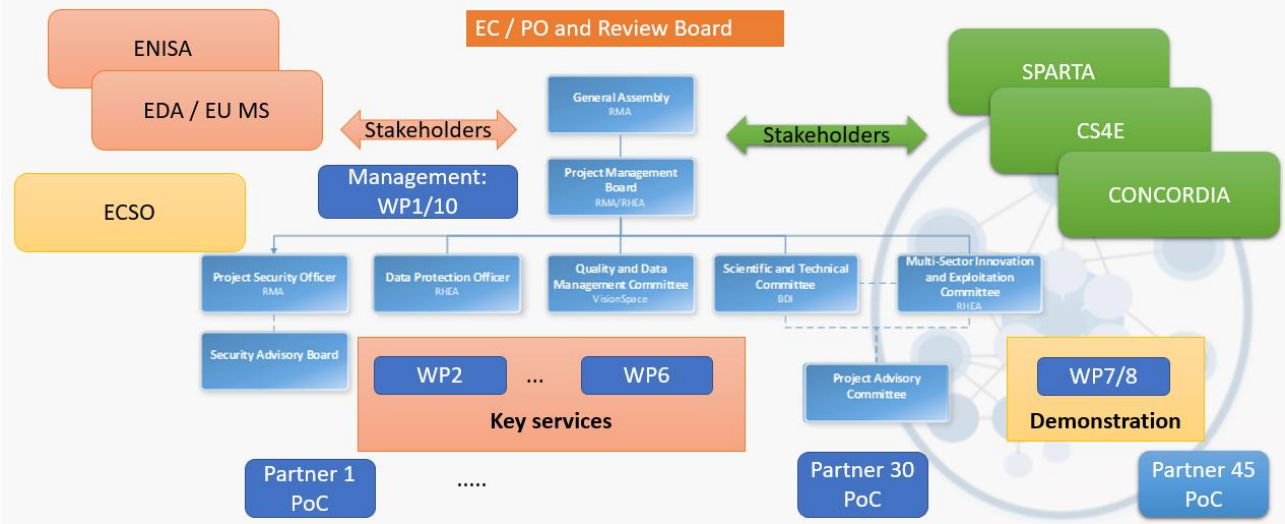


Figure 30: Organizational structure for the ECHO Consortium

ECHO Consortium Organisation	Positions	Responsibilities	ECHO CNO
Project Management Board (PMB)	Composed by a Project Manager designated from each Partner of the Consortium, co-chaired by the Project Coordinator and the Project Implementation Coordinator	• Human Resource management • Financial Management; • Legal Management; • Information Management; • Administrative Management; • Contractual Management; • Risk and Quality Management.	**Board of Directors**
General Assembly	One duly authorised representative from each partner, chaired by Project Coordinator	• Decision making and conflict resolution; • Approval of changes in the consortium constitution (entries and withdrawals of partners) and management bodies; • Contracts' amendments management.	**General Assembly**
Scientific and Technical Committee (STC)	Technical staff selected from the Consortium partners, chaired by the	• Collection and organisation of inputs concerning technical summaries for the interim and periodic reports;	**Technology and Innovation Committee**

ECHO Consortium Organisation	Positions	Responsibilities	ECHO CNO
	Scientific and Technical Management Coordinator	• Protection of ECHO's Intellectual Property Rights (IPR), complying with both the provisions of the EC contract and of the Consortium Agreement; • Scientific Publications • Coordination and monitoring of technical activities.	
Multi-Sector Innovation and Exploitation Committee (MSIEC)	Political and technical advisors from main European partners and bodies, including as an example other Pilots, ENISA, ECSO, ECC, ESA, EDA, NATO. Chaired by Multi-sector Innovation and Exploitation Coordinator.	• Foster continuous improvement and consolidation of cross-sectorial collaboration, through dedicated multi-lateral initiatives, meetings, papers also aimed at enlarging participation of new public/private entities in the scoped sectors; • Encourage participation of representatives from new sectors, through orchestration of communication campaigns and identification of vertical opportunities or partnerships, also with other security-related organizations and other consortia active on the same call; • Identify, prioritize, report to GA the emerging cross-sectorial external trends, public or private opportunities, initiatives and major threats; • Build and update the overall business exploitation plan for the ECHO consortium, also identifying benefits brought by the project activities to the general EU	**Membership Committee** **Technology and Innovation Committee**

ECHO Consortium Organisation	Positions	Responsibilities	ECHO CNO
		social/financial/technological landscape • Support innovation management from a business-development angle: continuously assess market trends and needs to adjust development of technological roadmaps and support services from the ECHO network accordingly;	
Quality and Data Management Committee (QDMC)	Technical staff selected from the Consortium partners, chaired by the Quality and Data Management Coordinator.	• Defining a strategy to balance between openness of data and preservation of IPR, privacy and security • Defining priorities, policies, best practices and standards for governing data definition, collection, reporting, and analysis; • Developing consistent processes for collecting, matching, aggregating, quality assuring, securing and distributing data throughout the Consortium Partners; • Ensuring that the research data will be findable, accessible, interoperable and re-usable (FAIR) during the project duration and after its completion; • Defining strategies and procedures for data curation and presentation, according the main available standards; • Ensuring compliance with GDPR when dealing with personal information handling; • Defining a quality management program and procedures applicable	**Technology and Innovation Committee** **Financial Committee** **Audit Committee**

ECHO Consortium Organisation	Positions	Responsibilities	ECHO CNO
		overall to all consortium activities; • Feeding a continuous improvement process to increase efficiency of ECHO, and quality of the deliverables; • Supporting the ECHO Governance model optimization.	
Project Advisory Committee (PAC)	15-20 security experts external to the Consortium	The Project Advisory Committee (PAC) is going to be composed of at least 15 (and maximum 20) dynamic, high-level opinion leaders at European and global level, with a proven career record. The PAC members shall all be recognised experts in the cybersecurity domains, representing different stakeholder groups including the industry, policy and regulatory views. Participants to the PAC have a significant interest in the ECHO outcomes and represent non-beneficiary members of the ECHO Network.	**Stakeholder Committee**
Project Coordinator (PC)	Chairman of the General Assembly and co-chairman of the Project Management Board		**Chief Executive Officer (CEO)**
Deputy Project Coordinator (DPC)	Assistant to the PC		**Deputy and close Assistant to the CEO and Chief Information Officer (CIO)**
Project Implementation Coordinator (PIC)	Co-chairman of the Project Management Board. PIC is dealing with the roles of the Financial		**Chief Operating Officer (COO)**

ECHO Consortium Organisation	Positions	Responsibilities	ECHO CNO
	Controller and Legal Adviser		
Scientific and Technical Management Coordinator (STMC)	Chairman of the Scientific and Technical Committee		**Chief Scientific Officer / Chief Technology Officer (CTO)**
Multi-sector Innovation and Exploitation Coordinator (MSIEC)	Chairman of the Multi-sector Innovation and Exploitation Committee		**Chief Innovation Officer/Chief technology officer (CTO)**
Quality and Data Management Coordinator (QDMC)	Chairman of the Quality and Data Management Committee.		**Chief Quality Management Officer**
Data Protection Officer (DPO)			**Chief Data Officer (CDO)**
Project Security Officer (PSO)			**Chief Security Officer (CSO)**
Work Package Leaders (WPL)	The Leader of each Work Package (WP).		**Potential lead for SGs or VOs**
Task Leaders (TL)	The Leader of each Task.		**None (Head Development teams in SGs/VOs)**
PPoC for the Partner (Partner PM and resource Manager) -	Each Partner participating to the Consortium has appointed a Project Manager and resource manager.		**Representatives in GA, NHs assembly**
Capability & Service Manager (following the Catalogue of services)	For each ECHO exploitable asset and service, there is a capability and service manager to be appointed		**COO of the Service Group**

Table 14: ECHO Consortium and ECHO CNO structures

Annex 6 – Membership categories

This is the excerpt from the Partnership Handbook (ECHO Partnership Handbook v1.2.docx) developed by the ECHO Partner Engagement Team, pp. 14-16.

4. Collaboration Opportunities

The project will develop and operate under an ECHO Governance Model, by which the efforts across the EU Network of Cybersecurity Competence Centres can be coordinated and optimized to provide lasting and sustainable excellence in cybersecurity skills development; research and experimentation; technology roadmaps delivery; and certified security products for improved cybersecurity resilience.

While we are progressing in the Project we are keen to continue growing our network of interested parties, stakeholders and potential new partners, and are constantly looking for new and exciting opportunities to refine and improve the project results in preparation for the ECHO CNO.

With this in mind we have identified the following ways in which interested parties could be involved in the Project (Table 15).

Category	Who can apply?	Engagement	Effort
ECHO Club Member	Individuals/Organisations	Passive, receive regular newsletters etc.	No commitment of effort required
ECHO Participant	Individuals/Organisations	Active, engage in activities, attend demonstrations and more (can be tailored).	Commitment of effort (can be tailored)
ECHO Partner	Organisations	Active, engage in R&D activities, become a member of ECHO services & more (can be tailored).	Commitment of effort/funding (can be tailored)

Table 15: Collaboration Opportunities - Overview

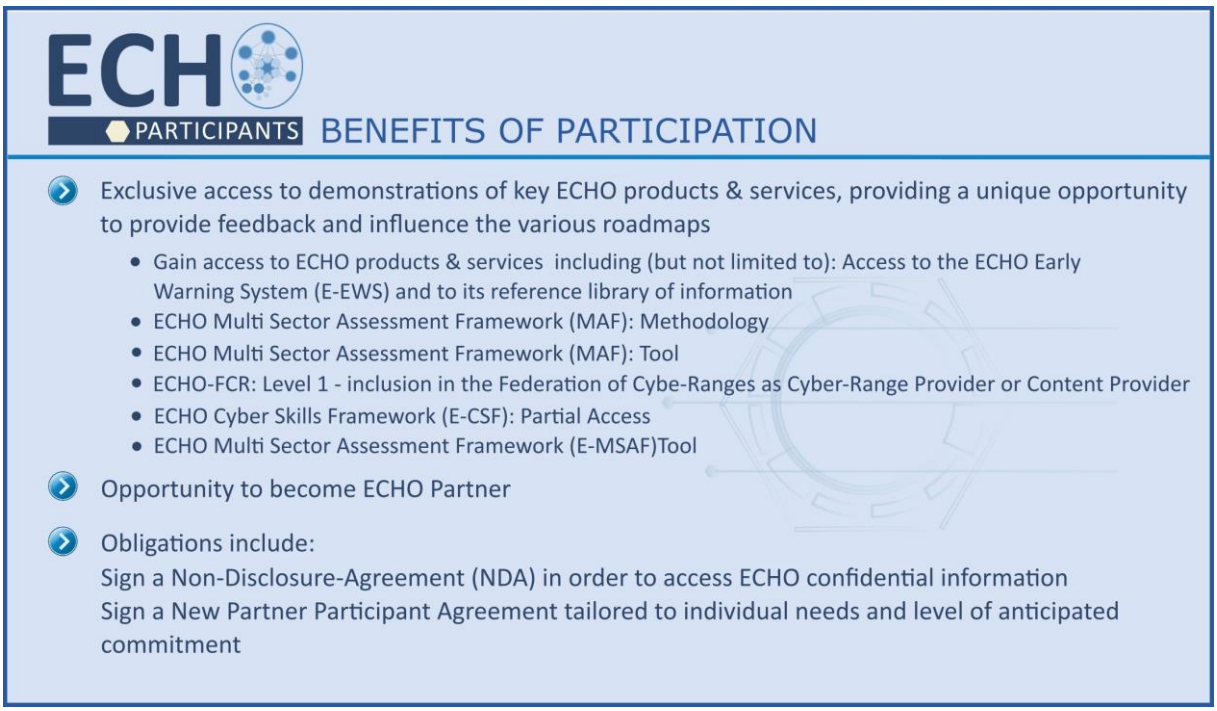
Become an ECHO Club Member

ECHO Club Members are classified as parties interested in the outcomes of the project, but do not contribute in anyway, and as such are not considered beneficiaries. Therefore, they are not bound by the Grant Agreement, Consortium Agreement or New Partner Agreement, nor are they committed to specific tasks. However, there remain a myriad of opportunities to be affiliated with the Project.

Become an ECHO Participant

ECHO Participants are interested in more actively collaborating in the Project by providing support, effort, feedback and participation in studies and demonstrations, and have the opportunity to gain full access to specific topics (e.g. the ECHO EWS). ECHO Participants are not beneficiaries, and are not bound by the Grant. However, in order to contribute to R&D and Network activities participants shall be bound by a simple New Partner Participant Agreement and an the Consortium Agreement.

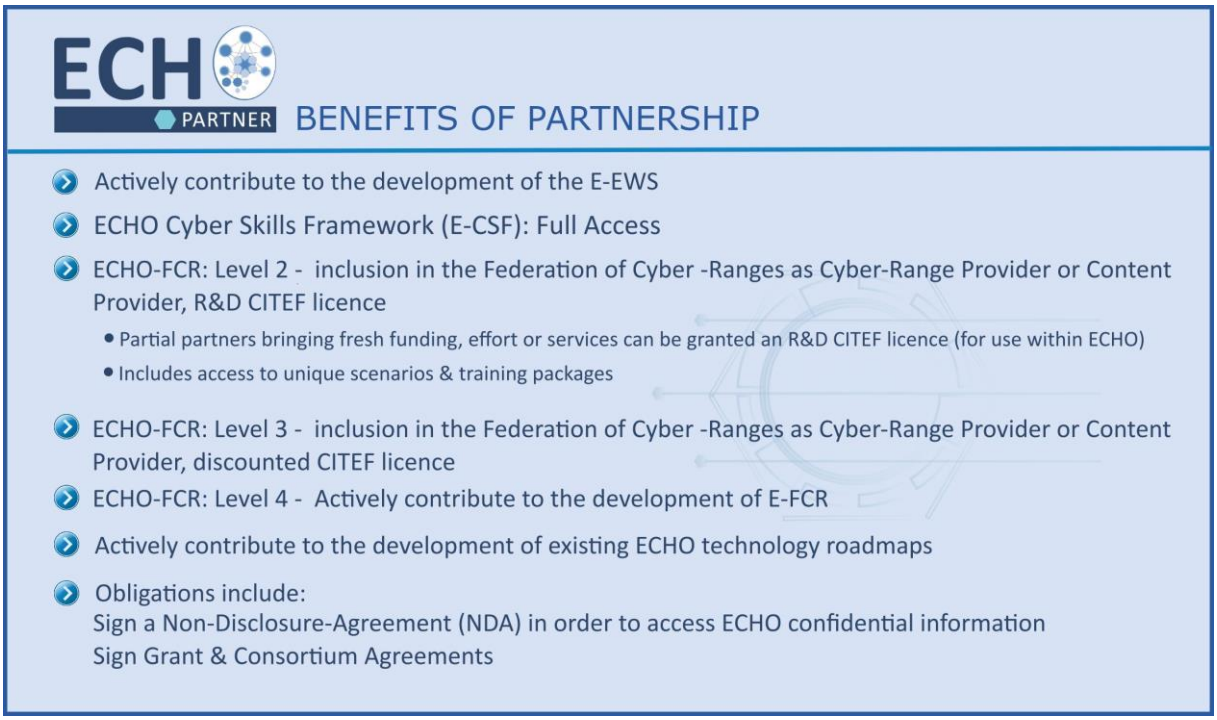
Benefits of becoming a participant include (but are not limited to):



Become an ECHO Partner

ECHO Partners are parties interested in becoming fully contributing partners, by providing fresh funding or effort, they would be able to influence the project and its activities, such as identifying and developing additional Technology Roadmaps and gain full access to all topics, as such, an amendment to the Grant and Consortium Agreements is needed, requiring a vote of the ECHO General Assembly.

Benefits of becoming an ECHO Partner include (but are not limited to):



There are of course many ways in which you can be involved with varying degrees of commitment to suit your needs and we are always keen to hear new ideas. Therefore, should you have already identified opportunities for potential collaboration please contact us so that we can discuss how the ECHO Project could be involved.

Annex 7 – ECHO Deliverables and ECHO CNO documents

ECHO Document Title	Reference ECHO CNO process areas	Methodology	Management area	Service Management
D1.1 Project Handbook	Organisational Procedures	Procedures Set-up	Overall Management	
D1.3 Project Quality Plan	Quality Management	Data related Strategy	Process Management	
D1.2 Data Management Plan	Data related Strategy	Positioning	Data Management	Data Acquisition
D1.3 Governance needs and objectives	Strategic Analysis	Decision Making		
D3.2 Governance alternatives	Strategic Analysis	Positioning		
D9.2 Dissemination Strategy	Information Strategy	Positioning	Marketing, Customers	
D3.6 Information Sharing Models	Strategic Analysis	Procedures Set-up	Information Management	
D9.6 Market Analysis	Strategic Guidance	Market Positioning, SWOT	Marketing	Requirements
D9.10 Yearly review of project objectives and market needs/opportunities	Strategic Report	Innovation Positioning, Planning and Monitoring	Guidance	Positioning
D4.6 Inter-sector Prototype Verification Plan	Innovation and Technology Strategic Planning	Positioning	Portfolio Mix	Build, Plan, Organise
D6.3 E-FCR verification plan	Innovation and Technology Strategic Planning	Product Positioning	Verification and Verification	Development
D4.3 Inter-sector cybersecurity technology roadmap	Innovation and Technology Strategic Planning	Innovation Planning	Planning	Requirements Management
D5.3 E-EWS Verification Plan	Innovation and Technology Strategic Planning		Verification and Verification	Development
D4.1 Transversal technical cybersecurity challenges report	Innovation and Technology Strategic Planning			Requirements
D4.2 Inter-sector technical cybersecurity challenges report	Innovation and Technology Strategic Planning			Requirements

ECHO Document Title	Reference ECHO CNO process areas	Methodology	Management area	Service Management
D9.11 Procedure for internal IP reviews	Innovation and Technology Strategic Planning	Innovation Planning and Monitoring	IPR related strategy	
D9.12 IP awareness trainings	Innovation and Technology Strategic Planning	IPR Training	Training Evaluation	
D9.4 Interim dissemination reports	Report		Monitoring	
D1.4 First Project Activity Report	Reporting		Monitoring	
D9.18 Communication collateral social media channels set-up	Customer and Partnership	Planning	External and Internal Relations	
D9.5 Event Calendar	Customer and Partnership		External Relations	
D9.17 - Web Platform	Customer and Partnership		External Relations	Web-site Design
D9.1 Project Leaflets	Customer and Partnership		External Relations	
D10.1 H Requirement no. 1	HR, Ethics, Data			
D10.2 POPD Requirement no. 2	HR, Ethics, Data			
D10.3_NEC_ Requirement no. 5	HR, Ethics, Data			
D9.16 Communication and Stakeholders Engagement Plan	Partnership and Stakeholders Management	Requirements Analysis	Strategic and Operational Planning	
D9.3 Stakeholder Mapping	Partnership and Stakeholders Management	Partnership planning	Auditing	
D6.1 E-FCR High-level design	Service Management	Design	Build	Design
D6.2 E-FCR Prototype	Service Management	Design	Build	Design
D2.1 Sector Scenarios and Use Case Analysis	Catalogue and Services Planning	Positioning, Scenario Anaysis	Plan	Requirements
D2.3 Transversal cybersecurity challenges and opportunities	Catalogue and Services Planning	Positioning, Technology Planning	Planning	Requirements
D2.2 Derivation of Multisector Assessment Framework	Catalogue and Services Strategic Planning	Global Technology Positioning	Planning	Requirements

ECHO Document Title	Reference ECHO CNO process areas	Methodology	Management area	Service Management
D5.1 E-EWS High-level design	Service Management	Design	Build	Design
D5.2 E-EWS Prototype	Service Management	Design	Build	Design
D5.5 Update - E-EWS High-level design	Service Management	Design	Build	Design
D1.5 Second Project Activity Report	Report, Monitoring	M24		
D2.6 ECHO Cyberskills Framework	Service Positioning and Planning	M24		
Deliverables after the D3.12 – after project month M36				
	Area of the document		*Month of delivery*	
D1.6 Third Project Activity Report	Report, Monitoring		M36	
D1.7 Fourth Project Activity Report	Report, Monitoring		M48	
D2.7 Training content and tools	Design and Build of Service		M36	
D2.11 ECHO Multi-sector Assessment Framework	Strategic Analysis and Planning		M45	
D2.12,13 Update – Transversal cybersecurity challenges and opportunities	Service Planning and Design		M42,M45	
D2.15 Update - Multi-sector requirements definition and demonstration cases	Service Planning and Design		M45	
D4.9, 10 Update - Inter-sector technical cybersecurity challenges report	Innovation and Service Planning		M45, M48	
D8.1-7 Demonstration surveys and reports	Customers satisfaction		M27-M48	
D9.7 Exploitation strategy and plans	Strategic Planning of Catalogue		M42	
D9.8 Business and sustainability plan	Business Planning		M48	
D9.9 Exploitation and innovation management plan	Catalogue Management		M24	

Table 16: Deliverables and ECHO CNO documents