A coordinated framework for cyber resilient supply chain systems over complex ICT Infrastructures

D7.2 Report on dissemination, standards and exploitation (Y1)

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List of Acronyms

Abbreviation / acronym	Description
3GPP	3rd Generation Partnership Project
BMC	Business Model Canvas
D7.5	Deliverable number 5 belonging to WP 7
EAB	External Advisory Board
EC	European Commission
EPO	European Patent Office
ETSI	European Telecommunications Standards Institute
GSMA	Global System for Mobile Association
ICT	Information and Communications Technology
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IP	Intellectual Property
IPR	Intellectual Property Rights
IRTF	Internet Research Task Force
ISO	International Organization for Standardization
KERs	Key Exploitable Results
KPIs	Key Performance Indicators
O-RAN	Operator Defined Open and Intelligent Radio Access Networks
OSM	Open-Source MANO
PMC	Project Management Committee
SWOT	Strengths, Weaknesses, Opportunities and Threats (analysis)
TIP	Telecom Infra Project
TRL	Technology readiness level
USPTO	United States Patent and Trademark Office
WP	Work Package

Executive Summary

This document presents the activities that took place in the context of WP7 during the first year of the FISHY project along with updated plans for the two upcoming years. An introduction that provides context on the present document is followed by an examination of the work carried out on all WP7 tasks.

All dissemination activities where the consortium participated are presented, together with the employed communication tools and the associated impact measuring metrics, and an updated plan for the following years.

Standardization activities are also presented, in terms of the efforts, to contribute to standardisation bodies, open-source communities, and other industrial fora. Active roles of project partners in these bodies and contributions to them, either already performed or ongoing, are reported as well.

The analysis on the market framework for the project results, performed throughout the first year of the project as part of its innovation management activity, is translated into an analysis of exploitation opportunities, with the collaboration of the project External Advisory Board.

1 Introduction

The purpose of this document is to provide a detailed report of the activities related to dissemination, standards and exploitations activities carried during the first year of the project. It is of great importance to maintain good monitoring and evaluating practices throughout the project lifetime to maximize the impact of its outputs, detailing and analyzing already performed and ongoing activities, and using them as input to establish a plan of future actions. This translates into the continuous metering of communication and dissemination impact, the identification and monitoring of standardization opportunities and contributions, and the analysis of innovation options in the framework of the potential market for project results. In addition to this, the partners provide updates on their individual and coordinated plans to maximize project impact, with the aim of ensuring the adaptability and flexibility that can help introduce added value to the produced outcomes.

The impact creation activities within WP7 reported here are horizontal activities within the project, and therefore directly related to all other work packages, collaborating with them in identifying the opportunities for impact creation and in translating project results into contributions in the areas of communication, standardization, and further exploitation. This deliverable constitutes the first of a series of periodic reports, each corresponding to one of the years in the project lifetime. The document will be followed by the corresponding updates reflected in D7.3 and D7.4, reporting progress and plan updates for year 2 and year 3, respectively.

The document is structured according to the three classes of impact creation activities, each one reported in one of the chapters.

- Chapter 2 details the communication and dissemination activities, ranging from event participation and organization to publications of different nature. The different communication channels (website, social networks, newsletters, etc.) are described and their impact analysed as well. An update of the communication plan for the next project year is included.
- Chapter 3 summarizes the active involvement and the contributions made to different standardization bodies and industry groups, including the discussion of ongoing activities and further contributions.
- Chapter 4 reports the activities regarding further exploitation of project results, with specific focus on innovation management aspects, with the identification of assets and the market framework for them, deriving a plan for business development with the support of the project External Advisory Board.

2 Dissemination and Communication

2.1 FISHY in Events

The objective of this chapter is to describe the specific dissemination and communication activities that were carried out during the first year of the project. We want to ensure that the expected results are communicated as widely and effectively as possible. These activities include, but are not limited to, participation in events/conferences/workshops, preparation of scientific papers, articles and other general publications, fostering relationships and synergies with related projects.

2.1.1 FISHY dedicated events

During this first year of FISHY, and despite the limitations of not having physical meetings, the consortium has had different internal and external workshops, as well as general assemblies. The internal communication is particularly important in the first year of the project where the main ideas and common paths forward must be consolidated towards a successful impact. During the first year of the project the consortium has held one kick-off meeting on September 2020, and two general assemblies in February 2021 and July 2021, as well as the first meeting with the FISHY Advisory Board. The main presenters in the latter meeting were the project coordinators presenting the project, the use case providers presenting the use cases, and the leader of exploitation presenting the business model. The attendants from the advisory board were: Haralambos Mouratidis from University of Brighton, UK, Jianping Wang from University of Hong Kong, China, Xiangtong Qi from Hong Kong University of Science and Technology, China and Jorge Ferreira from Amkor, Portugal. The meeting online lasted three hours, and the number of partners of the consortium participating, being several per partner due to their expertise, was 21, composed of members of the FISHY Consortium. The questions and suggestions from the EAB were very useful, most of them focused on how to implement FISHY in each one of the use cases, as well as the types of attacks when dealing with supply of chains. The full overview can be found in Section 4.4.

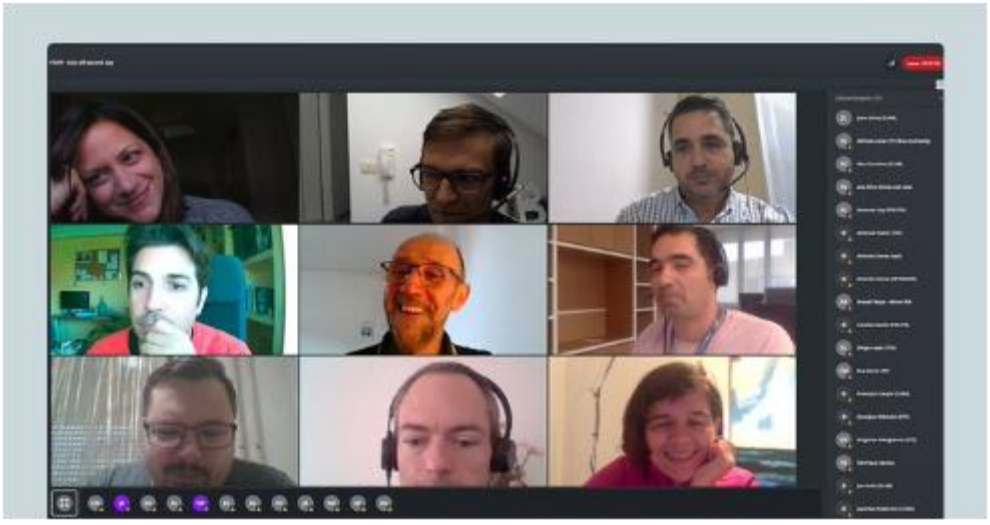

Figure 1. Online FISHY KOM meeting

2.1.1.1 FISHY workshops

We held different workshops, some of them internal workshops (only attending FISHY partners), and two of them external (open to external people).

Internal Workshops:

- ***First FISHY requirements workshop (***November 10, 2020***)***. The FISHY Requirements Workshop has taken place the 10th of November through video call, and has been organized by Synelixis, Greece. The aim of the workshop has been to create a common understanding among the partners regarding the services provided by the FISHY platform and how use cases can take advantage of them. Each project pilot provider presented the foreseen scenarios as well as the particular list of requirements, from which to shape the FISHY architecture. The agenda of presentations was:
    - 10:00-10:30 Technical description of FISHY (UPC and TUBS)
    - Scenarios foreseen and pilots' list of requirements:
        - 10:30-11:00 Pilot 1 (Optimum and Synelixis)
        - 11:00-11:30 Pilot 2 (SONAE)
        - 11:30-12:00 Pilot 3 (Altran)
- ***FISHY WP6 kick-off workshop (***December 17, 2020***)*** The second workshop was organized by SYNELIXIS and happened online, with our 3 uses cases presenting their requirements. The main topics of this meeting were:
    - What is the main objective of the use case? Who are the actors involved? How is it going to be developed (simulation, real environment, etc.)?
    - What are the main cybersecurity/cyber resilience issues of the use case? How do the cybersecurity problems affect the system? What is the impact of the issues in the business aspect?
    - What is the expertise of cybersecurity of the employees and end-users of the use case? Why do you need cyber resilience in your scenario?
    - What are the main objectives to be accomplished in FISHY? Technical objectives, Business objectives, … What are the benefits for the use case by fulfilling these objectives? How FISHY can improve the technical and business areas of the company?
- ***WP3-Trust Manager components design and implementation workshop*** (May 27, 2021) We organized a 3-hour workshop aimed at agreeing on the main Trust Manager (TM) components The agenda of this online workshop was:
    - Main objectives
    - T3.1 status & outcomes
    - T3.2 status & outcomes
    - Discussion topics
    - Integration rules
    - Workplan
- ***Kick off FISHY Exploitation workshop (***June 11, 2021) We organized one hour meeting with the next topics:
    - IPR Management
    - Exploitation Workshops: At the plenary meeting we intend to have a hands-on workshop (1h) just dedicated to exploitation tasks and decisions that need to be completed.

- Market Radar Actions
- External Advisory Board: The EAB meeting 1 should happen during the plenary meeting in July
- Joint Exploitation

External workshops:

- ***First FISHY workshop: SCCRM-21: Supply Chain Cybersecurity and Risk Management*** **(**June 10, 2021**)**. This workshop was co-located with the HPSR 2021 conference (https://hpsr2021.ieee-hpsr.org/). The workshop was completely remote, and the three presented papers were from FISHY partners. The number of attendants was 20.
  - 08:50 – 09:00 SCCRM Opening: Eva Marin (UPC, Spain) and Panos Trakadas (NKUA, Greece)
  - 9:00 – 9:30 Keynote: ***TSupply Chain Resilience in Industry 4.0 – Views on the role of Policies and Trustworthiness*** by Jürgen Neises (Fujitsu, Germany)
  - 9:30- 10:50 SCCRM-Technical session: Cybersecurity in Supply Chains. Moderator: Henrique Santos (University of Minho, Portugal)
    - *Farm to Fork: Securing a Supply Chain with Direct Impact on Food Security*, by Panagiotis Trakadas, Helen C. Leligou, Panagiotis Karkazis, Antonis Gonos, Theodore Zahariadis
    - *Challenges in the Automotive Software Supply Chain, Connected CAR,* by Jose Soriano, Guillermo Jiménez, Ernesto Correa, Noel Ruiz
    - *The Role of Intent-Based Networking in ICT Supply Chains, by* Mounir Bensalem, Jasenka Dizdarevic, Francisco Carpio, and Admela Jukan
  - 10:50-11:10 Coffee Break
  - 11:10 – 11:30 Keynote: ***Cybersecurity for industry/supply point of view from the EC***, by Martin Ubelhor (EC)
  - 11:30 – 12:00 Invited Talk: ***Cybersecurity trust and resilience in Industry*** by Fabio Martinelli (CNR, Italy)
  - 12:00 – 12:50 Panel: ***Cybersecurity, what's next?***, Moderator: José Francisco Ruiz (ATOS, Spain). Speakers: Martin Ubelhor (European Commission, H1), Haris Mouratidis (University of Brighton, member of the advisory board of FISHY, UK), Nineta Polemi (CYRENE project, Greece), Roberto Cascella (ECSO, Belgium).
  - 12:50 – 13:00 SCCRM Closing Panos Trakadas (NKUA, Greece)
- ***2nd FISHY Workshop: International Workshop on SecRS: Secure and resilient smart manufacturing environments (SecRS)*** (August 17, 2021) This workshop was co-located with the ARES 2021 conference[1]. In the first technical session of this workshop a paper from FISHY was presented.

  SecRS I

  Session Chair: Haris Mouratidis, University of Brighton, UK
  - An Indicators-of-Risk Library for Industrial Network Security, Carolina Adaros-Boye, Paul Kearney and Mark Josephs (Birmingham City University, United Kingdom), Hans Ulmer (Bosch, Germany)
  - Information Security Assessment and Certification within Supply Chains, Henrique Santos, André Oliveria, Lúcia Soares, Alan Satis, Alexandre Santos (ALGORITMI R&D Centre, University of Minho, Portugal)
  - Cyber security 4.0: protecting the Industrial Internet Of Things - the C4IIoT H2020 project presentation, Srdjan Skrbic (University of Novi Sad)

[1] http://www.ares-conference.eu

SecRS II

Session Chair: Georgia Sakellari, University of Greenwich, UK

- Cyber Security Incident Handling, Warning and Response System for the European Critical Infrastructures, the CyberSANE H2020 project presentation, Manos Athanatos (FORTH)
- Comprehensive cyber intelligence framework for collaborative manufacturing, the COLLABS H2020 project presentation, Gulshan Kumar (University of Padova, Italy)

2.1.2 Participation in Events/conferences/fairs

In this section, we collect all the participation in events or conferences outside the FISHY project, where the partners have participated.

- On April 13, 2021, Diego López from TID presented a Keynote at LAYER123 EUROPE: 360° Network Automation Congress - "Data flow aggregation for smarter network security"
- On June 7, 2021, Eva Marín from UPC, presented though video call an accepted paper, "Scalability analysis of a blockchain-based security strategy for complex IoT systems" in the HPSR 2021 conference. The conference was located in Paris, but with a hybrid model, where some of the participants were face-to-face and some of them online.

2.2 Publications

Due to the exceptional circumstances and the fact that we are in the first year of the project and the results of the project are not yet visible in the form of scientific publications, we only achieve 3 workshop papers and one conference paper.

- Farm to Fork: Securing a Supply Chain with Direct Impact on Food Security, by Panagiotis Trakadas, Helen C. Leligou, Panagiotis Karkazis, Antonis Gonos, Theodore Zahariadis, First FISHY workshop: SCCRM-21: Supply Chain Cybersecurity and Risk Management.
- Challenges in the Automotive Software Supply Chain, Connected CAR, by Jose Soriano, Guillermo Jiménez, Ernesto Correa, Noel Ruiz, First FISHY workshop: SCCRM-21: Supply Chain Cybersecurity and Risk Management.
- The Role of Intent-Based Networking in ICT Supply Chains, by Mounir Bensalem, Jasenka Dizdarevic, Francisco Carpio, and Admela Jukan, First FISHY workshop: SCCRM-21: Supply Chain Cybersecurity and Risk Management.
- Information Security Assessment and Certification within Supply Chains, Henrique Santos, André Oliveria, Lúcia Soares, Alan Satis, Alexandre Santos (ALGORITMI R&D Centre, University of Minho, Portugal), 2nd FISHY Workshop: International Workshop on SecRS: Secure and resilient smart manufacturing environments (SecRS).
- Scalability analysis of a blockchain-based security strategy for complex IoT systems, Martí Miquel-Martínez, Eva Marín-Tordera, Xavi Masip-Bruin, IEEE International Conference on High Performance Switching and Routing, HPSR 2021.

2.3 Liaison with other projects, initiatives & communities

The second FISHY workshop has been held on August 17, 2021, and it has been co-organized with the C4IIoT ("Cyber security 4.0: protecting the Industrial Internet Of Things")[2], COLLABS ("A COmprehensive cyber-intelligence framework for resilient coLLABorative manufacturing Systems")[3],

[2] https://www.c4iiot.eu/
[3] https://www.collabs-project.eu/

and CyberSANE ("Cyber Security Incident Handling, Warning and Response System for the European Critical Infrastructures")[4] and in conjunction with the 16th International Conference on Availability, Reliability and Security (ARES 2021).

Apart of the usual collaborations with other European projects, such as following each other in social networks, this first year of the project we have established a close collaboration with the project H2020 CYRENE. This project addresses the certification of security and resilience in supply chain services, and then both projects have many interests in common. We set two teleconferences where we established the strategy of collaboration:

- A joint supply chain infographic scheduled to October-November 2021, we present the problem of cybersecurity in supply chains and the proposed solutions by each one of the projects.
- Joint workshop CYRENE-FISHY co-located with the conference DRCN 2022 and organized by UPC.

Also, we are planning having a closer collaboration during the whole duration of the project, by maintaining periodic calls. For the 2nd and 3rd year of the project we will organize jointly the summer camp and the demo day.

2.4 FISHY Dissemination and Communication Channels/Tools

2.4.1 Visual and identity branding (FISHY brand book)

Information about the approach can be found in D7.1 [1].

2.4.1.1 Logo

Information about the approach can be found in D7.1 [1].

Figure 2. FISHY logo

2.4.1.2 Colors & typography

Information about the approach can be found in D7.1 [1].

2.4.1.3 Pictures

Information about the approach can be found in D7.1 [1].

[4] https://www.cybersane-project.eu

2.4.2 Website

The FISHY website is one of the main dissemination tools of the project. The first version of the website, December 2020, followed the project´s graphic identity and presents the project's overview, including objectives, use cases and project partners. The sections in this first version were: **Home, Architecture, Project, News&Events** and **Contact**. The section Architecture also included the tabs: Architecture, Use Cases and Methodology; as well as the Section Project included the tabs: **Objectives, Consortium and Deliverables**. Developed in Drupal 8 [2], the website has been designed and implemented jointly by ATOS and UPC. ATOS hosts the website and the update of news, publications, events, etc. is led by UPC as leaders of dissemination.

A second version was released in March 2021, including new sections such as **Blog**, and subsections in **Project** such as **Promotional material**. The premise was to have a clean and usable design, putting emphasis on the main objectives of the project and the use cases, as well as the news of the project. The website follows the EU recommendation regarding usability and accessibility [3], and it includes the logo of the European Commission (see online at https://fishy-project.eu/).

Figure 3. Website analytics

Country	Acquisition		
	Users ↓	New Users	Sessions
	81 % of Total: 100.00% (81)	64 % of Total: 100.00% (64)	108 % of Total: 100.00% (108)
1. Spain	34 (41.98%)	20 (31.25%)	59 (54.63%)
2. Slovenia	9 (11.11%)	7 (10.94%)	9 (8.33%)
3. Portugal	6 (7.41%)	6 (9.38%)	6 (5.56%)
4. Greece	5 (6.17%)	5 (7.81%)	5 (4.63%)
5. Hungary	5 (6.17%)	5 (7.81%)	6 (5.56%)
6. United States	4 (4.94%)	4 (6.25%)	5 (4.63%)
7. Canada	3 (3.70%)	2 (3.12%)	3 (2.78%)
8. France	2 (2.47%)	2 (3.12%)	2 (1.85%)
9. United Kingdom	2 (2.47%)	2 (3.12%)	2 (1.85%)
10. Italy	2 (2.47%)	2 (3.12%)	2 (1.85%)

Figure 4. Sessions and users by country (July 13, 2021)

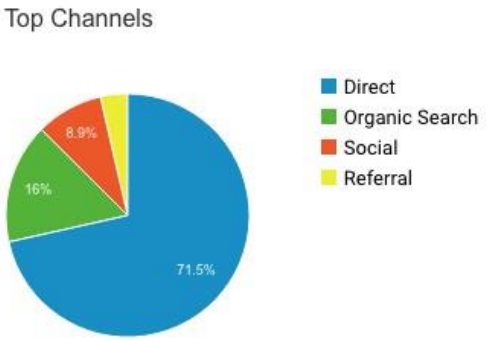

Figure 5. Top channels for accessing (July 13, 2021)

Social Network	Acquisition		
	Users	New Users	Sessions
	235 % of Total: 9.13% (2,574)	216 % of Total: 8.40% (2,571)	356 % of Total: 9.91% (3,593)
1. LinkedIn	**147** (61.25%)	137 (63.43%)	190 (53.37%)
2. Twitter	**86** (35.83%)	72 (33.33%)	159 (44.66%)
3. Facebook	**7** (2.92%)	7 (3.24%)	7 (1.97%)

Figure 6. Detail of the used social networks for accessing (July 13, 2021)

Landing Page	Acquisition		
	Users	New Users	Sessions
	1,883 % of Total: 73.15% (2,574)	1,881 % of Total: 73.16% (2,571)	2,543 % of Total: 70.78% (3,593)
1. /	**872** (43.10%)	852 (45.30%)	1,305 (51.32%)
2. /consortium	**122** (6.03%)	113 (6.01%)	132 (5.19%)
3. /architecture	**82** (4.05%)	80 (4.25%)	82 (3.22%)
4. /news-events	**81** (4.00%)	75 (3.99%)	83 (3.26%)
5. /objectives	**68** (3.36%)	68 (3.62%)	68 (2.67%)
6. /news-events/fishy-1st-newsletter	**63** (3.11%)	62 (3.30%)	63 (2.48%)
7. /use-cases	**48** (2.37%)	47 (2.50%)	50 (1.97%)
8. /form/contact	**44** (2.17%)	35 (1.86%)	48 (1.89%)
9. /user/login	**44** (2.17%)	41 (2.18%)	50 (1.97%)
10. /blog	**36** (1.78%)	35 (1.86%)	36 (1.42%)

Figure 7. Most visited pages (July 13, 2021)

Figure 5 to Figure 9 shows the main statistics regarding the FISHY website, from its creation in December 2020, to July 12, 2021. In Figure 5, one of the interesting data shown is the number of page views, 9408, and the average session duration, 2 min 11 sec; as well as the fact that most of the visitors, 90,8%, are new visitors. In Figure 6, it is shown the list of countries with most visitors, as it is obvious, countries from the consortium are in the first positions of the list, such as Spain, Slovenia, Portugal, and Greece; but in next positions there are countries from out of the consortium, even out of Europe, such as Hungary, United States, Canada, France, and United Kingdom.

Figure 7 shows the main channels to access to the FISHY website, being the most important way of accessing the direct access, followed by the organic search. The third way most utilized to access the FISHY website are the social networks, with a percentage of 8.9%. Figure 8 shows the detail about this accessing through the social networks, being the most utilized LinkedIn, followed by Twitter. A curios data is the fact that there are accesses through Facebook, whereas FISHY does not have Facebook account, which means that some of the partners utilize their personal Facebook accounts to disseminate FISHY.

Figure 9 shows the most visited pages in the FISHY website, being the Home and the Consortium, the most visited ones, which makes sense because we are in the first year of the project and basically, the interest when accessing the FISHY website is knowing what FISHY is and who we are.

2.4.3 Social networks

In this section, we will review the tasks done in dissemination in communication in the social networks, not only in the FISHY social networks, but also in own website/social networks accounts of the FISHY consortium partners.

Partner	Title	Link	Date
ATOS	Tweet	https://twitter.com/AriMarcomm/status/1318846990696943616?s=20	October 21, 2020
XLAB	Tweet	https://twitter.com/xlab_si/status/1349275860403167232	January 13, 2021
XLAB	FISHY A coordinated framework for cyber resilient supply chain systems over complex ICT infrastructures	https://www.xlab.si/research/fishy/	September 2020
ATOS	A coordinated framework for cyber resilient supply chain systems over complex ICT infrastructures	Atos Research and Innovation Booklet (https://booklet.atosresearch.eu/project/fishy)	September 2020
ATOS	European Commission Innovation program "FISHY"	https://atos.net/en/customer-stories/european-commission	October 2020
UMINHO	Project FISHY	http://marco.uminho.pt/projects/FISHY/	October 2020
XLAB	Cyber resilience: Why cyber security just isn't enough anymore	https://www.xlab.si/blog/cyber-resilience-why-cyber-security-just-isnt-enough-anymore/	November 30, 2020
ALTRAN	Proyectos en Ejecución	https://capgemini-engineering.com/as-content/uploads/sites/9/2020/06/20200525_publicidadproyectos_enejecucion_.pdf	September 2020

ALTRAN	FISHY, Seguridad para el IoT en la cadena de Suministro de Automoción	https://capgemini-engineering.com/es/es/insight/fishy-seguridad-iot-cadena-suministro-automocion/	May 2021
ALTRAN	FISHY, Seguridad para el IoT en la cadena de Suministro de Automoción	https://www.linkedin.com/posts/daniel-iglesias-hita_fishy-seguridad-para-el-iot-en-la-cadena-activity-6810205136057626624-gCOP/	June 2021
ALTRAN	Technitive: El Futuro de la Movilidad Urbana	https://capgemini-engineering.com/es/es/webinar/technitive-futuro-movilidad-urbana/	June 2021
UPC	Current Projects	https://www.craax.upc.edu/index.php/projects	January 2021

Table 1. References to FISHY

Another channel for engaging stakeholders and communicating FISHY's objectives, organisation, and results is through social media. Regarding the FISHY social networks, in September 2020 we created a Twitter account and a LinkedIn group. Whereas on March 2021 we changed the FISHY LinkedIn group to a usual LinkedIn account to increase the visibility. Both accounts are used to publish important events in FISHY such as meetings, workshops, new publications or blog entries, or to share project achievements and results (e.g., WP progress, deliverables, open-source resources, etc).

However, LinkedIn has focused to a more specialized audience including related H2020 projects, cybersecurity companies, academic world, etc. Information and language in this channel (scheduled on a weekly basis) will be more technical and will be focused on scientific publications, blog posts, objectives of the project, information about the use cases, technical achievements, etc. in Twitter we also disseminate other daily information such re-tweeting interesting post from other projects; and in average we tweet twice per week, whereas in LinkedIn we usually publish once per week. Currently the data of both accounts are:

- Twitter:
  - Link: https://twitter.com/H2020Fishy
  - Number of tweets: 136
  - Followers: 124
- LinkedIn:
  - Link: https://www.linkedin.com/in/fishy-project-16342920a/
  - Number of posts: 17 (from March 2021)
  - Number of connections: 56
- YouTube:
  - Link: https://www.youtube.com/channel/UCSDpfCPvFNjRS3RemG0iNQQ
  - No videos yet.

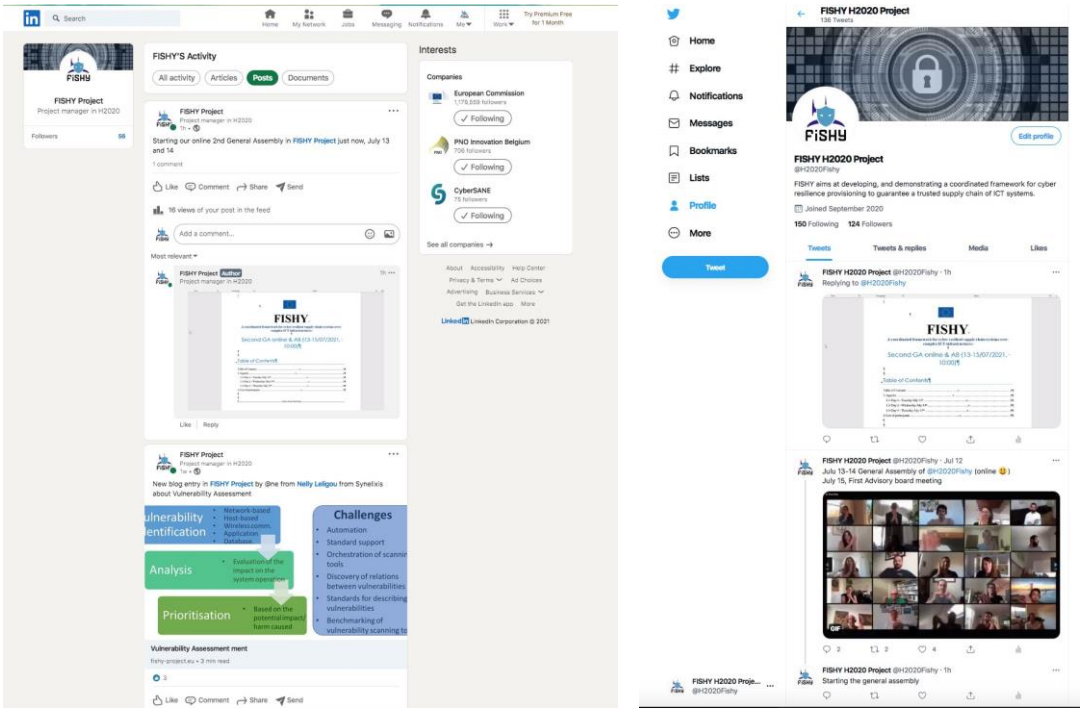

Figure 8. FISHY LinkedIn account (left) and Twitter account (right) (July 13, 2021)

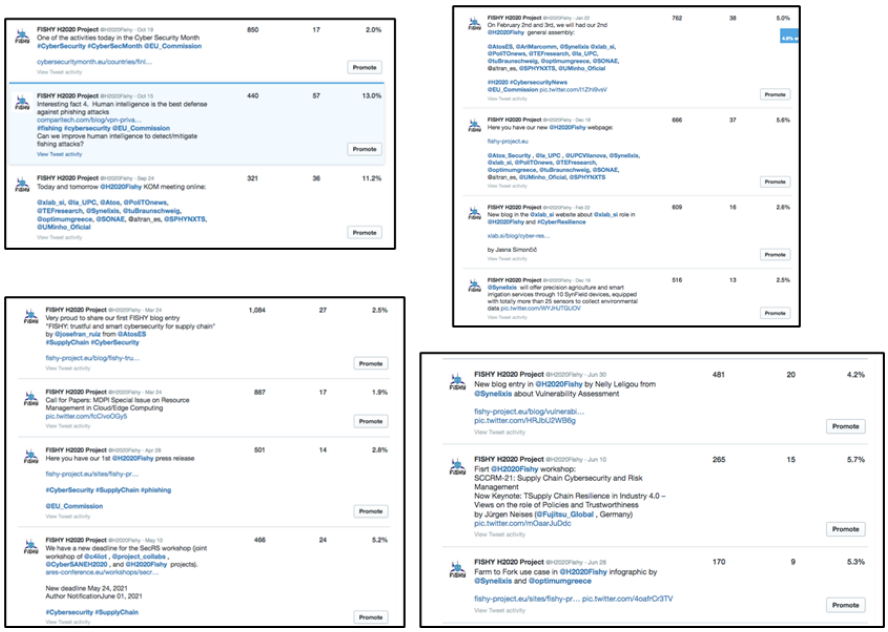

Figure 9. Some of the most appreciated Tweets

Figure 9 shows some of the most appreciated Tweets during the first year of FISHY; for instance, the Tweet with more impressions is the one about the first FISHY blog entry. In general, the Tweets with more impressions or more engagement are about to events and new publications related to FISHY. The same happens in LinkedIn where, the most appreciated posts, Figure 14, are usually related to the FISHY blog entries published on the website.

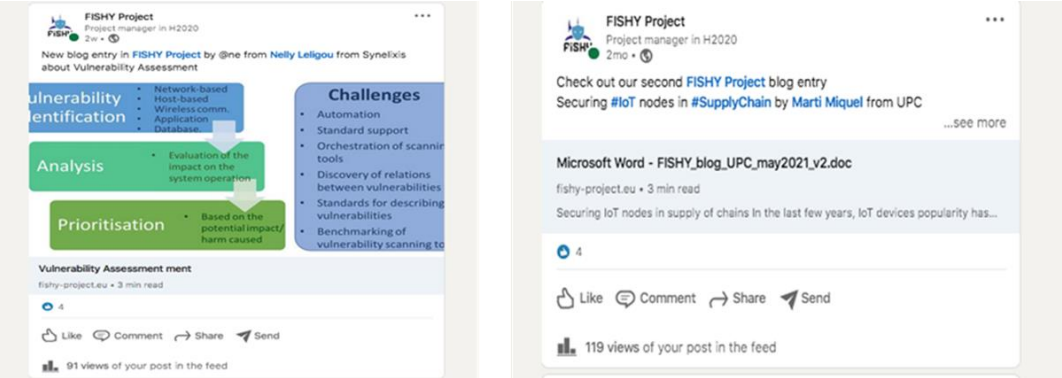

Figure 10. Most appreciated posts in LinkedIn

2.4.4 FISHY project presentation

We prepared a Power Point presentation on April 2021 to be used in the different events where FISHY is presented. In this document. We outline the main objectives of FISHY, the consortium, and a first approach to the architecture, as well as the three use cases. This presentation is available in the internal repository for being updated and personalized by the different partners, and a pdf version is published in the FISHY website[5].

Apart of this general presentation, the consortium prepared different pitch and deck material, in form of an extra Power Point presentation, as well as a White Paper. This White Paper is also published in our website and has been sent to the Advisory Board to prepare the first meeting with the Advisory Board on July 15, 2021[6].

2.4.5 Newsletters

The FISHY newsletter offers the appropriate means to carry out direct proactive communications to the targeted stakeholders, the European Commission, researchers and potential interested investors. The newsletter will be released at every key stage of the project:

#	Main Objective	Date
1	To inform about the Project objectives. To involve stakeholders in the project activities and workshops.	M6
2	To report results of the FISHY architecture and achievements in Y1.	M12
3	To involve stakeholders in FISHY project activities and workshops. To inform about the achievements in the definition of the use cases and integration tasks	M18
4	To inform about the achievements in the implementation of the use cases	M24
5	To provide details about the technical components of the FISHY framework	M30
6	To inform about project outcomes and sustainability of these achievements.	M36

Table 2. Newsletter Objectives

[5] https://fishy-project.eu/promotional-material/project-presentation
[6] https://fishy-project.eu/promotional-material/white-paper

The first newsletter was published in the FISHY website on March 2021[7], and in that document, a first approach to FISHY as well as the activities developed during the first six month were presented. The newsletter was also disseminated through our social networks.

2.4.6 Blog

The idea of publishing a blog is to spread FISHY to a more general audience and will be shared through a menu option in the Home page of the project website. FISHY blogs will have and extension of one page and the text should be supported by different graphical material, such as pictures, graphs, infographics, etc. Blogs will be also promoted in the social networks, LinkedIn and Twitter.

FISHY blogs will cover a variety of topics including project results and achievements, cybersecurity news, or general information related to cybersecurity; and are also open to any research topics related to FISHY.

Blog posts in FISHY will be published on a bi-monthly basis and will be produced by all partners with the view to communicate project findings as well as ignite interesting conversations. These blogs will be available from the project website.

Figure 11. Blog in FISHY website

The first entry was generated by the project coordinator, overviewing the project and its main objectives. The second blog entry was produced by UPC and presented a research topic related to securing edge nodes in a supply of chain by means of blockchain. The third already published blog entry has been written by SYNELIXIS and describes in an informative way the Vulnerability Assessment. Table below depicts the tentative plan for the blog production.

Partner	Date	Titles
ATOS	February 28, 2021	FISHY: Trustful and smart cybersecurity for supply chains

[7] https://fishy-project.eu/sites/fishy-project.eu/files/public/content-files/deliverables/1st%20FISHY%20Newsletter.pdf

UPC	May 14, 2021	Securing IoT nodes in supply of chains
SYN	June 30, 2021,	Vulnerability Assessment
SONAE	August 31, 2021	The importance of security in the Industry 4.0 paradigm
ALTRAN	October 31, 2021	[to be announced]
XLAB	December 21, 2021	[to be announced]
POLITO	February 28, 2022	[to be announced]
TID	April 30, 2022	[to be announced]
TUBS	June 30, 2022	[to be announced]
OPTIMUM	August 31, 2022	[to be announced]
STS	October 31, 2022	[to be announced]
UMINHO	December 21, 2022	[to be announced]
SYN	February 28, 2023	[to be announced]
SONAE	April 30, 2023	[to be announced]
ALTRAN	June 30, 2023	[to be announced]
ATOS/UPC	August 31, 2023	[to be announced]

Table 3. Blog post scheduling

2.4.7 Press releases

Press release is the media used to inform about the real benefits that FISHY can offer to the stakeholders' groups identified in D7.1 [1]: General public and civil society organisations, Industry, Government and Scientific community.

We plan to produce two press releases during the whole project, one at the beginning and another at the end of the project. The first of these press release[8], has been produced in March 2021, and it is available in both, the website and the repository. This press release has been also published in LinkedIn as an article. The idea is that the different partners can adapt this press release, for instance, translating it to their different languages or putting more the focus on the contribution of that partner; and then it may be used to be published in their internal websites or to be communicated to their own stakeholders or clients.

2.4.8 Dissemination & Communication toolkit

The following section describes the printed/published online dissemination material to be prepared in order to spread the message of FISHY. The initial idea was to print part of this material, such as brochure, posters and infographics to be used in face-to-face meetings, however due to the pandemic situation the consortium decided to have only online versions of this material, in the repository and in the website, to be freely used by the partners.

[8] https://fishy-project.eu/sites/fishy-project.eu/files/public/content-files/2021/FISHY_Press_release_V2_1.pdf

2.4.8.1 Brochure

The main objective of the brochure is to provide our audiences with an attractive and written project overview and a summary of the main project objectives and characteristics. The FISHY produced was produced in March 2021 in form of a two-pages document briefly describing What is FISHY, the Objectives and Expected Impacts, Figure 16. This brochure is available in the repository and published in the FISHY website.

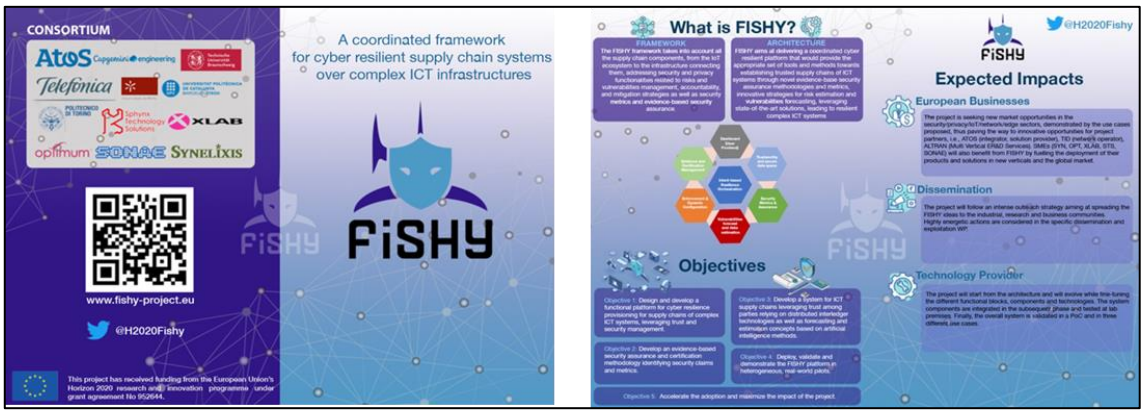

Figure 12. FISHY brochure

2.4.8.2 Poster

The main purpose of the poster is to catch the audience attention. A poster must be eye catching and FISHY poster is designed to give a clear and concise description of the project to interested parties. In this first year of the project, we decided to postpone the production of a poster, until there are face to face events. Instead of producing a poster we focused on producing different FISHY infographics as explained in next sub-section.

2.4.8.3 Infographics

As depicted in D7.1 [1], we adopt the following definition of infographic: An infographic is a collection of imagery, charts, and minimal text that gives an easy-to-understand overview of a topic.

Considering this definition during the first year of the project the consortium has produced four infographics. The first of them, Figure 13, like the brochure, presents the project as a whole; and three additional to present the three use cases to be deployed in FISHY. This infographic media facilitates the understanding of their features and benefits.

Figure 13. FISHY infographic[9]

The infographic describing the Farm to Fork use case is already published in our website[10], and two more infographics related to the other use cases, are already produced, and will be published in the next month.

2.4.8.4 Videos

FISHY YouTube channel has been created to offer FISHY followers' visual material about the project results (demos, presentations, videoblogs, etc). In a first approach and during 2020, the consortium has prepared two videos, one of them where the project coordinators introduce FISHY to a general audience, Video presentation part 1, and another one where the use cases present the benefits of using FISHY in their supply of chain. These videos will be uploaded to YouTube in the next months.

The consortium plans to publish at least the next videos during the whole duration of the project:

[9] https://fishy-project.eu/sites/fishy-project.eu/files/public/content-files/2021/FISHY_Infographic.pdf
[10] https://fishy-project.eu/sites/fishy-project.eu/files/public/content-files/2021/F2F_Infographic_F2F.jpg

- Video 3: FISHY architecture (mixing video and animation) M24. In this video it will be shown how the FISHY architecture works and each one of its modules by means of both animation and also real video.
- Video 4, 5 and 6: FISHY in use cases. How FISHY improves the cybersecurity in FISHY use cases, M33. In these videos the consortium will show a demo about how FISHY as a whole is used in each one of the use cases.

2.4.9 KPIs in communication and dissemination

In terms of assessing the success of the activities conducted in the context of T7.1, several performance indicators will be monitored. Some of these key performance indicators are directly extracted from the grant agreement, see Table 4, for the whole duration of the project. However, in D7.1, we established additional performance indicators to better monitor the fulfilment of all the dissemination and communication activities year per year. These new KPIs are shown in Table 5 and Table 6, and in parenthesis there are detailed the KPIs achieved during this first year.

KPI description	KPI Target
Scientific publication to conferences and journals supporting FISHY approach	At least 9 indexed journals and 20 conference papers
Impact factor of journals considered for FISHY publications	Greater than 2,5 (within JCR Q1 or Q2)
Number of workshops attended/organized	At least 6/3
Percentage of ISI indexed journal	90% (room for open source journals)
Ranking of conferences	75% must belong to tier 1 or tier 2 conferences 6

Table 4. Dissemination Activities: KPIs and Targets

From Table 4, the most challenging KPI is the number of publications in indexed journals with an impact factor greater than 2,5. In this first year of the project, the consortium has not yet published in any journal, but it is reasonable to think that the KPI can be achieved, due to the exponential growth the results in research the project will have.

On the other hand, regarding the dissemination and communication KPIs in Table 5 and Table 6, the most worried data, is the related to number of journals, the number of attended events, the number of blog videos as well as the number of posters; the rest of indicators are in a good shape to achieve the global KPIs at the end of the project. Some of the not achieved KPIs during this first year, such as the poster, and the attended events can be justified due to the pandemic situation this year, but if in the next two years the situation improves, the KPIs can easily achieved. The case of the blog videos is not a problem because some of the proposed blog entries in the next year will be in form of video blogs. Finally, regarding publications in journals is the KPI most worried, but in the next two years the consortium will have enough research material to achieve the KPI for the whole project.

KPI	Targets			Expected Impact
	Y1	Y2	Y3	
Number of project-dedicated workshops	1 (2)	2	3	Increased collaboration with other initiatives/projects/programmes for joint

Number of attendees to the FISHY workshops	50 (40?)	100	150	research, information exchange and dissemination. Increased awareness. Contact to external stakeholders to promoting FISHY solutions.
Number of FISHY events (Summer Camp/ Demo Day)	0	0	2	
Number of attended events (including 4 exhibitions and industrial events)	10 (5)	20	30	Ideas' gathering and knowledge exchange with relevant communities, projects and initiatives; Information about latest ICT news; Liaisons; Increased awareness.
Number of scientific publications (90% ISI indexed journals)	1 (0)	5	9	Validation of the project's concept, findings and advantages; Promotion of results to scientific communities; Ideas' gathering and knowledge exchange with relevant communities and initiatives.
Number of articles in general media (at least 15 publications to international conferences and workshops related to cyber resilience)	2 (1)	10	15	
Liaisons and joint activities with other projects, communities, initiatives.	5(4)	7	10	Communication of project news, events & results; Validation of project's concept, findings and progress; Ideas' gathering and knowledge exchange; Increased awareness.
Contributions to standardizations	0	2	5	Submission of at least 4 contributions in relevant industrial bodies and communities

Table 5. Disseminations KPIs

KPI	**Targets**			**Expected Impact**
	Y1	**Y2**	Y3	
Number of unique website visitors	1,500 (2519)	2,500	3,500	Main online information channel; Communication of project news, events & results; Liaisons with other initiatives, projects, working groups; Increased awareness. Drive engagement with the project.
Average duration of website visits	2 min (2 min 10 s)	2,5 min	3 min	
Number of website page views	3,000 (9188)	5,000	8,000	
Number of references to the project website on search engine (Link Building)	10 (14)	15	20	Liaisons with other initiatives, projects through links; Increased awareness
Number of accumulative followers in Twitter	100 (124)	200	250	Increased visibility to stakeholders active in social media; Attainment of interest of stakeholders; Direct communication with followers. Sharing knowledge with
Number of tweets	100 (139)	200	300	

Number of LinkedIn members	100	200	250	other projects and initiatives. Drive engagement with the project
Number of posts, news/ events on the website	15 (>15 Done!)	30	45	
Number of brochures	1 (1)	1	1	Increased awareness. Drive engagement with the project
Number of infographics	3 (4)	3	3	Increased awareness on project use cases.
Number of posters	1 (0)	1	1	Communication of main project's concepts and advances in a catchy and easily understandable manner. Drive engagement with the project
Number of blog posts	4 (4)	10	16	Communication of main project's concepts and advances in a catchy and easily understandable manner. Drive engagement with the project
Number of project videos	1 (1)		2	Increase awareness. Reinforcement of the exploitation strategy.
Number of blog videos	2 (0)	4	6	Communication of main project's concepts and advances in a catchy and easily understandable manner. Drive engagement with the project
Number of press releases	1 (1)	0	2	Communication of project news, events & results; Increased awareness. Unique branding and visual identity of the project; Improves communication of results and information provision during events.

Table 6. Communication KPIs

2.5 Dissemination and communication plan for Y2

During the second year of FISHY the consortium will plan at least the next dissemination and communication activities:

- 3 use case videos
- 6 blog entries
- 1 workshop in collaboration with H2020 Cyrene
- 1 infographic in collaboration with CYRENE
- 2 Newsletters

Apart of these planned activities, FISHY will be continuously updating the website as well as posting in LinkedIn and Twitter. On the other hand, after one year of work, the maturity of the project will be enough to get benefits in terms of scientific publications (conference and journals) both individually and in collaboration with different partners.

The individual plans for dissemination and communication of the different partners are detailed in the next subsections.

2.5.1 ATOS

ATOS plans to focus in the second year in disseminating the more technical results done in the project together with standardization activities focusing in the aspect of cybersecurity. In that sense, we will present different cybersecurity solutions (monitoring, response, auditing, etc.) in the internal industry meetings and innovation workshops so we can, on the one hand, refine and improve the offering of FISHY with feedback of the market and, on the other hand, analyse how FISHY could be used or integrated with current or existing solutions.

Additionally, due to the participation of Atos in other EU projects in the area of cybersecurity, we will lead and participate in joint workshops together with other projects or EU organizations in order to present FISHY to a wider audience and increase its impact in Europe.

2.5.2 SYN

Synelixis identified a set of target international conferences, journals, and events where the project results will be published or presented. We have already published joint papers based on the different pilots and participated in international workshops and events with posters, presentations, demonstrations, and keynotes. However, as the development of the platform will continue, it will create more opportunities for dissemination activities.

Moreover, SYN will try to maximize the dissemination potential through demonstrations of FISHY prototypes. Also, SYN will target scientific dissemination to interested on-going research and innovation actions as well as to the wider scientific community through relevant journal publications and events (conference/workshops). Last, but not least, SYN will use corporate marketing media (SYN website, social media, newsletters, etc.) to create awareness on FISHY outcomes.

2.5.3 XLAB

Due to its business focus as SME, XLAB has a lower emphasis in dissemination activities addressing the scientific community. On the other hand, the company is planning pitch activities that will be of great contribution to the dissemination and communication activities towards an industrial audience, in line with the exploitation activities as well. The most recent plan is the presentation and possible live demonstration of Wazuh integration in an online event organized by the Slovenian Chamber of Commerce in discussion with Slovenian automotive industrial partners in September 2021. In the end of that month, XLAB will also produce a blog publication to expose the highlights of this meeting. Moreover, XLAB considers the participation on other events of this nature.

2.5.4 POLITO

POLITO, as an academic partner of the Fishy project, will take part in the results' dissemination to the scientific community through publications in high-impact factor conferences and journals of the cybersecurity and privacy sector. Moreover, the fundamentals, concepts and results of the project will be locally disseminated with talks given at the Politecnico di Torino, also involving the institution's startup incubator (I3P). Furthermore, POLITO's educational offer will include several Master Thesis and PhD student positions centred on the project research topics.

2.5.5 TID

The dissemination activities planned for TID are aligned with what was described in Section 7.2.2.5 of D7.1 [1], focused on:

- Internal dissemination, sharing project results to different areas and companies within the Telefónica Group, and with providers and selected customers within the Telefonica ecosystem.
- General industrial dissemination, in events and fora related to virtualization technologies and security, building awareness on the concepts and results developed by FISHY.

TID expects dissemination activity to become stronger in the coming period, as results from the project mature and the pandemics situation improves, allowing more opportunities for direct participation in the events and fora mentioned, both at the internal and general levels.

2.5.6 UPC

UPC is in charge of task 7.1, and it will be in charge of coordinating the overall set of activities and actions related to communication and dissemination. In this leadership role, UPC will gather all the information about dissemination actions from all partners, such as scientific publications, blog entries (including plan for blog entries), attendance of events and others. Fruit of this activity, UPC will continue updating news and events in FISHY website, as well as posting in LinkedIn and Twitter. Moreover, UPC plans to publish in at least 3 international conferences and in one indexed journal. Besides this, UPC will collaborate in the creation and edition of the different videos during this second year.

2.5.7 TUBS

TUBS as an academic partner will contribute to the dissemination of the project results through the publications in international peer reviewed journals and presentations in conferences and workshops. Moreover, TUBS will contribute through its internal channels of online dissemination and through its teaching activities. As a part of its dissemination efforts for Y2, TUBS will also provide blog content.

2.5.8 OPT

The plan of Optimum with respect to dissemination of the project results includes activities through the company's digital media channels such as websites and social media accounts. During the second year of the project, OPT will also use complementary communication channels, such as press releases and newsletters to inform the public about the project news and achievements.

Although not being an academic partner, OPT will collaborate with academic partners towards assisting on publishing scientific papers in international prestigious Journals and Conference proceedings that are closely related to the project's research topics. The plan also includes the participation to selected events to present accepted publications or invited keynotes, workshop organization, and any other scientific and technical venue of high relevance for the promotion of the FISHY results.

2.5.9 SONAE

For the second year of FISHY, Sonae and linked third party Sonae Arauco will focus on different dissemination actions aimed at diverse audiences. As an end-user of FISHY results, Sonae will focus on actions such as:

- Internal dissemination – to share the project developments and intermediate results with different areas of the Sonae Group through internal newsletters and experts' internal forums.
- External dissemination – to share FISHY's intermediate results with other industrial organizations, including other actors in the value chain such as suppliers or clients, through digital channels (e.g., social media) and the participation in conferences or other events targeted to industrial users.

Additionally, a video focused on the specific use case will also be prepared to be shared with external audiences.

2.5.10 ALTRAN

ALTRAN Engineering will focus the dissemination actions as follows:

- Internal dissemination: Within group R&D initiatives in AIT and Edge computing ensuring that developments and results are shared as well as best practices and know-how internalized as there is a constant collaboration and engagement within different R&D teams involved. Besides through ALTRAN engineering knowledge internal transfer tools the results will be presented to a wider internal audience via newsletter, workshops, and open sessions ("technitives").
- External dissemination: Using ALTRAN engineering presence in diverse industrial forums such as the Mobile World Forum the results of the project will be presented, besides the project will be presented to relevant actors in the automotive and telco industries through ALTRAN engineering commercial network.

Additionally, ALTRAN Engineering team will prepare a video focusing on the characteristics and points to highlight in specific use case to be shared with external audiences, in the same way as the other partners are preparing one for their own use cases, and we can also collaborate and participate in the elaboration of the one single video for the whole project.

2.5.11 STS

For the second year of FISHY, STS will continue to promote and disseminate FISHY achievements that target industry and SME stakeholders through its official web page (https://www.sphynx.ch) and its dedicated news page. In addition, STS will disseminate FISHY actions through its official social networks accounts of LinkedIn, Facebook and Twitter. Furthermore, it will be actively present in relative events and conferences, while STS will try to contribute to scientific publications, targeting especially to those that are relative to the Security and Certification Manager components of FISHY platform.

2.5.12 UMINHO

The local website @UMINHO for dissemination of FISHY Project's activities will be updated with information on the FISHY's developments (https://marco.uminho.pt/projects/FISHY/). UMINHO team will produce contents to be included in the forthcoming FISHY Newsletters. Dissemination materials from the FISHY project will also be made available to participants of the EAI SmartCity360 conference series, as UMINHO integrates the Organizing Committee.

Also, new project's related publications are to be submitted, and afterwards presented, to International Conferences, or Workshops, in the area.

3 Standardisation

3.1 Participation in standardisation bodies

3.1.1 ETSI

ETSI (European Telecommunications Standards Institute) is a European Standards Organization (ESO). Is the recognized regional standards body dealing with telecommunications, broadcasting and other electronic communications networks and services.

TID has represented FISHY with their participation in the following ETSI groups:

NFV

Industry Specification Group (ISG) Network Functions Virtualisation (NFV) has developed over 100 different specifications and reports for the virtualization of network functions, with focus on the management and orchestration of virtualized resources. From an architectural point of view, NFV specifications describe and specify virtualization requirements, NFV architecture framework, functional components and their interfaces, as well as the protocols and the APIs for these interfaces.

- TID is part of the leadership team of this group, acting as founding member and owning the NOC (Network Operator Council) chair on this group.

ZSM

Zero Touch Network And Service Management (ZSM) group was formed with the goal to accelerate the definition of the end-to-end service management architecture, spanning both legacy and virtualized network infrastructure, to enable automatic execution of operational processes and tasks.

- TID is part of the contributors' group and is one of the founding members of the group.

PDL

Permissioned Distributed Ledger (PDL) analyse and provide the foundations for the operation of permissioned distributed ledgers, with the ultimate purpose of creating an open ecosystem of industrial solutions to be deployed by different sectors, fostering the application of these technologies, and therefore contributing to consolidate the trust and dependability on information technologies supported by global, open telecommunications networks.

- TID is part of the leadership team, acting as founding member and owning a chair

SAI

The ETSI Industry Specification Group on Securing Artificial Intelligence (ISG SAI) focuses on three key areas: using AI to enhance security, mitigating against attacks that leverage AI, and securing AI itself from attack. The ETSI ISG SAI works alongside a landscape of huge growth in AI, creating standards to preserve and improve the security of Artificial Intelligence.

- TID is part of the contributors' group and is one of the founding members of this group.

ENI

The Experiential Networked Intelligence (ENI) focuses on improving the operator experience, using closed-loop AI mechanisms based on context-aware, metadata-driven policies. This enables the ENI system to recognize and incorporate new and changed knowledge, and hence make actionable decisions.

- TID takes part is this group as contributor.

TC-CYBER

Technical Committee (TC) Cyber (Cybersecurity) work is split across 9 key areas: understanding the cybersecurity ecosystem, IoT security and privacy, cybersecurity for critical national infrastructures, protection of personal data and communication, enterprise and individual cybersecurity, cybersecurity tools, support to EU legislation, forensics, and quantum-safe cryptography. You can find out more about each area below.

- TID takes part is this group as contributor.

3.1.2 IETF

The Internet Engineering Task Force (IETF) is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.

- TID acts as a contributor in Security (SEC) and Operations and Management (OPS) areas.
- UMinho is participant in SEC, OPS and Internet (INT) areas.

3.1.3 IRTF

The Internet Research Task Force (IRTF) focuses on longer term research issues related to the Internet while the parallel organization, the Internet Engineering Task Force (IETF), focuses on the shorter term issues of engineering and standards making.

- TID is contributor in Network Management Research Group (NMRG), Computation in the Network Research Group (COINRG) and Quantum Internet Research Group (QIRG) areas.

3.1.4 3GPP

The 3rd Generation Partnership Project (3GPP) unites [Seven] telecommunications standard development organizations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC), known as “Organizational Partners” and provides their members with a stable environment to produce the Reports and Specifications that define 3GPP technologies.

- TID acts as a contributor in TSG Service and System Aspects 1 (TSG-SA1) (Services), TSG-SA2 (Architecture), TSG-SA3 (Security), TSG-SA5 (Management, Orchestration and Charging) and TSG Core Network and Terminals (CT).

3.1.5 OSM

Open-Source MANO (OSM) is developing an open-source Management and Orchestration (MANO) stack aligned with ETSI NFV Information Models. As a community-led project, OSM delivers a production-quality MANO stack that meets operators' requirements for commercial NFV deployments.

- TID acts as a founding member and chair, being one of the leaderships in the group.

3.1.6 O-RAN

Operator Defined Open and Intelligent Radio Access Networks (O-RAN ALLIANCE’s) mission is to re-shape the RAN industry towards more intelligent, open, virtualised and fully interoperable mobile networks. The new O-RAN standards will enable a more competitive and vibrant RAN supplier ecosystem with faster innovation to improve user experience. O-RAN based mobile networks will at the same time improve the efficiency of RAN deployments as well as operations by the mobile operators.

- TID acts as a contributor, being one the founding members of this group.

3.1.7 TIP

The Telecom Infra Project (TIP) is a global community of companies and organizations working together to accelerate the development and deployment of open, disaggregated, and standards-based technology solutions that deliver the high-quality connectivity that the world needs – now and in the decades to come.

- TID acts as a contributor in this group, specially focused on WAN infrastructures.

3.1.8 GSMA

The Global System for Mobile Association (GSMA) represents the interests of mobile operators worldwide, uniting more than 750 operators with almost 400 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors.

- TID is contributor of this group, being active in the Operator Platform (OP), Security and Internet groups.

3.1.9 IEEE

The Institute of Electrical and Electronics Engineers (IEEE) is the world's largest technical professional organization for the advancement of technology.

- UMinho is participant on the Internet of Things (IoT) activities and is active in involvement with Sensors Council.

3.1.10 ISO

International Organization for Standardization (ISO) brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.

- UMinho is participant with ISO in ISO/IEC/JTC 1/SC 27, jointly with International Electrotechnical Commission (IEC) through the Joint Technical Comittee (JTC1), about Information security, Cybersecurity and Privacy Protection.

3.2 Activities and contributions in standardisation bodies

3.2.1 ETSI

3.2.1.1 NFV

The work done by TID in the Network Function Virtualization (NFV) have been contributions and support to different Work-Item (WI) proposals on:

- CI/CD application in NFV lifecycle management and orchestration [4].
- Tenant isolation (SEC026) [5].

Apart from this work, TID has been working on the preparation of a new work-item proposal on NFV Security Assurance (SEC027) [6] and the contribution and support to the relaunch on the SEC005 work-item on certificate management [7].

3.2.1.2 ENI

On the field of the Experiential Networked Intelligence (ENI), TID has been working on contributing and supporting to new WI proposals:

- Processing and management of intent policies (ENI-025) [8].
- Models for data exchange and knowledge representation [9].

3.2.1.3 MEC

The work done in the Multi-access Edge Computing (MEC) ETSI group by TID:

- Publication of whitepaper titled *MEC security: Status of standards support and future evolutions* [10].
- Work-item on MEC studying security topics and paradigms that apply to MEC deployments, covering themes of application and platform security, Zero-Trust Networking, and security requirements for MEC Federations [11].
- Acting as a Leader of the MEC Support Team [12].

3.2.2 IETF

The following work have been done by TID related to this organization:

- Proposal for extension of the I2NSF charter to address security policies [13].
- Updates and comments on the analysis of ACME integration with other IETF protocols (draft-ietf-acme-integrations) [14].
- Contribution on the applications of digital twin principles to network management (draft-zhou-nmrg-digitaltwin-network-concepts-03) [15].
- Contribution on intent mechanism classification (draft-irtf-nmrg-ibn-intent-classification-03) [16].
- ACME STAR delegation for short-lived certificates (draft-ietf-acme-star-delegation) submitted for publication [17].

3.2.3 3GPP SA1

The work done by TID in 3GPP Technical Specification Group Service and System Aspects (TSG SA) is the contribution and support to a new WI proposal on the application of SFC in 5G networks [18].

3.2.4 ITU-T

TID has been working in the ToR of the ITU-T Focus Group on Autonomous Network [19]. This group draft technical reports and specifications for autonomous networks, including exploratory evolution in future networks, real-time responsive experimentation, dynamic adaptation to future environments, technologies, and use cases.

3.2.5 ISO

UMinho is working in this group on the preparation of a new standard project (or part) on security metric for supply chains.

4 Exploitation

The following section will elaborate on the activities of Task 7.3 that focus on the exploitation of the project. This includes the IPR management, the business and product development, and the innovation tracking building on other tasks of the project (e.g., the market radar in Task 2.1).

4.1 Overview

To ease the access to the achievements of T7.3 reported in this deliverable, we will have a first section to present the main highlights of the exploitation task, the progress measured over previously defined KPIs, the interactions between T7.3 and other tasks in the project, and the plans for Year 2.

4.1.1 Highlights

In this first reporting period, and according to the plans published in deliverable D7.1, the effort for exploitation in FISHY builds on the work done in the market assessment in D2.1 and in developing the architecture of the FISHY full-stack solution with respect to the technological imperatives of our use cases. During this first year of the project, we have explored the initially proposed exploitation results, in the context of both their value proposition (based on the problems they solve) and their market positioning (examining what their differentiators and innovation potential are). This will help us better understand the FISHY product, both in terms of the now refined individual exploitation (which aligns with the priorities of each of the consortium partners), and the preliminary joint exploitation that starts to position the consortium partners in a common business proposition to be explored from the research produced in this project.

To better leverage the exploitation opportunities during the lifetime of the project, we have defined the IPR management methodology that we will follow, as well as the initial business model based on the collected business models of the most established competitors, and a market assessment, both published in D2.1. While the market assessment update is positioning the initial FISHY development in comparison to the competitors, the preliminary business model builds on this work and on the joint exploitation plans to provide a foundation to guide the project's exploitation activities. And to present this business perspective from the start, we have worked with Task 7.1 to prepare a pitch deck that can help each of the partners present the innovation potential of the project, as well as a white paper that can be used to follow up on the contacts made. These materials were used in our contacts with the External Advisory Board (EAB) of FISHY, with whom we met in July 2021 to present the highlights of the project and hear their suggestions on how we should move forward in terms of both technical and business pathways.

4.1.2 KPIs

The updated progress of exploitation activities of FISHY is shown in the KPIs of Table 7 below for the T7.3 achievements. These exploitation specific KPIs improve the planning published in D7.1, based on expected outcomes as agreed within the consortium. While IPR management and product articulation have made significant progress (mostly due to the nature of the exploitation tasks in this first year), business development is showing some initial advances (mostly around joint exploitation) and go-to-market had some initial actions building on the communications activities and preliminary understanding of the FISHY business opportunities. These updates (and corrects) the exploitation KPIs published in Table 10 of deliverable D7.1.

As noticed in Table 7 below, we have already achieved some of the proposed targets for M36 in M11. Note that the figures for IPR management refer to the expected IP outcomes, while the figures for product articulation refer to the analysis of the project results that need to be configured along the way to the solutions. They show the IP results and exploitable results analysed, which is an initial work that can be refined during the lifetime of the project. We also expect these numbers to increase over the lifetime of the project including new trends and relevant competitors.

KPI	Description	Metrics	Target (M36)	Target (M12)	Status (M11)
IPR Management	Identification, analysis and protection of IP results	# of IP instances logged and analysed	20	15	17
Product Articulation	Analysis of the FISHY innovations with market potential	# of exploitable results analysed	15	10	13
Business Development	Focused business models based on joint exploitation	# of business tools prepared	5	3	3
Go-to-market	Coordinated communication of the FISHY Key Exploitable Results (KERs)	# of actions	10	5	1

Table 7. Updated KPIs for FISHY's exploitation activities

4.1.3 Interactions with other tasks

The exploitation task is transverse to most R&D tasks, especially in the context of product development. This is also visible from the technical and communication perspectives, which use knowledge gained in exploitation as input to their workflow.

The technological decisions from the technical coordination and WP2 are crucial to steer the value message of FISHY towards appropriate target groups. On the other hand, the implementation of the first phase of joint exploitation (discussed in Section 4.2.4) requires a lot of input from the technical coordination and from all partners leading assets that are core technologies in building the FISHY layers to be exploited.

Intersecting between the WP7 tasks, the exploitation task T7.3 has worked closely with the communication activities in task T7.1 to coordinate joint actions that can lead to business and market insight, but also lead generation. As part of this collaboration, we also create support materials for pitch activities and help shape marketing campaigns within communications towards a business-face strategy. These interactions with the communication efforts enable the appropriate value message, ensuring the efficiency of exploitation throughout communication channels and marketing materials. Upcoming interaction with external media, coordination of industrial pitch activities, and production of remote and physical booths are key aspects of this collaboration. In addition, the presentation of value messages on the website using information gathered and curated at T7.3 will help promote a clear view of FISHY's business strategy and community acceptance.

Collaboration with T7.2 is based on exploration of other EC projects and initiatives in terms of complementarity and competition. In particular, efforts to comply with and contribute to existing standards (discussed in Section 3) will be of great value in discussing business opportunities with potential FISHY customers.

4.1.4 Plans for Y2

In this first year of the project, we have analysed the potential to unlock the impact of FISHY, and plan how to leverage its innovation. Below is an updated timeline of planned exploitation activities with a 2-year window beyond FISHY's lifetime. This provides an overview of the overall exploitation activities and how they are in sync with each other. It also allows us a more complete perspective of the Year 2 plan in the context of what was accomplished in Year 1.

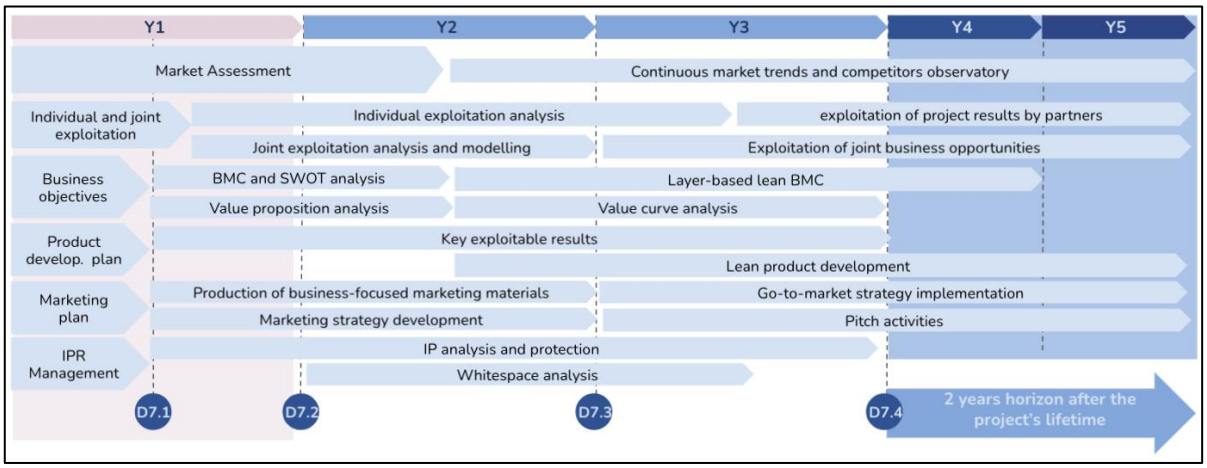

Figure 14. Timeline of activities for FISHY exploitation

As projected in Figure 14 above, the end of Year 1 already includes a kickstart of individual and joint exploitation analyses with a preliminary exploitation model presented in Section 4.2.4. Additionally, the diversified business modelling and SWOT analysis has started in an overall manner, and value proposition analysis is already presenting a ranking in Section **¡Error! No se encuentra el origen de la referencia.**. Moreover, the product development initiated with the collection of expected exploitable results and their decomposition into building blocks of exploitation of FISHY (see Section 4.2.1), and finally the interaction with T7.1, are allowing for a business-oriented communication of the value of FISHY and the production of appropriate marketing materials, a white paper, and a pitch deck (discussed in Sections 2 and 4.3). In Year 2, we will intensify business development and product development, side-by-side with innovation efforts and IPR management, towards the exposure of FISHYs KERs.

In particular, we will continue to monitor market trends and competitors within T2.1 and refine their comparison with FISHY hand in hand with technological development within a lean product development approach. Moreover, we will intensify synchronisation with the communication effort of T7.1 in order to enhance the communication of FISHY's unique value proposition and potentiate lead generation. A prime example of this synchronisation is the orchestration of activities to jointly participate in major events, global initiatives and external media. The T7.3 exploitation task will also follow-up the appropriate synchronisation with IPR management and innovation management, which will make significant progress in Year 2.

4.2 Innovation Management

The innovation management methodology adopted at FISHY follows the lean product development perspective where early adopters (the FISHY use cases) contribute greatly to decision making and thus impact the value generation. We start this section by discussing the exploitable results.

4.2.1 Exploitable Results

In the following we describe the exploitable results identified in FISHY. This feeds the new communication approach adopted in the new white paper, pitch deck and other forthcoming communication activities. Moreover, they will serve as drivers in communicating the value message of FISHY based on its most prominent technology.

To help us better express FISHY's main ideas about its representing assets, we have used an adaptation to the Pitch Canvas[11] approach. This entrepreneurial brainstorming tool, created by David Becket, helps structure and visualize a pitch on one page, much like the business model canvas. Using this tool in the context of FISHY requires some adaptation to the context and needs of the WP7 team. The main objective is to facilitate the global view and content creation related to the main ideas of the project. In doing so, we have distinguished the following classes and the corresponding questions to be answered. This adaptation to the original canvas fits better with the average TRL 6/7 (which is considered the target for the end of the project as agreed in the GA), and is proprietary to the impact generation team at FISHY. It is based on the following:

- Problem: What is the problem we are trying to solve?
- Solution: With which solution are we solving it?
- Value: Why is our solution better?
- Functionality: What does it do?
- Technology: What does it entail?
- Differentiator: What is the differentiator from the competition?
- Value: What are the core innovations in the product?

We present the highlights of this analysis in the following Table 8, and the details of the analysis of each exploitable result in the confidential version of this deliverable, D7.5. of this document, in agreement with the pitch canvas approach described above.

ID	Lead	Exploitable Result	Domain of Action	TRL start	TRL end	WP/ Task	Task Leader
E01	ATOS	Enhanced capabilities for ATOS XL-SIEM	Vulnerability Assessment	6	7	3.2	XLAB
E02	ATOS	Extended Continuous Risk Assessment Engine	Risk Assessment	6	7	3.2	XLAB
E03	TID	Standardised API for network infrastructure abstraction	API/network monitoring	6	7	5.2	POLITO
E04	TID	Ordered Proof of Transit (OPoT)	Privacy enhancement	3	5	5.2	POLITO
E05	STS	Security Assurance & Certification Management Platform	Security Assessment	6	7	4.2	STS
E06	XLAB	Detection and protection components	Intrusion and Detection Services	5	7	3.2	XLAB
E07	XLAB	Vulnerability Assessment	Vulnerability Assessment	5	7	3.2	XLAB
E08	XLAB	Extensions to xOpera	Orchestration	6	7	4.1	POLITO
E09	OPT	ILT-based warehouse management system	Data Management	9	9	6.1	OPT
E10	SYN	Evidence-based data monitoring platform	Data Quality Control	9	9	5.1	TUBS
E11	UPC	Trustworthy identification and authentication of edge systems	Blockchain	4	6	3.3	UPC

[11] https://upmetrics.co/canvas/pitch-canvas

E12	UPC	Advanced Mitigation strategy - PMEM	Predictive Maintenance	3	6	3.2	XLAB
E13	TUB	Intent-based resilience orchestrator (IRO)	Orchestration	3	6	5.1	TID
E14	POLITO	Integrity Assessment Toolkit	Integrity Assessment	4	6	5.2	POLITO
E15	UMinho	Framework for InfSec evaluation within IoT	IoT security	4	6	5.2	POLITO
E16	Altran	Connected & Autonomous Car Use Case	IoT security	4	6	6.2	ALTRAN
E17	SONAE	Prototype of FISHY platform ready for validation in a real context	Security Platform	3	6	6.2	SONAE

Table 8. Exploitable results of FISHY

Based on these exploitable results we defined the domains of action that guided the market assessment, as reported in D2.1, to create the FISHY market radar. We recall that within exploitable results, the FISHY core technologies are the assets that shape the FISHY product (and are therefore the ones that are communicated to the target audiences), while the technological enablers are the ones that are needed to ensure the appropriate functionality, innovation, and uniqueness of the FISHY solution.

Figure 15. Distinction of exploitable results between enalbles and core technologies

4.2.2 IPR Management

The term Intellectual Property Rights (IPR) is used to refer to a party's ownership of a tangible or intangible outcome. It covers several different aspects, covered by different laws and practices at national and EU level. All IPR-related topics - copyright, patents, licensing, joint ventures and spin-offs - are collectively indicated as IPR and exploitation[12]. Here we address the vision of FISHY on IPR and its processes to process and protect it throughout the duration of the project.

The protection and exploitation of FISHY IPR is central to the exploitation activities and provides a basis for the definition and commercialization of the project results. Our overall activities include the identification of the parties with IPR on each of the project outcomes, and the identification of which protection and exploitation model is applicable to each of the project outcomes. During M1-M9, the Consortium updated the IP background and synchronised with the questionnaire of external tools to FISHY in use (the confidential version of this deliverable, D7.5). It also logged the expected IP results by collecting it from partners synchronised with the progress in the product definition and description of exploitable results. It reflects the technology produced in the context of FISHY and is based on the IPR background earlier disclosed in GA, updated by Task 7.3.

[12] European Commission. (2018). Intellectual Property. Retrieved 8 10, 2018 from EC - Industrial Growth: https://ec.europa.eu/growth/industry/intellectual-property_en

The outcomes generated within FISHY are developed by Consortium Partners. Most of the developments will be done via an open-source license (using the Apache 2.0 license as agreed upon at GA). The IPR management will be done for the software solutions and components developed within the duration of the project. The technology developed as part of FISHY reflects the IPR results described in the confidential version of this deliverable, D7.5, where we present the expected IP results. It is part of the FISHY exploitation live document, which also includes the IPR background with which the project has started, including technology dependencies to be considered. The IPR results and planned licensing is tracked by T7.3 with each IP owner to ensure that planned tangible outcomes affecting multiple partners can be built even after the end of the Grant Agreement (GA). Important parts will be open-source and thus available without any special agreement, other parts will have shared IPR by multiple partners and thus can be used by all. For the remaining parts, agreements will be negotiated in the second half of the project as appropriate.

4.2.3 Individual exploitation

During M7, the consortium answered a questionnaire to update and evaluate the progress of individual and joint exploitation. In the following, we present the main results that will feed into the exploitation modelling at FISHY.

The assessment on the individual exploitation plans of the FISHY consortium partners is fundamental as it shows compromise to the exploitation of the results of the project. It was collected via an online survey in March 2021. The questionnaire to assess individual and joint exploitation was designed with input from the consortium partners to ensure that the questions were clear and appropriate. It is as follows:

1. *What is your role in* FISHY *'s product development?* [in the individual exploitation perspective]
2. *Which problem(s) do you resolve? How is it different from existing solutions?* [What are the needs of your future customers and how is your technology different?]
3. *Which is your value proposition?* [What is great about your technology?]
4. *What exploitation opportunities and risks do you foresee for your idea?* [How will this individual exploitation impact your institution?]
5. *What is your role in the long-term sustainability of* FISHY*? Do you consider a spin-off or IP transfer?* [How do you see this individual exploitation in the sustainability of FISHY?]

Based on the responses from this exploitation survey, we were able to understand that most of the consortium partners are able to participate in the exploitation of the project results and on the undertake of business opportunities (see Figure 16). We can also see that several FISHY partners are considering the transfer of intellectual property, also related to the weight of academic exploitation (in terms of number of research institutions) within the project.

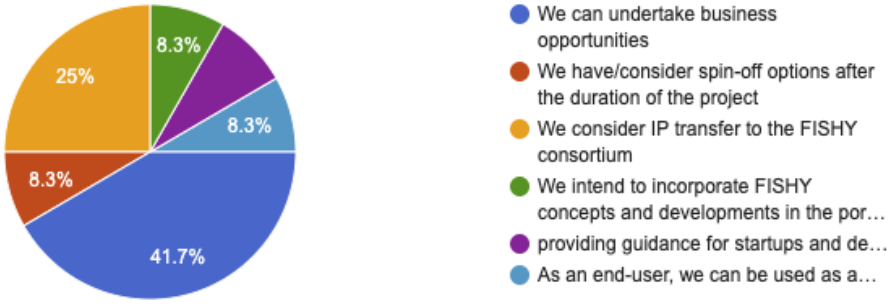

Figure 16. Legal capability of FISHY to share commercial opportunities

Regarding the global audiences of the FISHY consortium within the defined domains of action, we see that security IoT is the most widely reachable community, followed by IDS, security assessment and API/network monitoring, representing fundamental areas in FISHY. Predictive maintenance and security platforms are also well covered areas.

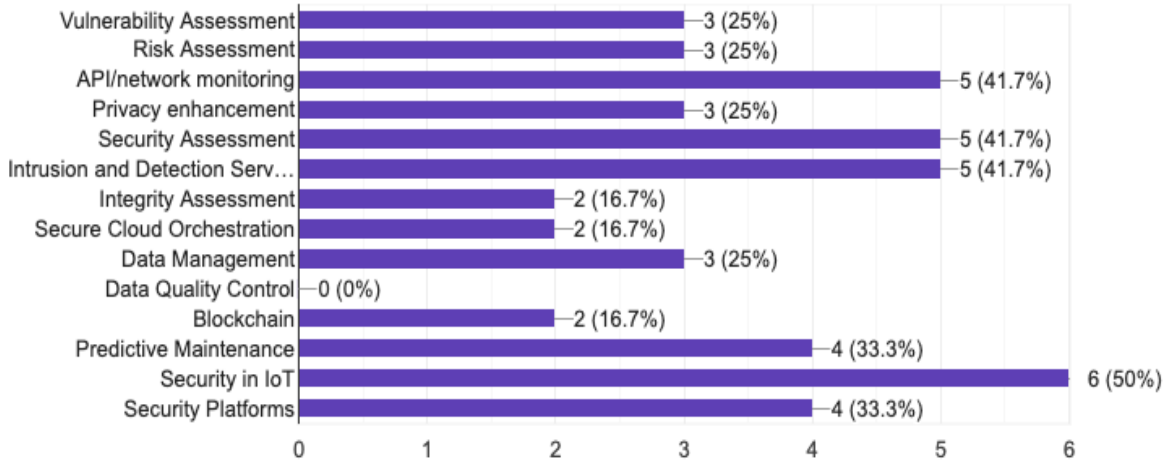

Figure 17. Audiences and targets of FISHY partners within domains of actions

4.2.4 Joint exploitation

In the following paragraphs we will be discussing the exploitation model that can be designed as the foundation of the joint exploitation in FISHY. Note that this exploitation model can be updated throughout the project's lifetime whenever impactful decisions happen in (i) technological development; (ii) IPR management; (iii) product development; (iv) innovation management; or (v) business development. This effort serves as input to the business development discussed in Section 2.5.

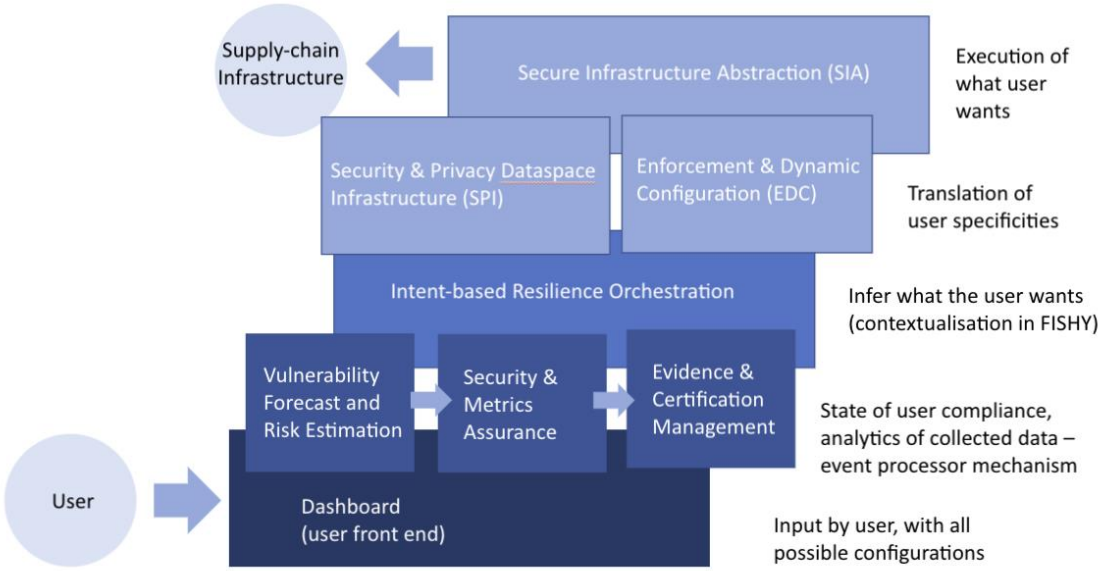

Figure 18. A representation of the global exploitation model at FISHY

The diagram described in Figure 18, shows the skeleton of FISHY's joint exploitation where all the consortium partners have roles. That figure is implying five different levels regarding the role of the assets in the context of FISHY. These relate to the way we will be exploring joint exploitation, which will be later transferred to the product prioritization as discussed in Section 2.4.2. While the first level of joint exploitation refers to the overall exploitation of the full FISHY toolset, the second level is proposing the exploitation of three technological layers (see Section 2.4.2) that can complement existing infrastructure at the customer. Moreover, these layers are composed of the expected exploitable results that can be further broken down as listed in Section 2.4.1. Some of these can be considered as independent solutions and services (and in some cases they are already independent of FISHY). Finally, the products and services enhanced by FISHY at each of the three use cases are considered as the fourth exploitation level. They will not be considered in the go-to-market strategy of FISHY but will leverage some of the exploitable results and will impact the take-up of FISHY technology as early adopters.

Although at the early stage of the project, partners have already identified instances of joint exploitation, aside from the global exploitation of FISHY. This information will be further analysed in the upcoming months to better understand the range of business opportunities that can be leveraged within and beyond the duration of the project. Some partners have expressed an intention to leverage project results through spin-off/spin-out entities but are also considering other types of knowledge and technology transfer. This will be further addressed by the innovation management at a later stage in the project, as the opportunities for joint exploitation are better understood. The exposure of this joint exploitation has several scheduled venues that integrate the common communication and dissemination effort at FISHY.

In the forthcoming impact generation report D7.3 we will continue this discussion presenting per KER the specific value, customer profile, user stories, potential use cases and other information needed to complete their submission to the Horizon Results Platform[13].

[13] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform

4.3 Initial go-to-market

In the following paragraphs we will be presenting the pitch materials and initial activities that expose the exploitation strategy of FISHY. The information in this section will be updated with the forthcoming deliverable D7.3.

Building on the very good communication materials made available by Task 7.1, the collaboration of the latter with Task 7.3 allowed for the preparation of materials to support pitch activities.

As part of the pitch materials and with the aim of improving the business visibility, the project consortium constructed a white paper containing high-level information about the challenges, objectives, concept and use cases of the project. The white paper was designed in the context of the project branding. It is visually appealing, structured in a storyline and it needs to reflect the project's communication strategy. The structure and content of the white paper was agreed by the WP7 team in May 2021 and is as follows:

1. The cover contains the identifying elements of the project - the title and the logo. We have also added the website where the reader can find all the information about the project.
2. We have briefly described five challenges faced by FISHY in the context of supply chain management.
3. We continue with the solutions for these challenges and the explanation of how we are helping industries.
4. We presented the detailed joint exploitation concept through a diagram to help better understanding the FISHY solution
5. We elaborate on the detailed technical overview of the architecture with the graphical representation
6. We present a short but informative presentation of all three use cases and how they are benefiting from the FISHY solution
7. We expose the project consortium through the partners' logos.
8. At the end, we added social media accounts where news is shared on a regular basis

In line with that work, we have prepared a pitch deck of slides that can be adapted by partners to better address a specific audience (e.g., supply chain of IoT automotive, interested in the particular challenges of this industry), but serving as a basis to present the project with a business focus. The design is similar to the white paper that extends this pitch deck, and the complementarity of these supporting materials fits well to the planned pitch activities throughout the project. We have also established a pitch activity log in the exploitation live document, where we will be collecting the essential information on those activities (with the help of the consortium partners).

Figure 19. Samples of FISHY's white paper and pitch deck

Although the recent COVID-19 crisis, we have adapted our approach to joint actions to try to minimize the loss expected regarding exploitation outcomes. The difficulties in doing so are well-known, with the much lower level of engagement in global events, leading to the cancelation of the industrial fairs and booth showcases. Nevertheless, FISHY organised a workshop as a joint action to present the vision of the project and showcase the initial results and the potential of their defined KERs.

In the following months, we will present the several joint actions that we will all actively participated in, with the aim not only to disseminate the knowledge as contributors to the different communities we address with FISHY, but also to expose its available key exploitable results, get first-hand insight on market trends and new competitors, and also to start the procedure of lead generation. These plans are further discussed in D7.1[1] and in the section 2 of this document.

4.4 External Advisory Board

The following section will be elaborating on the first meeting with the FISHY EAB, their role and responsibilities, as well as on the comments and suggestions provided during the meeting. It was distributed in three parts: the first addressing the objectives and vision of FISHY (led by the project coordinator); the second focusing overall architecture, technical development and fit to use cases (led by the technical coordinator); and the last one focusing the impact generation on the project (led by the WP7 leader). The overall appreciation was positive, producing highly relevant insights to the forthcoming developments at technical and exploitation levels.

4.4.1 Membership, role and responsibilities

The FISHY External Advisory Board (EAB) has been established to provide high-level strategic advice and guidance from peers external to the consortium partners, work package leaders, and researchers on how FISHY can achieve its stated objectives, attain maximum impact, and ensure continuing relevance in both the research and industry sectors. The EAB plays a key role in FISHY project governance, with responsibilities primarily aiming to:

- Review the progress of all activities and technical developments on an annual basis to ensure that the project continues to head in the right direction. (e.g., Is FISHY focusing on the right

things?).

- Review project outputs, both in terms of quality and continued applicability, ensuring that these outputs are in line with research and industry advancements and best practices.
- Identify opportunities for increased cross-component and inter-project linkage, pointing the team to other initiatives that can benefit FISHY.
- Identify gaps in the FISHY solution as a whole that may impede the successful uptake and exploitation of project results.

The FISHY EAB members are peers external to the project that have been selected for their extensive expertise in the areas of activity undertaken by the project and reflect a cross-section of research and industry. The current composition of the EAB is provided in below:

Name	Affiliation
Shahrokh Daijavad	Almaden Research Center, IBM, San Jose, USA
Jorge Sanz	National University of Singapore, Singapore
Haralambos Mouratidis	University of Brighton, UK
Jianping Wang	University of Hong Kong, China
Xiangtong Qi	Hong Kong University of Science and Technology, China
Jorge Ferreira	Amkor, Portugal

Table 9. FISHY EAB members

EAB meetings are intended to be held annually, near the end of each project year, and before each formal review. This timing ensures that the EAB is able to review the project state of the art coinciding with each iteration of the project release, before it is made, while providing adequate time to obtain and act upon their feedback leading into project review. The timing of the EAB meetings is also in relation to project milestones.

4.4.2 First meeting summary

The 1st EAB meeting was held on July 15, 2021, with all members in attendance. The meeting started with a high-level conceptual and technical overview of the project. This was followed by in-depth presentations of each of the FISHY use cases, focusing on the ways FISHY is being used to solve challenges specific to each use case. After this, the Y1 progress and workplan for Y2 was introduced. In the final session, project impact was presented, focusing primarily on the envisioned market offering and positioning strategy. As well-received feedback was obtained at the end of each session through open discussion, recommendations have been broken down by session:

4.4.2.1 Project Overview

To offer the EAB a first view of the FISHY value message, the consortium presented the global view of the project and the vision of the proposed technology based on the complex problem of cybersecurity and resilience of ICT supply chains, and how this problem is reaching a momentum. We have shown the EAB how we are leveraging this opportunity by making available a toolset that is developed close to the needs and realities of the FISHY use cases in a lean manner, and how our innovative approach

will be supported by a well-established organisational structure and strong consortium of research and industrial partners.

4.4.2.2 Technical overview

To present a complete but simplified perspective of the early achievements of the project in this first year, we have presented the methodology of requirement collection from use cases and went through some of the most relevant ones that will ensure the defined project objectives. This was followed by the comprehensive description of the system architecture addressing the priorities of FISHY. It was followed by the overview of the complete functional platform and the challenges ahead in the two iterations planned.

4.4.2.3 Use Cases

To clarify to the EAB members the important role of the use cases in this project, their leaders presented the business case of each of them, as well as the needs and expectations from FISHY. We highlighted the impactful areas where these stand - connected cars, farm-to-fork and Industry 4.0 - and some of the specific challenges to each of the use cases that we are looking to address with the FISHY technology.

4.4.2.4 Impact Generation

To conclude we presented the first steps in the definition of the unique value proposition, description of exploitable results and domains of actions. We discussed how the latter define the areas to be monitored by the market radar established, and how the key exploitable results are defined as layers in the joint exploitation strategy in line with the system architecture. We highlighted the importance of the roadmap to standards contributions and project liaisons we are taking. Finally, we discussed the actions taken to build and communicate the value message of FISHY, as well as the intense efforts to communicate the project's results to the scientific community through highly ranked conferences and journals.

4.4.2.5 Recommendations

Although the early stage and research nature of the project, it is important to start to understand better the skillset, benefits and usability of the FISHY technology also in the context of exploitation. In that, we should start having some ideas on the minimal requirements and minimal adopted tools for the FISHY platform to be functional, most likely a minimal set of functionalities that already we can call FISHY (differentiating the solution from a set of tools). Also, although the early beginning, it is important to start understanding the realistic modularity of the solution in the sense of what is needed to substitute existing solutions by FISHY solutions and how could those hybrid combinations work.

The roadmap for contribution to standards will be a core piece of impact generation and, as highlighted by the EAB, standards are key factors for the adoption of FISHY technology (considering the difficulty to change to something new in many supply chain stakeholders).

Communication will also have to make an effort (in pair with exploitation) to extrapolate from the technical views and highlight benefits. In that note, Industry 4.0 could be a good venue to reach in online magazines and events. In that note we agreed to publish Press Releases as LinkedIn articles.

5 Conclusions

Deliverable 7.2 has presented all activities related to dissemination and communication, standardisation, and exploitation for the first year of FISHY. Additionally, updates and plans for the next period are also discussed, with the intent of keep a flexible approach that helps the project in maximising the impact of the project results.

During this first year, the consortium has worked with intensity to promote its main concepts and objectives to all relevant audiences, from the report of academic results to the awareness about them in industrial fora and specific workshops and including the creation and use of digital channels with this purpose.

Considerable progress has been made towards standardisation, and the results of this progress and the influential position of project partners will be used as a platform to produce even better results and explore additional opportunities as the project results mature.

The activities related to exploitation have followed a well-structured path, supported by the market analysis and the identification of innovation assets. Business opportunities are being established and analysed with the collaboration of the External Advisory Board, and will continue being refined as the project evolves and direct experience with the different use cases becomes available.

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