D7.3

Report of Standardisation, Dissemination, Communication and Digital Presence

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List of Acronyms

API	Application Programming Interfaces
BSW	Basic software of contents
CA	Consortium Agreement
DoA	Description of Action
EC	European Commission
EAB	External and advisory board
ECSO	European Cyber Security Organisation
ECU	Electronic Control Unit
EDC	Ethics and data management committee
GA	Grant Agreement
PC	Project Coordinator
PO	Project Officer
POPD	Processing of Personal Data
PSO	Project Security Officer
RTE	Runtime environment Board
ToC	Table of contents
5GAA	5G Automotive Association

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Executive Summary

The purpose of the Deliverable D7.3 Report of Standardisation, Dissemination, Communication and Digital Presence is to present the interim results of the standardisation, dissemination and communication activities of the project carried out up to M19 with the aim of positioning the project among its stakeholders. The final results will be presented at the end of the project in D7.4.

For a better understanding of the activities carried out, D7.3 has been structured into two main areas:

1. Standardization approach addressed in the chapter 2
2. Dissemination and communication activities covered by the chapters 3, 4, 5 and 6

In relation to the standardization and stakeholder engagement approach followed in the project, this document presents an overview about how the partners in CARAMEL are involved and participating in relevant standards bodies including ISO/SAE21434, AUTOSAR, 5GAAA and the IEEE-SA P2020 working group. Furthermore, the partners are also collaborating with open source communities and other industrial initiatives such as ECSO or CSIRT.

In relation to the dissemination and communication channels, and despite to the current COVID-19 crisis, the CARAMEL consortium participated in a total of four (4) international conferences in addition to different online events, as well CARAMEL partners organized two (2) project events, namely the "*Ubiwhere Future Mobility Webinar*" in May 2020 and the "*Advanced Cybersecurity Approaches for Connected, Automated and Electric Vehicles*" in September 2020. Moreover, more than 30 publications in different media (conference, websites, etc) have been produced.

Furthermore, the website has been refactored and populated with new contents and social media accounts have been animated providing information about CARAMEL activities and progress. Statistics and information about the key performance indicators are given to measure the impact of these communication and dissemination actions.

1   Purpose and Scope

1.1   Purpose of the document

This document, entitled "*Report of Standardisation, Dissemination, Communication and Digital Presence*" is Deliverable D7.3 of the CARAMEL Project within work package WP7 "Dissemination, Communication and Exploitation of Results", and is more specifically related to *T7.1 Dissemination and Maximisation of Project Impact* and *T7.4 Interaction with Relevant Stakeholders, Standardisation*. The main purpose of the document is to detail the various activities that took place during the 1st half of the project' regarding communication and dissemination of the CARAMEL project as well the standardization approach followed.

This execution of the dissemination, communication and standardization activities has been based on the plans provided on deliverable *D7.1 Dissemination, Communication and Exploitation Plan* [1] for dissemination & communication of projects results as well as for the outcomes of the standardization actions and links.

1.2   Structure of the document

This document is structured in 6 major chapters:

- **Chapter 2 Standardisation Approach** introduces the Impact creation through the standardization activities in CARAMEL.
- **Chapter 3 Dissemination and Communication channels** provides information about the different dissemination and communications channels utilized to generate awareness about the project and its outcomes. Some channels include the Website, Social Networks like Twitter, Linkedin, etc. and events, among many others.
- **Chapter 4 Dissemination and communication formats** reports all the communication material created in this 1st half of the project to be used in publications, events and digital media.
- **Chapter 5 Monitoring and Evaluation of dissemination & communication activities** presents the methodology for the monitoring and evaluation of dissemination and communication activities, along with the related performance indicators.
- **Chapter 6 Overview of dissemination and communication channels and formats** provides a summary of all the actions reported in the previous chapters.
- **Chapter 7 Objectives for the next reporting period** details the next steps in the project for the communication, dissemination and standardisation activities.

Additionally, Chapter 1 introduces the overall structure of the document meanwhile Chapter 7 summarizes the main conclusions of the document.

2   Standardisation Approach

A predefined structure and workflow plays a major role in defining the use of software and hardware components. To build any complex environments and system architecture an organized and reliable reference is needed and this is obtained by observing a uniform structure and interfaces in any product development. All these factors pave for the need of standardization whose main focus is to address the challenges in any product development.

In the present scenario, there are several standardization bodies which are active at National, International and Industrial level. This chapter presents an overview about how the partners in CARAMEL are involved and participating in observing the relevant standards in the project. Furthermore, the partners also participate with open source communities and other industrial initiatives. There are many organizations who have published many standards related to cybersecurity, automotive, electrical, electronic and other technologies. To name few organizations and committees.

1. **International Organization for Standardization (ISO)**: An international association for worldwide proprietary, industrial and commercial standards.

2. **European Telecommunications Standards Institute (ETSI)**: An International association for information and communication technologies (ICT) standards.

3. **International Electrotechnical Commission (IEC)** : An international association for electrical, electronic and related technologies.

4. **Society of Automotive Engineers (SAE**): An international association for automotive standards.

5. **AUTomotive Open System ARchitecture (AUTOSAR):** is a worldwide development partnership to standardize software framework for intelligent mobility.

6. **5G Automotive Association (5GAA**): An international association which contribute in developing the frameworks, practical aspects, required standards, and business cases for 5G and the future application of connected mobility solutions.

7. **IEEE P2020 Standard :** An international working group on automotive imaging standards.

Any committee or organization which deals with standards has technical committees (TC) and subcommittees (SC) to construct suitable standards and supporting documentation. In ISO there are six defined stages [8] ,

1. Proposal stage
2. Preparatory stage
3. Committee stage
4. Enquiry stage
5. Approval stage
6. Publication stage

By following these predefined steps a suitable standard is developed which can be applied/followed to improve engineering methods or operation of an organization to unify a way of working.

2.1   Standardisation bodies

2.1.1   ISO/SAE21434

The joint ISO/SAE working group on automotive security engineering is currently working on the following standards regarding automotive cyber security:

   o ISO/SAE DIS 21434 - Road vehicles - Cybersecurity engineering

   o ISO PAS 5112 - Road vehicles - Guidelines for auditing cybersecurity engineering

The ISO/SAE 21434 standard addresses the cybersecurity perspective in engineering of electrical and electronic (E/E) systems within road vehicles. By ensuring appropriate consideration of cybersecurity, the standard aims to enable the engineering of E/E systems to keep up with changing technology and attack methods. The ISO PAS 5112 defines a guideline on how to audit the cyber security engineering processes.

The CARAMEL project team includes active members of the ISO/SAE working group. The working groups have several meetings every month to further develop the mentioned standards. The participation of VAL ensures that the relevant controls regarding cybersecurity of the standards are considered in the project activities. Relevant project results will be used to propose refinements of relevant controls, if applicable.

Regarding ISO the Final Draft International Standard (FDIS) was developed and registered for a formal approval during the current reporting period:

Figure 1: ISO 21434 Status, 16.03.2021

For ISO/PAS 5112 a committee draft was created that should be available until end of April 2021.

Figure 2: ISO/PAS 5112 Status, 16.03.2021

2.1.2   AUTOSAR

AUTOSAR (AUTomotive Open System ARchitecture) is a worldwide development partnership of vehicle manufacturers, suppliers, service providers and companies from the automotive electronics, semiconductor and software industry.

The primary goal of the AUTOSAR development partnership is the standardization of basic system functions and functional interfaces.

Figure 3: AUTOSAR basic system functions and functional interfaces.

Application interfaces:

AUTOSAR standardized a large set of application interfaces in terms of syntax and semantics for the following six vehicle domains: Body and Comfort, Powertrain Engine, Powertrain Transmission, Chassis Control, Occupant and Pedestrian Safety as well as HMI, Multimedia and Telematics.

The focus is on interface specifications of well-established applications in order to emphasize software reuse and exchange, which is considered as one of the main requirements of AUTOSAR. The deployment of standardized application interfaces is a key factor for the reuse of applications.

The application interface descriptions contain a richness of data standardized by experts of all partners. These standardized interfaces allow software designers and implementers to use them in case of expanding or reusing software components independent of a specific hardware and/or Electronic Control Unit (ECU).

In general, applications are the competitive edge of an ECU. AUTOSAR is not going to standardize the functional internal behaviour of an application, e.g. algorithms, but the content exchanged between applications. Typical examples of applications are electronic stability control (ESC), steering, electric parking brake, park distance control, exterior light, anti-theft systems, remote keyless entry and so on.

AUTOSAR Classic Platform:

The AUTOSAR Classic Platform architecture distinguishes on the highest abstraction level between three software layers which run on a microcontroller: application, runtime environment (RTE) and basic software (BSW).

- The application software layer is mostly hardware independent.
- Communication between software components and access to BSW via RTE.
- The RTE represents the full interface for applications.
- The BSW is divided in three major layers and complex drivers:
  - Services, ECU (Electronic Control Unit) abstraction and microcontroller abstraction.
  - Services are divided furthermore into functional groups representing the infrastructure for system, memory and communication services.

AUTOSAR in CARAMEL context:

PANASONIC will provide a state-of-the-art test vehicle equipped with all modern AUTOSAR compatible ADAS components. In case of incompatibilities or missing functionalities, AVL can provide also with an alternative test vehicle platform for the purposes of CARAMEL.

Capgemini, Altran's parent organization, is premium member of the AUTOSAR consortium, a role we intend to exploit to drive new features, Application Programming Interfaces (APIs), functional and non-functional properties as developed in CARAMEL. The regular AUTOSAR conference also provides the ideal venue to reach the entire Automotive Industry.

2.1.3   5GAA

The 5G Automotive Association (5GAA) is a global, cross-industry organisation of companies from the automotive, technology, and telecommunications industries (ICT), working together to develop end-to-end solutions for future mobility and transportation services.

Created on September 2016, the 5GAA unites a large member base, including 8 founding members: AUDI AG, BMW Group, Daimler AG, Ericsson, Huawei, Intel, Nokia, and Qualcomm Incorporated.

Since its inception, 5GAA has rapidly expanded to include key players with a global footprint in the automotive, technology and telecommunications industries. This includes automotive manufacturers, tier-1 suppliers, chipset/communication system providers, mobile operators and infrastructure vendors. More than 130 companies have now joined 5GAA [3].

As the "5G" in the name implies, the 5GAA strives to promote the use of a single, forward-looking V2X standard based on 5G technology for the communication between vehicles and other vehicles, the roadside infrastructure, and central services.

DT-Sec's parent company Deutsche Telekom is a member of the 5GAA, Joachim Springer from Deutsche Telekom's subsidiary T-Systems International GmbH is the current Director General of the 5GAA.

DT-Sec is actively engaged in working on the Misbehaviour detection work item in 5GAA Security working group (WG7). As a result, the 5GAA will publish several white papers on misbehaviour detection in the V2X area that include results from pillar 2 of the CARAMEL project.

2.1.4   IEEE P2020 Standard

The IEEE-SA P2020 working group on automotive imaging standards was established in order to address the considerable ambiguity in measurement of image quality of automotive imaging systems, both human and computer vision based. The white paper, IEEE P2020 Automotive Imaging, outlines the goals, achievements, rationale and plans of the subgroup, which has started to work on development of a new standard.

Image quality plays a crucial role for both automotive viewing and automotive computer vision applications and today's image evaluation approaches do not necessarily meet the needs of such applications. Currently there is not a consistent approach within the industry to measure automotive image quality.

The IEEE P2020 working group is attempting to remedy these deficiencies by connecting people in the field, identifying gaps in existing standards, and working to address these by creating a coherent set of key performance indicators by which camera systems and components may be evaluated in a manner consistent with their intended use.

Panasonic Automotive is leading one of the sections of the Standard addressing the introduction of image quality metrics that are relevant to the accuracy degradation of Computer Vision Algorithms.

2.2 Stakeholder Engagement

2.2.1   ECSO

ECSO (European Cyber Security Organisation) [4] is (was) the partner of the European Commission (EC) for the implementation of the Cybersecurity Public-Private Partnership (PPP). ECSO managed the research, work and recommendations in the area of cybersecurity from both public and private stakeholders, including large companies, SMEs, research centres, universities, operators, end-users, etc. from European Member States and H2020 Programme associated countries.

The main objective of ECSO was to develop the European cybersecurity ecosystem and the advancement of European digital sovereignty. In order to achieve this objective, the organization is composed of different working groups, each of them focusing on different aspects:

- **WG1 standardization, certification and supply chain management**: focuses on cybersecurity standardization activities and certification.
- **WG2 market deployment, investments and international collaboration** supports activities for market deployment, investments, and collaboration with external European Member States.
- *WG3 sectoral demand and users committee* focuses on the needs of different technical and non-technical sectors of Europe in the field of cybersecurity
- **WG4 support to SMEs, coordination with countries and regions** focuses on support and work with SMEs across Europe, obtaining information about their needs and creating taskforces to increase their cybersecurity workforce and collaboration.
- **WG5 education, training, awareness and cyber ranges addresses the specific education and training activities**. This is a very important aspect of cybersecurity together with the technical one, so the education covers from the universities to learning tools for organizations.
- **WG6 SRIA and cyber security technologies** works on the compilation of needs of different sectors and working groups in order to create an agenda of cybersecurity challenges that is provided to the EC in order to support them for the identification of next objectives in the research and innovation area.

As detailed above, there are different activities and working groups that could be aimed for collaboration in ECSO, specially WG6 (cybersecurity challenges). CARAMEL partners aim at having a close interaction with them in order to, on the one hand, use their results for guiding cybersecurity work of CARAMEL and, on the other hand, provide ECSO with results of the project that can hence be used to enhance their work with real use cases.

2.2.2   CSIRT

The EU NIS Directive establishes in Article 12 the CSIRTs Network "to contribute to developing confidence and trust between the Member States and to promote swift and effective operational cooperation" (Full text of the NIS Directive). The NIS Directive, adopted on 6th of July 2016, represents the first EU-wide rules on cybersecurity. The objective of the Directive is to achieve a high common level of security of network and information systems within the EU, by means of improved cybersecurity capabilities at national level, increased EU-level cooperation and risk management, incident reporting obligations for operators of essential services and digital service providers. The NIS Directive is a major milestone towards building cybersecurity resilience on the European level and the Directive entered into force in August 2016.

The CSIRTs Network is a network composed of EU Member States' appointed CSIRTs and CERT-EU ("CSIRTs Network members"). The European Commission participates in the network as an observer. ENISA is tasked to actively support the CSIRTs cooperation, provide the secretariat and active support for incident coordination upon request.

The CSIRTs Network provides a forum where members can cooperate, exchange information and build trust. Members will be able to improve the handling of cross-border incidents and even discuss how to respond in a coordinated manner to specific incidents [5].

The Deutsche Telekom CERT has the status "certified" in the ENISA CSIRT inventory and is also an actively contributing member of the FIRST (Forum of Incident Response and Security Teams) [6].

The Deutsche Telekom CERT is an integral part of DT-Sec since all group-wide security-related activities and projects are centralized in this new company. Therefore, all results from the CARAMEL project will automatically be part of any current and future Deutsche Telekom CERT activities. To this end, DT-Sec feeds project results into the Deutsche Telekom knowledge management system and participates in internal workshops and events to promote re-use of CARAMEL project results.

Since Deutsche Telekom CERT is in turn a certified ENISA CSIRT and also member of FIRST, Deutsche Telekom CERT will integrate all relevant CARAMEL results (especially the work done on Backend/SOC integration in the project) into standardization activities in these CSIRT communities where Deutsche Telekom CERT actively participates.

3   Dissemination and Communication channels

Communication channels are the means (online, traditional) through which the CARAMEL partners are informing the target audience about the project objectives and achievements. These include the project website, project social networks and channels and participation at events.

3.1 Project website

The project website was created to share information specific to the project with internet users interested in cybersecurity, machine learning and autonomous & connected vehicles, which are the project's pillars. Derived from the task mentioned above the project website has served as a starting point for the communication and dissemination of the results developed in CARAMEL. The official website of the CARAMEL project can be accessed through the following link: https://www.h2020caramel.eu/

As an introduction to the website content, the consortium can highlight as the most important sections of this website the following structure: posts, members of the consortium and brief descriptions, project's objectives and its external advisory board as well as all the created media and published works, and lastly a section for sharing the latest events around CARAMEL. It can be highlighted, that the website's tree diagram showing the website's organisation was slightly modified compared to the one presented in deliverable 7.1. Figure 4: Website Structure Treeshows an updated view of the structural tree of the website.
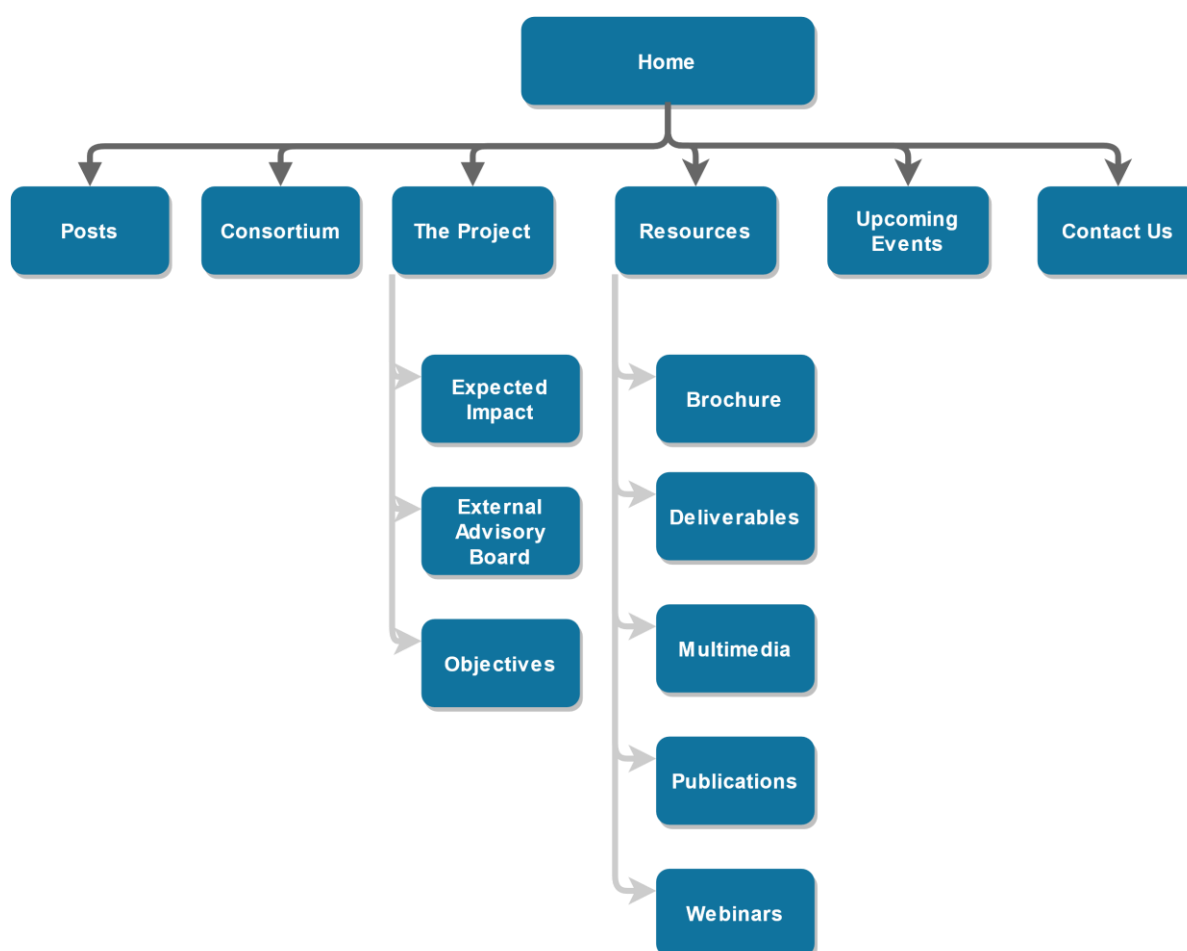
Figure 4: Website Structure Tree

As part of the changes made to the website, among the most relevant the consortium can highlight is a group of new functionalities which allow a intuitive web navigation, such as:

1. Sliding set of new images on the CARAMEL home page.
2. Added subtabs on Resources tab to include Deliverables, Publications and Webinars
3. New section to present the latest events
4. Integration of Bibsonomy to track all the published papers.
5. All public deliverables were uploaded to CARAMEL's website for easier consult.

Figure 5: Website Screenshot March 2021 shows the current status of the website. (March 2021)

Figure 5: Website Screenshot March 2021

3.1.1   Website statistics

Nowadays, website statistics can be used to analyse from which part of the world visits were made or which are the most visited sections of the website. For this purpose, since the creation of the website interesting data has been collected by using google analytics and revolvermaps. Both are used under a free license.

The website's success can be analysed by the number of users who have visited the website since the beginning of the project. It can be said that until March 2021 there have been visits from 81 different countries located on all the habited continents around the world. Figure 6: Top View visualising sessions around the globe shows a top view showing the various locations around the world that have connected to the website.
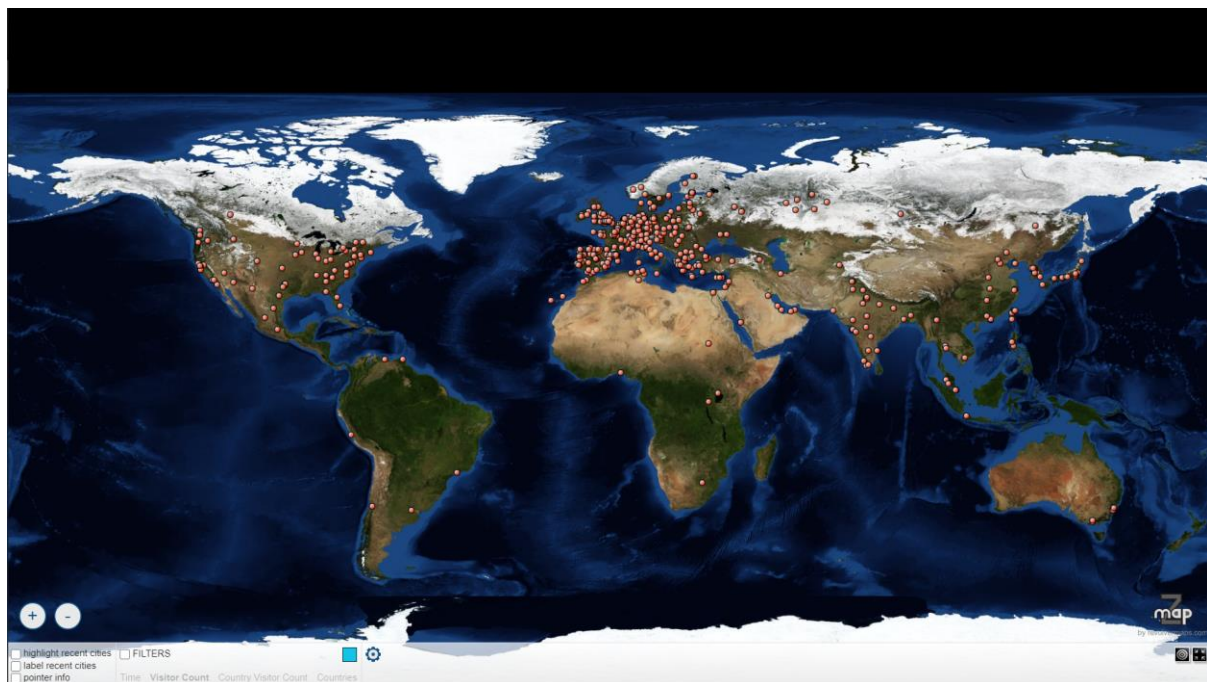
Figure 6: Top View visualising sessions around the globe

It is important to note that despite having achieved a great interest in different parts of the world, the most significant number of visits are concentrated in a few countries, representing 66.6% of the visits, these visits to the website correspond to Germany, Spain, Greece, Cyprus, France and USA. From the list of the countries with more visits, except for the USA, the visiting countries are members of the European Union. Figure 7: Top 10 countries with most registered visits shows the 10 countries that provide the highest cumulative number of visits to the website.

No.	Country	Percent & Number of Visits ▼	
1	🇩🇪 Germany	20.61%	911
2	🇪🇸 Spain	19.86%	878
3	🇺🇸 United States	8.71%	385
4	🇬🇷 Greece	7.60%	336
5	🇨🇾 Cyprus	5.38%	238
6	🇫🇷 France	4.43%	196
7	🇵🇹 Portugal	3.64%	161
8	🇳🇱 Netherlands	3.10%	137
9	🇮🇹 Italy	2.40%	106
10	🇬🇧 United Kingdom	2.35%	104

Figure 7: Top 10 countries with most registered visits

From the referrals to CARAMEL's website, it is remarkable that the percentage of sessions directly came from CARAMEL's website represents a 46% of the total number of sessions. It is also important that at least 37% of the sessions are accessed through referrals from external search engines, which can include but are not limited to Google, Bing, etc. Less than 10% of the sessions on the website correspond to links provided through social channels. The visits from social channels suggest that a more prominent social channels campaign promoting the CARAMEL's outcomes might substantially increase the users base informed about the latest project activities.   For the rest of the visits, 8% correspond to references to the CARAMEL website using direct links from third party websites. Figure 8: Number of referrals made to the CARAMEL website in 2021 shows the percentage of referrals to CARAMEL's website.
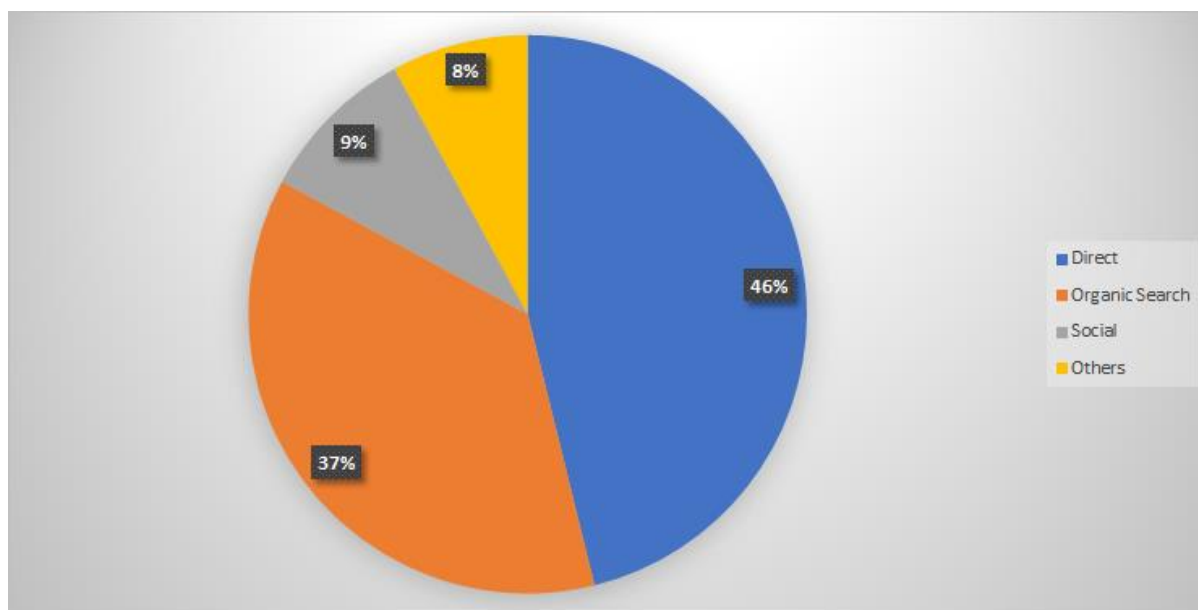
Figure 8: Number of referrals made to the CARAMEL website in 2021

During the project's life, different events have taken place in which some project members have participated by presenting papers or holding workshops. It is interesting to distinguish the highest peaks representing an increase in the number of visits to the website. In October 2019, during the starting phase, we can observe a substantial increase in the number of visits to the website, reaching a peak of 337 visits to the project website, as can be observed from the monthly basis analysis in Figure 9: CARAMEL website sessions statistics.
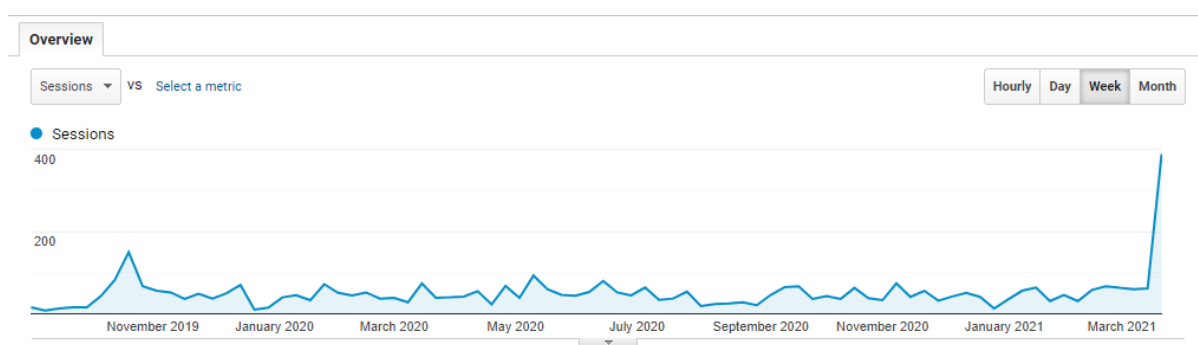
a)   Weekly basis
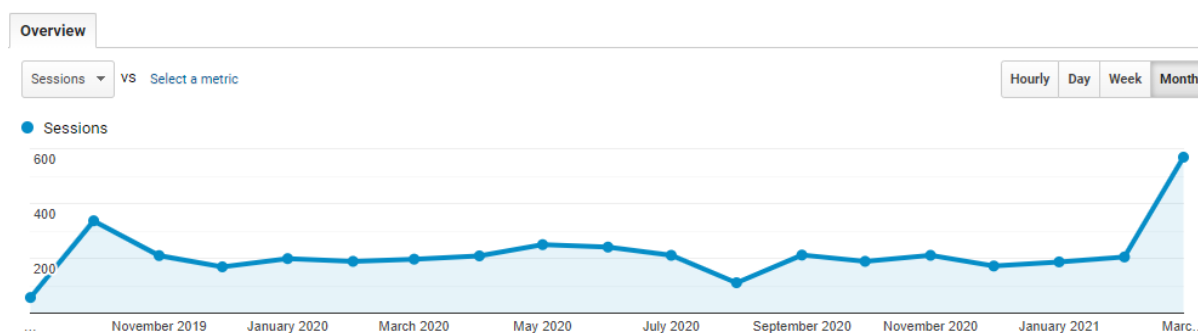
b)   Monthly basis

Figure 9: CARAMEL website sessions statistics

The number of constant visitors on the CARAMEL's website has remained constant without notable changes, with an average of 200 users per month. Just in the months June & July, a slight increase in the website visits is observed coinciding with the participation in the conferences EuCNC, ICTON and ISVLSI. After the second week of July, a small decrease in the weekly amount of visits is observed. A second notable increase occurred during September when EWGT and ITSC were held, returning to the usual number of visits.

According to Google Analytics tool as of March 2021. A total of 2761 users have visited the website, which represents 4125 visits to the website. Within this total number of visits, 8962-page views were registered, averaging a total of 2.17 pages visited per user. Figure 10: CARAMEL website statistics shows the most relevant website statistics as provided by Google Analytics

Users	New Users	Sessions
2,757	2,761	4,125

Number of Sessions per User	Page Views	Pages/Session
1.50	8,962	2.17

Avg. Session Duration	Bounce Rate
00:01:34	54.25%
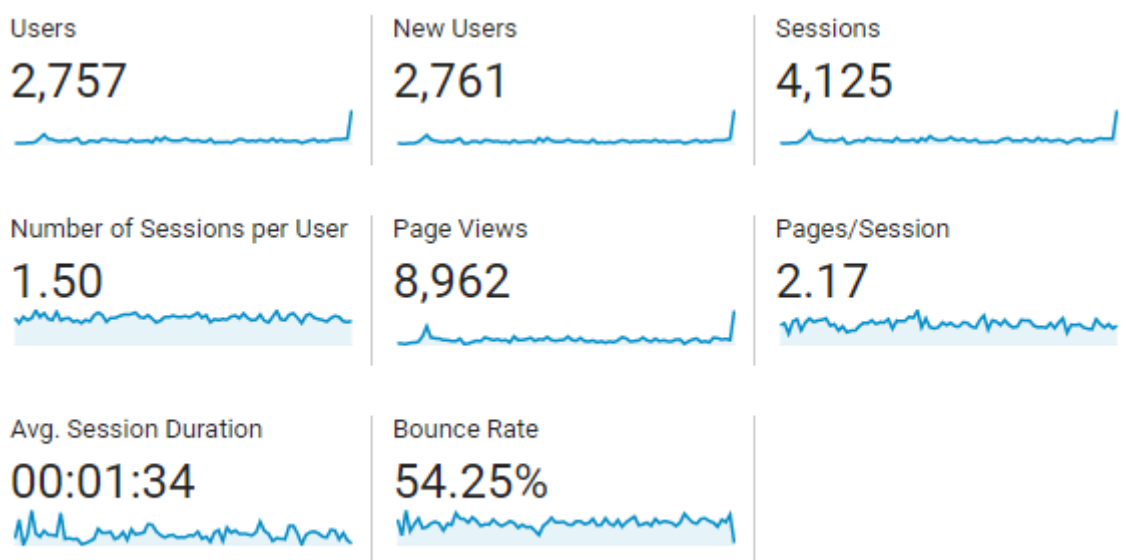
Figure 10: CARAMEL website statistics

3.2 Social Networks

Besides the CARAMEL website social media channels such as Twitter and LinkedIn are being updated, enabling communication with possible stakeholders mostly about the outcomes of the project. It can be said that the social media channels had facilitated effective and fast communication to spread the latest project outcomes. This interaction helped us to reach an audience from all the habited continents around the world.

As a fundamental part of analysing the project's engagement with social network users, statistics collected within the social networks are analysed.

3.2.1   Twitter statistics

As of March 2021, the project has made a total of 70 tweets, which corresponds to an average of 4 tweets per month. So far in the project, the interaction on Twitter has achieved an average of 5400 impressions per month, which means the number of post's views produced through the social network. Figure 11: Monthly CARAMEL's Twitter impression. shows the accumulated number of impressions made through Twitter, **https://twitter.com/caramel_project**, during the project's lifetime.
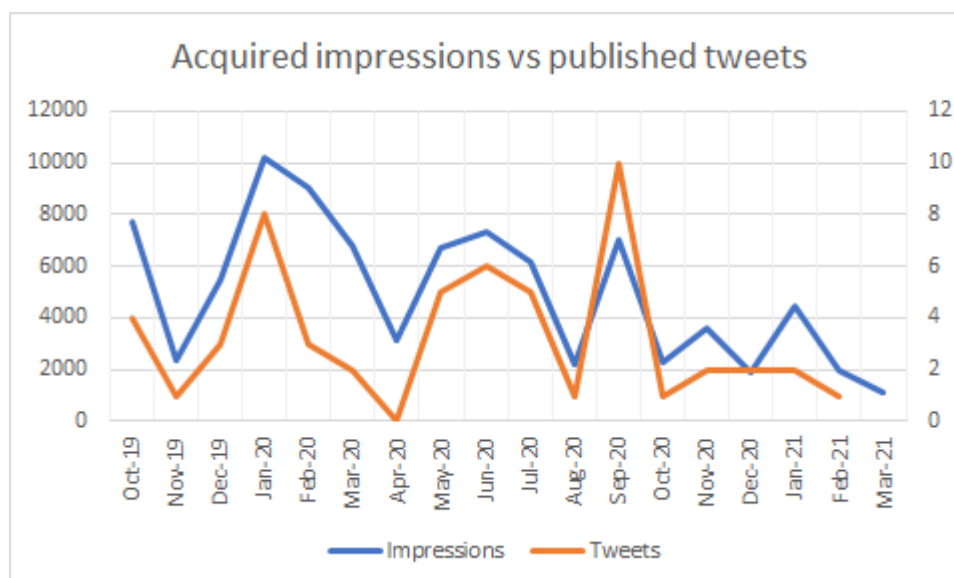
Figure 11: Monthly CARAMEL's Twitter impression.

In Figure 11: Monthly CARAMEL's Twitter impression.Figure 11: Monthly CARAMEL's Twitter impression. we can see the number of users reached through the use of tweets in more detail. A set of points representing the most achieved impressions can be highlighted, especially in October 2019, which marks the beginning of the project's life. January 2019 was the date on which the most significant number of tweets were made. June and September were the dates in which many events were held and promoted through the Twitter social network. Similar behaviour can be observed to the results presented in Figure 9, which showed a slight increase in visits in the same months. The aforementioned data suggest that a social network campaign considerably increases the dissemination activities.

As of 24 March 2021, the project's official Twitter account has been followed by 184 different users, suggesting that the project is relevant to a large community sector that encompasses other projects and individual users interested in the topic addressed by CARAMEL. As part of the analysis of the information shared on Twitter, a cloud tag analysis is added that visualises the most used words in the tweets made. It can be seen in Figure 12: CARAMEL's Twitter cloud tagFigure 12: CARAMEL's Twitter cloud tag that connected, mobility, workshop, project, cybersecurity and caramel are the most used words.

Figure 12: CARAMEL's Twitter cloud tag

To have an effective social media communication, the CARAMEL Twitter account used a set of relevant hashtags aiming for maximum diffusion. This strategy used a diverse group of hashtags aiming to connect with an already interested audience, always trying to maintain the central core addressed by the project. Examples of the hashtags used by CARAMEL on all of its posts can be seen in Table 1.

#cybersecurity	#mobility	#webinar	#5g
#ai	#eu	#ccam	#future
#h2020	#road	#taxonomy	#cyber
#risk	#safety	#greener	#connectivity

Table 1: CARAMEL hashtags

In Table 1: CARAMEL hashtags, a slight deviation can be observed from the hashtags proposed in deliverable 7.1. However, it is still consistent with the central theme addressed by the project.

As part of our ongoing activities in the dissemination strategy, CARAMEL identified the most exciting tweets for the past six months, which achieved many engagements.

Some of CARAMEL top tweets can be seen below in Figure 13:left) CARAMEL twitter from 22 Jan 2021 Right) CARAMEL twitter from 10 Nov 2021Figure 13:left) CARAMEL twitter from 22 Jan 2021 Right) CARAMEL twitter from 10 Nov 2021
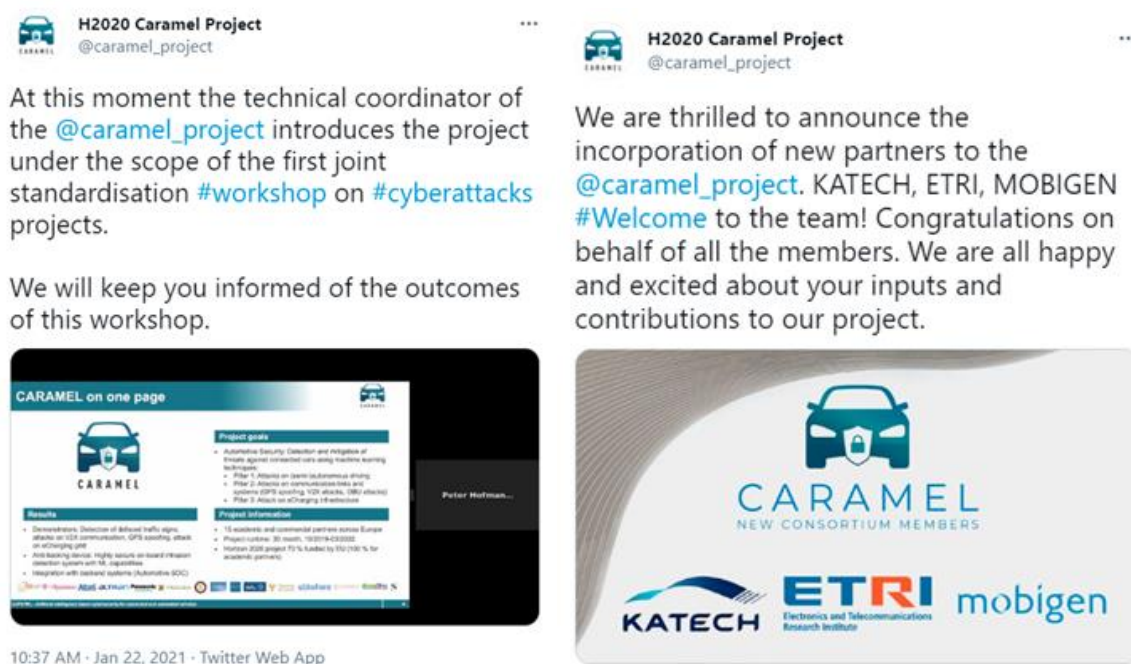
Figure 13:left) CARAMEL twitter from 22 Jan 2021 Right) CARAMEL twitter from 10 Nov 2021

The Twitter post from Figure 13:left) CARAMEL twitter from 22 Jan 2021 Right) CARAMEL twitter from 10 Nov 2021Figure 13:left) CARAMEL twitter from 22 Jan 2021 Right) CARAMEL twitter from 10 Nov 2021shows the most successful tweet, which achieved 2470 impressions with 79 engagements.
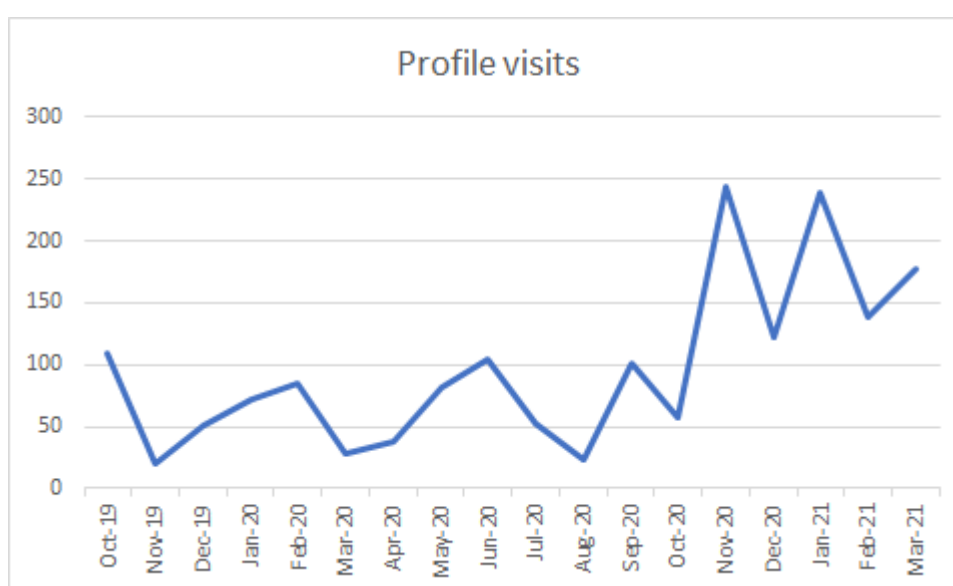
Figure 14: Monthly CARAMEL's profile visits

It is interesting to summarise that the communication strategy through tweeting has managed to reach a large audience. It is pleasing to note that the number of users visiting CARAMEL's profile has increased as the project has progressed. As shown in the Figure 14: Monthly CARAMEL's profile visits in the last three months, there have been many users interested in the project.

3.2.2   LinkedIn statistics

While some social networking sites focus on attracting a casual audience, Linked, **https://www.linkedin.com/in/caramel-project-3974a617b/**, focuses on connecting users in a more formal way. That said, it is possible to analyse not only the number of users visiting the site but also to identify the most common job position of the users attracted by the topics investigated by CARAMEL, their experience, the country from which the connection is made and the type of industry to which the users are related.
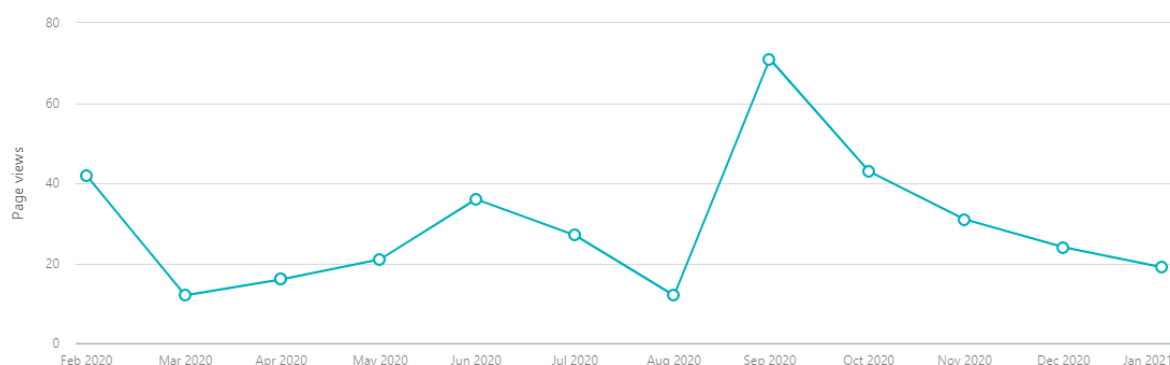
Figure 15: Visits made on CARAMEL's LinkedIn account

Figure 15: Visits made on CARAMEL's LinkedIn accountFigure 15: Visits made on CARAMEL's LinkedIn accountshows the number of visits registered on LinkedIn from Feb2020 until Jan2021. Overall, it can be seen that during September it reaches its highest numbers of accumulated visitors in a month and coincides with the events carried out in Cyprus, on where our colleagues made an event EWGT2020.

Top locations

	Visitors	% of Visitors
Barcelona Area, Spain	58	32.22%
Cambridge, United Kingdom	14	7.78%
Frankfurt Am Main Area, Germany	14	7.78%
Amsterdam Area, Netherlands	10	5.56%
Munich Area, Germany	9	5%
Rome Area, Italy	8	4.44%
Berlin Area, Germany	6	3.33%
Moscow, Russian Federation	5	2.78%
Lexington, Kentucky Area	4	2.22%
Brussels Area, Belgium	4	2.22%
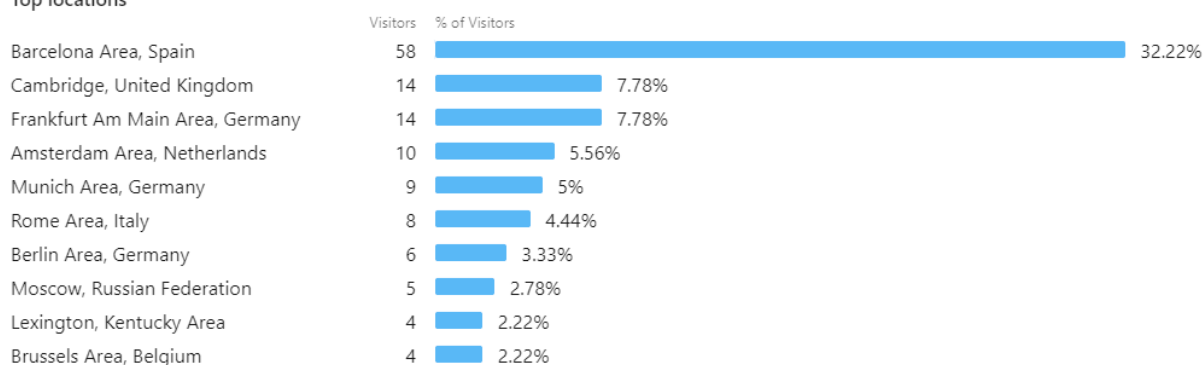
Figure 16: Top 10 Countries visiting CARAMEL's LinkedIn account

The bar chart in Figure 16: Top 10 Countries visiting CARAMEL's LinkedIn accountFigure 16: Top 10 Countries visiting CARAMEL's LinkedIn account highlights the countries with the most visits to the LinkedIn website. A comparative analysis of the different visits to the CARAMEL website shows that Spain is the country with the highest number of visits, followed by Germany. It is important to note that the United States does not appear among the countries with the most visits to the site. Still, the UK, the Netherlands and Moscow are among the most visited countries even when they do not contribute to the same extent in the number of visits to the website as shown in Figure 17: Top 10 visitor's job functions and seniority visiting CARAMEL's LinkedIn account.

Top job functions
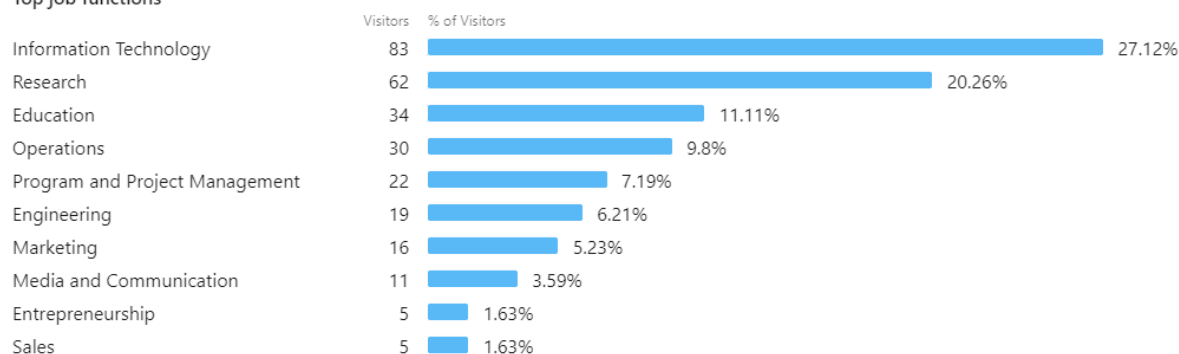
	Visitors	% of Visitors	
Information Technology	83		27.12%
Research	62		20.26%
Education	34		11.11%
Operations	30		9.8%
Program and Project Management	22		7.19%
Engineering	19		6.21%
Marketing	16		5.23%
Media and Communication	11		3.59%
Entrepreneurship	5		1.63%
Sales	5		1.63%

Top seniorities

	Visitors	% of Visitors	
Senior	162		51.1%
Entry	95		29.97%
Manager	20		6.31%
Director	15		4.73%
VP	8		2.52%
Training	7		2.21%
CXO	5		1.58%
Partner	5		1.58%
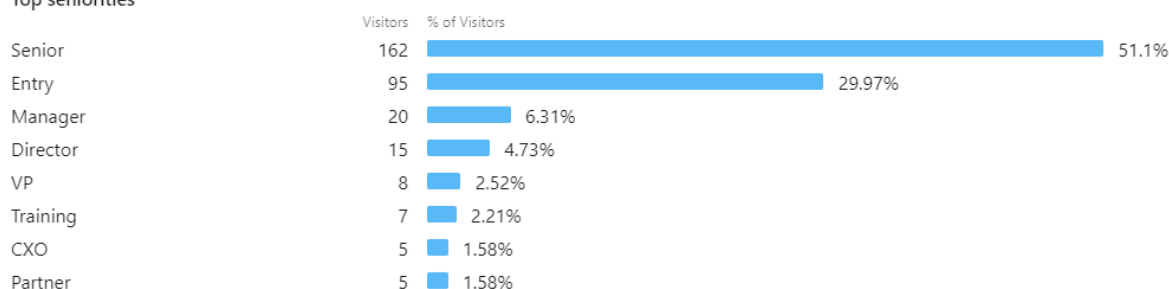
Figure 17: Top 10 visitor's job functions and seniority visiting CARAMEL's LinkedIn account

According to Figure 17: Top 10 visitor's job functions and seniority visiting CARAMEL's LinkedIn accountFigure 17: Top 10 visitor's job functions and seniority visiting CARAMEL's LinkedIn account, the percentage of visitors' roles in a company visiting the LinkedIn account shows the following pattern. On the one hand, the top job functions such as Information technology roles have the most visits representing 27% of the total followed closely by full-time researchers and below the last two large groups are education staff. This data suggests that LinkedIn is an excellent way to connect with research and applied science stakeholders. On the other hand, in the visitors' experience, the bar charts shows that seniors are the most active users in this platform, with 51% of the total number of visits. In terms of entry-level users, they had an outstanding presence on this social network with 30% of the total visits. Concerning other experiences associated with the visiting users, it can be observed that managers and directors only represent 6.31% and 4.73%, respectively. It might be essential to consider that such positions typically are less than other roles in a company suggesting a highly interested audience in the topics addressed by the project.

Top industries

	Visitors	% of Visitors	
Research	97		29.39%
Information Technology and Services	48		14.55%
Automotive	44		13.33%
Higher Education	24		7.27%
Computer Networking	19		5.76%
Electrical/Electronic Manufacturing	19		5.76%
E-Learning	11		3.33%
Computer Software	9		2.73%
Computer & Network Security	8		2.42%
Venture Capital & Private Equity	7		2.12%
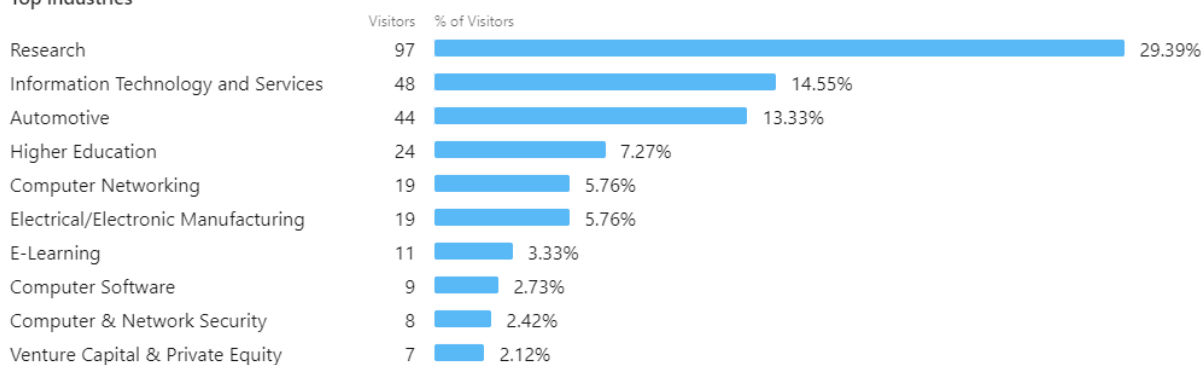
**Figure 18: Top 10 industries visiting CARAMEL's LinkedIn account**

Figure 18: Top 10 industries visiting CARAMEL's LinkedIn accountshows the associations of visitors to a given industry. It can be seen that almost 30% of the registered visits come from a research

association that is useful for disseminating results. There is a remarked fall in the percentage of visitors from Information and Technology industries with slightly less than 15%, closely followed by the automotive industry with 13% of the total number of visitors. The information, as noted above, is handy because it represents the project's subject matter audience from different sectors.

3.3 Liaison with other Projects or Initiatives

As part of the engagement with other peer projects, CARAMEL has established several collaboration lines, as described below in Table 2: Liaisons:

Project	Collaboration established	Lead partner
Cyberwatching	Project added to cyberwatching database.	i2cat, 8Bells, Atos
ARCADE	Project added to arcade database.	i2cat
5GCroCo	Common Partner	i2cat
5GMED	Common Partner	i2cat
cyberwiser	Stakeholders Expert Board	i2cat, Atos
nIoVe	Workshop Co-organization	ucy
Inspire 5GPlus	Common Partner	i2cat
EUCCAM	Book contribution	i2cat
5GAA	Standardization activities	DT-sec
BDV	i2cat participates on BDV	i2cat
ECSO	Book contribution	i2cat, Atos

Table 2: Liaisons

3.4 Events

During this 1st Half of the project, CARAMEL has been involved in events that have contributed to disseminating the results of the project, mostly in international conferences where a certain number of accepted papers have been presented orally. Besides previous participation in events, there has been a couple of them which were organized by members of the CARAMEL consortium, making them even more valuable for reporting purposes. A small description of the events and the purpose of the participation are being included in the following section.

3.4.1   Project events

CARAMEL as a consortium has contributed to certain events that provide the completion of the proposed dissemination goals through workshops, webinars, and conference stands. These events are presented below.

Workshops

During the third weekend of September 2020, KIOS, the research & innovation center of excellence, University of Cyprus, as a member of the CARAMEL consortium, organised, together with the nIoVe project, a workshop entitled Advanced Cybersecurity Approaches for Connected, Automated and

Electric Vehicles. The workshop covered topics such as: cybersecurity strategies, threat analysis, data Communication security in networked embedded systems, to mention just a few of the most relevant topics for CARAMEL. The full list of interesting topics can be found on the following website https://cybersec-itsc2020.isi.gr/topics-of-interest/. This workshop aimed to connect members from various sectors such as research and development, industry, component suppliers with an activity related to autonomous vehicles, the internet of vehicles and electric charging stations.

The event was held successfully and without complications of any kind. The official website of the workshop can be accessed via the following link.

https://cybersec-itsc2020.isi.gr/

Figure 19: Main page of CARAMEL's co-organized workshop

Moreover, CARAMEL is already underway of organising the next workshop which is oriented towards Clients, OEMs and Partners. More information including the outcomes of it, will be provided in D7.4 "Standardisation, Dissemination, Communication and Digital Presence Final Report" on M30.

Webinars

During the second week of May 2020 Ubiwhere as a member of the consortium organised a webinar to which the project coordinator was invited to introduce the CARAMEL project from a future mobility cyber security point of view. This webinar is part of a series of webinars organised by Ubiwhere. Various topics regarding the future of mobility were discussed. Also, the member produced an e-book with the most relevant information from this webinar series, which can be accessed via the following address **https://www.ubiwhere.com/en/news/ebook-future-mobility-webinar-series**.
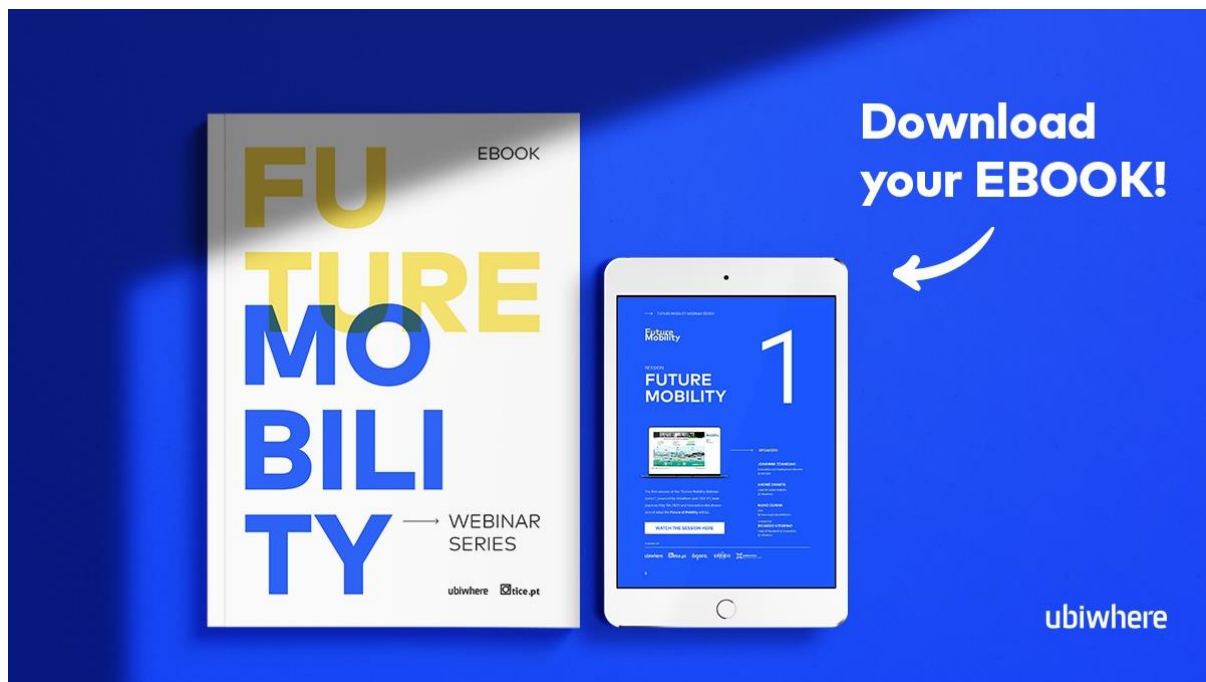
Figure 20: Ubiwhere Future Mobility Webinar series.

3.4.2   Participation in Events

CARAMEL has participated in 4 international conference events in which at least eleven papers and nine oral presentations have been presented. The venues for which CARAMEL made a presentation during the first period, includes European Conference on Networks and Communications (**EUCNC**), IEEE Computer Society Annual Symposium on VLSI (**ISVLSI**), International Conference on Transparent Optical Networks (**ICTON**), and the Euro Working Group on Transportation (**EWGT**), as can be seen on Table 5: List of eventsTable 5: List of events.

Conference Presentation

EuCNC 2020

Figure 21: EUCNC 2020 logo

In the second week of June 16-17, the European Conference on Networks and Communications took place in Dubronik Croatia. To bring together experts in cutting-edge research from both academic centres and world-renowned industry. EuCNC is a space to present the latest advances being researched, specifically by projects funded by the European Commission.

One paper was presented during this event:

1. The CARAMEL Project: a Secure Architecture for Connected and Autonomous Vehicles

ISVLSI 2020

Figure 22: ISVLSI 2020 logo

From 6 to 8 July 2020 the IEEE Computer Society Annual Symposium on VLSI was held in Limassol Cyprus. This conference aimed to explore trends and new ideas in the field of VLSI. However, it had a special section on security, artificial intelligence and cyber-physical systems. It was possible to include CARAMEL's participation as a stimulus for new developments for VLSI developers.

One paper was presented during this event:

2. Towards Artificial-Intelligence-Based Cybersecurity for Robustifying Automated Driving Systems Against Camera Sensor Attacks

ICTON2020

Figure 23: ICTON 2020 logo

The International Conference on Transparent Optical Networks was held on July 19-23, 2020. This event was held virtually due to the impositions as a containment measure to the world-wide virus COVID-19. ICTON is a conference focused on applying optical technologies for telecommunications, measurement, computing and novel fields derived from the above topics.

Four papers were presented during this event:

3. Towards Artificial-Intelligence-Based Cybersecurity for Robustifying Automated Driving Systems Against Camera Sensor Attacks
4. Multi-Radio V2X Communications Interoperability Through a Multi-Access Edge Computing (MEC)
5. 5G Enabled Cooperative Localization of Connected and Semi-Autonomous Vehicles via Sparse Laplacian Processing
6. GNSS Location Verification in Connected and Autonomous Vehicles Using in-Vehicle Multimodal Sensor Data Fusion

EWGT2020

Figure 24: EWGT 2020 logo

The 23rd Euro Working Group on Transportation was held from 16 to 18 September 2020 as a conference dedicated to presenting innovative projects related to transportation and addressed topics such as Modelling and Control, Economics and Policy Planning and operation, Connected and Automates Vehicles for naming a few. Like the other conferences, this one was held in a hybrid face-to-face/virtual way to contain the spread of the COVID19 virus which is stalking the whole world.

Three papers were presented during this event:

7. Addressing Cybersecurity in the Next Generation Mobility Ecosystem with CARAMEL
8. Impact of False Data Injection attacks on Decentralized Electric Vehicle Charging Protocols
9. A benchmarking framework for cyber-attacks on autonomous vehicles

WACV2021

Figure 25: EUCNC 2021 logo

The WACV conference is an international event focused on computational vision in which various lectures, tutorials and workshops take place. Mainly focused on being low-cost and therefore valuable. As a usual phenomenon in the last months, this event was held as a virtual event due to the restrictions imposed to contain the spread of the COVID19.

One paper was presented during this event:

10. DriveGuard: Robustification of Automated Driving Systems with Deep Spatio-Temporal Convolutional Autoencoder

Workshop

CAST

Figure 26: CAST Forum logo

The CAST forum is an association of predominantly German organizations interested in developments in IT security. The goal of CAST association. is to confront and further develop the growing importance of IT security in all sectors of industry and in all areas of public administration. As part of one of such effort it was organized the event CAST Workshop "Automotive Security" in Darmstadt, Germany, on 3 September 2020.

In this event the partner DT-SEC presented the objectives and preliminary results of the CARAMEL project.

Joint Standardisation Workshop

Figure 27: Banner Workshop Dynamic countering of cyber-attacks projects

During this workshop organised by the CyberSane project, the European Commission's sister projects under the Horizon 2020 programme were present. All the participating projects were called through the same call for innovation, including projects related to cybersecurity. CARAMEL presented its results to this specialised group in order to achieve a synergy that will allow to reach some of the project objectives.

Conference Participation

Apart from the common activities planned. CARAMEL has been involved in unplanned events. An example is a presentation made for the students of the Universitat Politècnica de Catalunya (UPC) in Barcelona, Spain. This recurrent event is being organized by the university to keep in touch with professionals and master students of the program. During such activity, it was presented the CARAMEL project with the scope of protecting the new generation of cars from cybercriminal Table 5: List of events shows a summary of all events on which CARAMEL has participated.

3.4.3   Cancelled events

It is important to mention the efforts made in planning for a couple of events that could not be carried out due to the pandemic that the entire world is facing.

It is the case of the mobile world congress, for which i2cat would have a space available to promote the project activities. Among the planned activities, it was giving away flyers, and some videos about the project were about to be displayed on in-site screens. Besides, members of the consortium were going to be present to solve any doubt about the project. Sadly, due to the current pandemic, the event was cancelled, the official statement used to be in the following link. MWC | MWC Barcelona 2021. Alternatives press releases can also be found at the following link GSMA Statement on MWC Barcelona 2020 From John Hoffman, CEO GSMA Limited | Business Wire.

It was planned that during the ITS2020 congress to be held from 18 to 20 May 2020, Ubiwhere would be present at a stand. As members of the consortium, they would have the authority to distribute official brochures about the project. However, the restrictions imposed during that time prevent us from carrying out such activity. The official declaration of cancellation of the event can be found on the following website. Covid-19 Update - ITS in Europe (itseuropeancongress.com).

As part of the dissemination activities, a plan was organized to be conducted while attending ICT 2020, to be held from 1 to 3 December 2020. There were plans to attend as one of the main exhibitors and to have a large participation of the members. CARAMEL as a consortium was about to showcase the initial results of the project with a set of interactive demos. However, once again, due to the actual situation, the event was cancelled. The official cancellation statement can be found at the following link https://ec.europa.eu/digital-single-market/en/news/ict-2020-exhibitors-guide-event-cancelled.

3.4.4   CARAMEL referrals

Referral ownership	Referral
Arcade Project	**ARCADE database**
Cyberwatching Project	**Cyberwatching**
Bavarian Research Alliance	**Bavarian Research Alliance**
Universitat Politecnica de Catalunya	**MASTEAM-MATT**
Altran	**CARAMEL - Cybersicherheit für sicheren Straßenverkehr - Altran Deutschland**
Atos	**https://booklet.atosresearch.eu/project/caramel**
Atos	**https://booklet.atosresearch.eu/content/intelligence-based-cybersecurity-cooperative-connected-and-automated-mobility-ccam**
Ficosa	**https://www.ficosa.com/news/industrial-vehicle/european-commission-funded-project-caramel-cybersecurity-challenge-mobility/**
i2cat	**https://i2cat.net/projects/caramel/**

Greenflux	**https://www.greenflux.com/greenflux-takes-part-in-h2020-cybersecurity-project-caramel/**
8Bells	**https://www.8bellsresearch.com/projects/h2020-caramel/**
8Bells	**https://www.8bellsresearch.com/our-projects/**
Ubiwhere	**https://www.ubiwhere.com/en/research-innovation/cybersecurity-caramel-tbd**
Ubiwhere	**https://www.ubiwhere.com/en/news/ubiwhere-integrates-cybersecurity-project-for-safer-connected-and-autonomous-mobility**
University of Cyprus	**https://www.kios.ucy.ac.cy/research/research-projects/active/596-caramel-artificial-intelligence-based-cybersecurity-for-connected-and-automated-vehicles.html**
Sidroco	**https://sidroco.com/portfolio/sidroco_caramel_h2020_project/**
Sidroco	**https://sidroco.com/safer-roads-in-europe-the-h2020-project-caramel-kicks-off-in-barcelona/**

Table 3: CARAMEL referrals

Lead member	Referral
i2cat	About Intelligent Mobility For Energy Transition (IMET) | Smart Cities Marketplace (eu-smartcities.eu)

Table 4: Press releases

Event type	Event name	Lead partner	Event owner	Place	Target Audience	Event/Material link
Oral presentation	EuCNC2020	UCY	EUCNC	Dubrovnik, Croatia,	Open	https://ieeexplore.ieee.org/document/9200945 https://zenodo.org/record/4441684#.YAI_mTmSlhF
Oral presentation	ISVLSI2020	UCY	ISVLSI	Limassol, Cyprus,	Open	https://ieeexplore.ieee.org/document/9154906 https://zenodo.org/record/3987790#.YAI_qjmSlhF
Oral presentation	ICTON2020		ICTON	Bari, Italy,	Open	https://ieeexplore.ieee.org/document/9203087 https://zenodo.org/record/4441693#.YAI9LDmSlhF
Oral presentation	ICTON2020		ICTON	Bari, Italy,	Open	https://ieeexplore.ieee.org/document/9203495 https://zenodo.org/record/4441739#.YAI_tzmSlhF
Oral presentation	ICTON2020		ICTON	Bari, Italy,	Open	https://ieeexplore.ieee.org/document/9203314 https://zenodo.org/record/4441754#.YAI_szmSlhF
Oral presentation	ICTON2020		ICTON	Bari, Italy,	Open	https://ieeexplore.ieee.org/document/9203087 https://zenodo.org/record/4441693#.YAI9LDmSlhF
Oral presentation	EWGT2020		UCY	Paphos, Cyprus	Open	https://www.sciencedirect.com/science/article/pii/S2352146521000685
Oral presentation	EWGT2020		UCY	Paphos, Cyprus	Open	https://www.sciencedirect.com/science/article/pii/S2352146521000715?via%3Dihub
Oral presentation	EWGT2020		UCY	Paphos, Cyprus	Open	https://www.sciencedirect.com/science/article/pii/S2352146521000703
Oral presentation	WACV2021	UCY	CVF	Online	Open	https://openaccess.thecvf.com/content/WACV2021W/AVV/papers/Papachristodoulou_DriveGuard_Robustification_of_Automated_Driving_Systems_With_Deep_Spatio-Temporal_Convolutional_WACVW_2021_paper.pdf

Talk	MASTEAM-MATT talk	I2CAT	EETAC	Barcelona	Open	https://eetac.upc.edu/ca/noticies/masteam-matt-talks-dr-pouria-sayyad-khodashenas-i2cat-protecting-the-new-generation-of-cars-from-cybercriminals
Webinar	Future Mobility	I2CAT	Ubiwhere	Online	Open	https://www.ubiwhere.com/en/news/ebook-future-mobility-webinar-series
Workshop	CAST "Automotive Security"	DT-SEC	DT-SEC	Online	Open	https://cast-forum.de/workshops/programm/285?ts=1613392322057
Workshop	Joint Standardisation Workshop of Dynamic Countering of Cyber-Attacks Projects	DT-SEC	CyberSane	Online	H2020 Projects	https://www.cybersane-project.eu/standardisation-workshop-2021/
Conference Participation	ECCV 2020	0INF	-	Online	Open	https://eccv2020.eu/
Conference Participation	Cybersecurity Standardization Conference 2021	Altran	ENISA	Online	Open	https://www.enisa.europa.eu/events/cybersecurity_standardisation_2021

Table 5: List of events

4   Dissemination and communication formats

Dissemination and communication formats are understood to be any sort of means through which the CARAMEL project's main messages can be transmitted and communicated outside of the consortium.

4.1   Communication material kit

During the first half of the project, some audio-video media were created to enable communication and dissemination of relevant information. The files can be found in the following compilation table.

Brochure	https://www.h2020caramel.eu/wp-content/uploads/2020/02/Caramel_flyer.pdf
Video	https://youtu.be/AAL1sk-vDYk
Poster	https://www.h2020caramel.eu/wp-content/uploads/2021/03/CARAMEL_poster.png

Table 6: audio-visual media compilation

4.2 Publications

During these 19 months, CARAMEL has developed several papers, developed as a result of the project's research outcomes. Some of those papers have been presented to a wider audience by means of different international conferences. The full list of accepted CARAMEL papers can be found in Table 7: List of publicationsTable 7: List of publications

Type	Name	Authors	Publisher	Link
Paper	The CARAMEL Project: a Secure Architecture for Connected and Autonomous Vehicles	Vitale, C.; Piperigkos, N.; Laoudias, C. ; Ellinas, G. ; Casademont, J.; Khodashenas, S.P.; Kloukiniotis, A.; Lalos, A. S.; Moustakas, K.; Barrientos Lobato, P.; Moreno Castillo, J.; Kapsalas, P.;Hofmann, K. P.	IEEE	**https://ieeexplore.ieee.org/document/9200945** **https://zenodo.org/record/4441684#.YAI_mTmSlhF**
Paper	Towards Artificial-Intelligence-Based Cybersecurity for Robustifying Automated Driving Systems Against Camera Sensor Attacks	Kyrkou, C.; Papachristodoulou, A.; Kloukiniotis, A.; Papandreou, A.; Lalos, A.; Moustakas, K.; Theocharides, T.	IEEE	**https://ieeexplore.ieee.org/document/9154906** **https://zenodo.org/record/3987790#.YAI_qjmSlhF**
Paper	GNSS Location Verification in Connected and Autonomous Vehicles Using in-Vehicle Multimodal Sensor Data Fusion	Souli, N.; Laoudias, C. ; Kolios, P. ; Vitale, C. ; Ellinas, G. ;Lalos, A. ; Casademont, J. ; Khodashenas, P. S. ; Kapsalas, P.;	IEEE	**https://ieeexplore.ieee.org/document/9203087** **https://zenodo.org/record/4441693#.YAI9LDmSlhF**
Paper	Multi-Radio V2X Communications Interoperability Through a Multi-Access Edge Computing (MEC)	Casademont, J.; Cordero, B. ;Camps-Mur, D. ; da Conceição, L. A. M. ; Lalos, A. ; Vitale, C. ; Laoudias, C. ; Khodashenas, P. S.;	IEEE	**https://ieeexplore.ieee.org/document/9203495** **https://zenodo.org/record/4441739#.YAI_tzmSlhF**
Paper	5G Enabled Cooperative Localization of Connected and Semi-Autonomous Vehicles via Sparse Laplacian Processing	Piperigkos, N. ; Lalos, A. S. ; Berberidis, K. ; Laoudias, C. ; Moustakas, K.;	IEEE	**https://ieeexplore.ieee.org/document/9203314** **https://zenodo.org/record/4441754#.YAI_szmSlhF**

Paper	Addressing Cybersecurity in the Next Generation Mobility Ecosystem with CARAMEL	Argyropoulos, N; Khodashenas, P. S; Mavropoulos, O.; Karapistoli, E.; Lytos, A.;Karypidis, P.A.; Hofmann, P.	Elsevier	https://www.sciencedirect.com/science/article/pii/S2352146521000685
Paper	Impact of False Data Injection attacks on Decentralized Electric Vehicle Charging Protocols	Piperigkos, N.; Lalos, A. S.	Elsevier	https://www.sciencedirect.com/science/article/pii/S2352146521000715?via%3Dihub
Paper	A benchmarking framework for cyber-attacks on autonomous vehicles	Khadka, A; Karypidis, P; Lytos, A.;Efstathopoulos, G.;	Elsevier	https://www.sciencedirect.com/science/article/pii/S2352146521000703
Paper	Exploring Adversarial Attacks and Defences for Fake Twitter Account Detection	Kantartopoulos, P.; Pitropakis, N.; Mylonas, A.; Kylilis, N.;	MDPI	**https://www.mdpi.com/2227-7080/8/4/64** **https://zenodo.org/record/4457007**
Paper	Wireless Technologies for the Connectivity of the Future	Vitale, C.; Piperigkos, N.; Laoudias, C.; Ellinas, G.; Casademont, J.; Escrig, J.; Kloukiniotis, A.; Lalos, A.S.; Moustakas, K.; Diaz, R.; Baños, D.; Roqueta G.; Hofmann, P.; Khodashenas, P. S. ; Kapsalas, P.		**DOI not released yet.**
Paper	DriveGuard: Robustification of Automated Driving Systems with Spatio-Temporal Convolutional Autoencoder	Papachristodoulou, A.; Kyrkou, C.; Theocharides, T.	IEEE	https://openaccess.thecvf.com/content/WACV2021W/AVV/papers/Papachristodoulou_DriveGuard_Robustification_of_Automated_Driving_Systems_With_Deep_Spatio-Temporal_Convolutional_WACVW_2021_paper.df

Table 7: List of publications

5 Monitoring and Evaluation of dissemination & communication activities

5.1 Methodology for Evaluation

The work performed under T7.1 "Dissemination, Communication and Exploitation of Results" of CARAMEL project will be closely monitored and coordinated by the task leader. To measure the impact of the conducted activities and to be able to adjust/fine-tune the dissemination and communication strategy for achieving the expected outcomes and maximising visibility, a set of initial metrics has been developed. Such metrics (Performance Indicators hereafter) will allow having a constant view of the quantitative amount and the qualitative effectiveness of the dissemination and communication activities conducted.

5.2 Related Performance Indicators

As a way of tracking CARAMEL's activities, a compilation of the project's performance indicators can be seen in the following table.

KPI	Description	Target description	Target	Status
CARAMEL website "Yearly visits"	Disseminate the project and its achieved goals to a wider audience	200 visits to the website each month.	6000	4,428
Conferences	Participation on conferences	3 oral presentations per year	9	10
Industrial fairs	Participate in exhibitions	8 participations per year	20	16
Training "Tutorial"	Tutorial package for threat analysis and cyber-threats	File should be downloaded at least 500 times.	500	0
Training "Supervision of students"	Supervision or co-supervision of students	At least 2 PhD and 5 M.Sc	2 PhD 5 M.Sc	1/2 PhD Nicolas Soufi 1/5 M.Sc Adrian Pino
Workshop seminars	Organize 3 workshops at academia and industry.	1/3 of the planed workshops have been achieved : Advances Cybersecurity Approaches for	3	1

		connected, automated and Electric Vehicles (UCY)		
Webinars	Offer 3 Webinars	1/3 of the planned KPI has been achieved. Webinar was presented by I2cat in conjunction with the event organized by Ubiwhere (Future mobility /Ubiwhere)	3	1
White papers	Contribute with: 2 CARAMEL white papers 5 joint white papers	CARAMEL white papers are planned based on the topics of WP2, WP3, WP4.	7	1
Standard contributions	Creation of 2 standard contributions	2 potential tasks were identified and are planned to be completed on the second half of the project	2	0
Workshops to "potential clients"	Introduce the outcomes of CARAMEL to potential clients		5	0
CARAMEL website "File downloads"	Provide an open-source publications collection	30 monthly downloads of any uploaded document.	900	183 (Zenodo trackable files)
CARAMEL website "external link"	Track references from external websites	Increasing Trend	-	18 (Table 3)
Press releases	Press releases in tech and magazines	2 references per year in any tech magazine or website	5	1
Market events Presence	Professional presence 3 presences per year.		8	0

Table 8: CARAMEL dissemination and communication KPIs

5.3   KPI's for Standardization Activities'.

The details of the KPI's are provided below:

Sl. No.	KPI Description	Targets
1.	Number of Working Groups (WG) involved	3 WG
2.	Importance of standardization group - International reach (e.g. number of countries involved)	100 countries
3.	Importance of standardization group - Number of members in the committee	10 members
4.	Number of meetings attended during the CARAMEL runtime	50 meetings
5	Number of contributions (verbal or written) to standardization (e.g. verbal contribution to a meeting, mail to a mailing list.)	20 contributions

Table 9: Standardization KPIs

6 Overview of dissemination and communication channels and formats

Table 10: Overview of dissemination and communication actionssummarising all the dissemination and communication activities in the reporting period.

Item	Type of Activity	#
Publications (current reporting period)		
1	Publications (books, magazines, journals)	34
TOTAL (1)		**34**
Events (current reporting period)		
2	Participations in events	8
3	CARAMEL events	1
4	CARAMEL workshop	1
TOTAL (2-4)		**10**
Digital presence (current reporting period)		
5	Social network presence (Twitter, YouTube, LinkedIn)	3
6	CARAMEL website	1
TOTAL (5-6)		**4**
Other activities (current reporting period)		
7	Liaison projects and initiatives	11
TOTAL (7)		**11**
Formats (current reporting period)		
8	Brochure	1
9	Press release	1
10	Video	1
	TOTAL (8-10)	**3**
	TOTAL	**62**

Table 10: Overview of dissemination and communication actions

7   Objectives for the next reporting period

According to the work plan of CARAMEL the main objective of the task T7.3 and report D7.3 is to coordinate the process of dissemination, communication, Standardization and interaction with the stakeholders. In the first reporting period, main preference was given to defining a suitable work plan and progress in the defined direction. For the upcoming time period the discussions are in progress on analyzing how to address or collaborate with the target stakeholders. The consortium plans to actively participate and establish a relation with innovation bodies and organize more events to connect with the audience from all possible fields.

The standardization activities within the next reporting period is planned that ISO standard 21434 should be finally published within 2021. Furthermore, for ISO/PAS 5112 a committee draft should be available until April 2021. The standard should be finalized and published within 2021. To this end, the release of these standards is a big milestone regarding the standardization of cybersecurity engineering in the automotive sector.

The next step would be the definition of follow-up activities. This will be done during the SO/TC 22/SC 32/WG 11 meeting in April 2021. The follow-up steps will be defined in later stages. The goal of AVL is to bring in relevant results of the CARAMEL project in the proposal of the upcoming activities.

During the first half of the project, the communication and dissemination activities were continued as planned at the beginning of the project, thus achieving alignment with the planned project performance indicators. The current world situation prevented, to some extent, the realisation of some of the planned events. However, to complete the pending metrics, the following actions will be emphasised during the second phase of the project.

- Creation and launch of various press releases
- Continue to disseminate results through social networks
- Keep the website up to date
- Create Tutorial package for threat analysis and cyber-threats
- Maintain and create new partnerships with other projects
- Keep participating on events

8   Conclusions

This interim report is vital for the effective Dissemination and Communication strategy therefore this document elaborated on the interim status of Standardisation, Dissemination, Communication and Digital Presence. Several Standardisation bodies are involved in cybersecurity ISOs (e.g. ISO/SAE DIS 21434, ISO PAS 5112) and worldwide development partnerships of vehicle manufacturers such as AUTOSAR (AUTomotive Open System ARchitecture). In addition, CARAMEL's Stakeholder Engagement includes ECSO, BDVA, CARNET and CSIRT. The Dissemination and Communication channels were elaborated in detail covering an array of channels including websites, Social Networks, Liaison with other projects and initiatives and organisation and participation in events related to the automotive and cybersecurity context.

To qualitatively and quantitatively ensure the dissemination process, a monitoring and evaluation procedure was established including several key performance indicators that were defined. It is important to build up on the consortium strengths and its shared views towards dissemination and communication in order for CARAMEL to achieve maximum visibility and create an impact within the business and scientific community in order to accelerate faster adoption of the research and innovation outputs.

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