

Project Acronym and Title:

# 5GhOSTS - 5TH GENERATION SECURITY FOR TELECOM SERVICES

Deliverable:

# D5.1: COMMUNICATION, DISSEMINATION & EXPLOITATION PLAN


Authors and affiliation:

**Christoph Baumann (Ericsson AB)**

christoph.baumann@ericsson.com

**Jan Tobias Muehlberg (KU Leuven)**

jantobias.muehlberg@cs.kuleuven.be


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| **CL** | Classified, as referred to in Commission decision 2001/844/EC | |

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| **Approved (PMB member)** | Name | Y-M-D |
| **Approved (Coordinator)** | Name | Y-M-D |



| **Author(s)** | | |
|---|---|---|
| **Name** | **Organisation** | **E-mail** |
| Christoph Baumann | ERICSSON AB | christoph.baumann@ericsson.com |
| Jan Tobias Muehlberg | KU LEUVEN | jantobias.muehlerg@cs.kuleuven.be |



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| **Public introduction** |
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| 5GhOSTS will analyze and improve the security of service-based implementations of 5G networks, relevant to protect the EU's critical communication infrastructure. Starting from the emerging 3GPP's service-based architecture for 5G networks, which includes virtualization of mobile and core network functions, the project aims to improve the security of virtualization technologies: containers, lightweight Virtual Machines and orchestration frameworks. Unlike previous evolutions in the telecommunications sector, the 5th Generation of Telecommunication Systems (5G) presents diverse and novel requirements for technologies such as heterogeneous air interfaces, Software Defined Networking, Network Functions Virtualization, Mobile Edge Computing and Fog Computing, as well as algorithms to optimize the management of such complex networks. As a result, the 5G evolution will mainly built on layers of software services. The telecom industry is migrating to virtualized and orchestrated environments, allowing the deployment of Virtual Network Functions (VNFs) on cloud infrastructure enabling the concept of network slicing. The main motivation driver for this move is sustainability through cost and energy reduction as well as full automation of telecom systems operations facilitating dynamic and scalable adaptation to service demands. State-of-the-art light-weight virtualization and container orchestration frameworks clearly contribute to this driver, but do not meet the stringent security requirements of telecommunication systems. |

| **Executive Report Summary** |
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| This document outlines planned activities to economically exploit, disseminate, and publicly communicate results obtained from the research in the 5GhOSTS project. It is supposed to be updated regularly, as the corresponding plans and activities evolve. |

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# Overview

This document outlines planned activities to economically exploit, disseminate, and publicly communicate results obtained from the research in the 5GhOSTS project. It is supposed to be updated regularly, as the corresponding plans and activities evolve.

# Exploitation

We expect the 5GhOSTS project to produce exploitable results in the form of new knowledge and methods that enable the development of innovative technologies in the scope of mobile network and cloud platform security.

Knowledge and methods may represent exploitable assets in themselves as licensable intellectual property, while derived technologies may be exploited directly, e.g., as software components of commercial products, or indirectly, e.g., through analysis tools that improve the quality and thus the value of current and future software products.

Besides these immediate project outputs, there are positive side effects from the academic-industrial collaboration and the intensive ESR training program that we intend to leverage.

## Goals

Below we list possible exploitation activities within the project which are aimed to increase its economic and societal impact:

- Novel methods and mechanisms developed in the project shall be evaluated for the possibility to protect IP. By default, valuable inventions shall be patented before dissemination.
- Technical results shall be transferred into commercial Ericsson products, services, or tools.
- The research in 5GhOSTS shall enable follow-up studies in academia and industry.
- Groundbreaking innovations with a large commercial potential may warrant the creation of a spin-off / start-up company to facilitate their exploitation beyond the scope of the project.
- For new components and tools that will be published as open source, the results should be integrated into an existing community of third-party contributors to ensure a lasting impact. Alternatively, steps shall be taken to build a new community around the results.
- All ESRs are expected to complete the 5GhOSTS training program and obtain their PhD thesis, after which they will be experts in the mobile network security area. Ericsson intends to gain suitable graduates as permanent employees after the end of the project.
- We shall aim to promote suitable results in technical standards for mobile networks, security, or certification. Ericsson Research Security has delegates in relevant standardization bodies to pursue this goal.
- Findings in the legal area surrounding privacy requirements shall result in compliance guidelines as well as policy recommendations that may effect policy change.

We will describe more detailed plans and activities once exploitable results have been produced. For any planned or ongoing activity, this document shall provide an assessment of

- Possible targets and the potential value or impact of the result on these stakeholders
- Barriers and risks for successful exploitation as well as possible mitigations
- Concrete measures to engage potential users of the results
- Roles and responsibilities of the project partners to support exploitation

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## Current and planned activities

| **Activity** | *IPR management* |
|---|---|
| **Description** | Project Task 5.4 ensures an appropriate IP management: the Consortium Agreement and the CDEP will define a publication policy and procedures for the assessment and, in case, the prompt protection of IP. |
| **Target** | Define ways of working that evaluate intellectual property generated by Ericsson and KU Leuven and, if suitable, how we ensure it is properly protected by patents before dissemination |
| **Risk & Mitigation** | - |
| **Engagement** | The plan will be presented to all project members, management will ensure it is followed. On the Ericsson side publication policies are already in place that aim to prevent the premature dissemination of patentable results. |
| **Responsibilities** | Ericsson will take the lead to propose ways of working in line with the CA and internal policies. |
| **Timeframe** | Have document ready by M12, or as soon as all ESRs are hired |

# Dissemination

Key results of 5GhOSTS are planned to be disseminated to relevant stakeholders during and after the project duration. For the best outcomes the targeted audience and communication channels need to be aligned with the desired impacts outlined above.

We group possible activities after the intended audience.

- Academia / Fellow researchers
    - Novel results shall be published as scientific publication, e.g., as conference or journal papers, targeting prominent venues in the mobile network, security, cloud platform, or IT law community. Publications shall permit open access.
    - More detailed developments or unpublished results may be disseminated as technical report or white papers under open access.
    - Presentations at conferences, workshops, university seminars, summer schools, etc. are suitable to raise awareness about our work in the scientific community and build networks for possible further collaboration.
- Internal dissemination @ Ericsson
    - Presentations to business or product development units will be given to convince potential receivers of our results and transfer them into products.
    - Presentations to other security researchers at Ericsson, e.g., in other research areas such as Cloud infrastructure, may foster collaboration and built momentum towards productification.
    - Posters and demos at internal events such as the “Research Day” and similar ones raise awareness of our work and may attract the interest of business units.
    - Presentations at internal forums and seminar series are a good way to spread the word about our work and receive technical or business-related feedback.
    - Prototype implementations of our results may be delivered to product development units for a joined evaluation and further collaborative development.
- Customers of Ericsson
    - Presentation or demos for customers may catch their interest and strengthen our position with product development units

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    - joined studies with customers may be conducted to evaluate our results in the field and potentially raise customer interest and a productified solution
- Internal and external dissemination by KUL
    - Focuses on an international professional and academic audience
    - Presentation at internal conferences to inspire collaboration for upcoming research projects and interdisciplinary proposals
    - Keynotes, track talks, tutorial sessions, etc., at international academic and professional events
    - Extending DistriNet's training and consultancy portfolio towards new market segments in telecommunications and cloud security
- Mobile Network / Cloud industry in general
    - Publication of code for components, models, or tools as open source may recruit new users of our solutions and boost further development.
    - Contribution of our solutions into existing open source projects may help establishing them as a widely-used de-facto standard
    - Presentation at industry fairs, e.g., Mobile World Congress, is a great way to increase visibility and stoke customer interest.
    - Articles in industry magazines, technical websites, blogs, or similar forums may present our results to a wider audience with IT background.
    - For new methods or tools being developed, internal or external training workshops or hackathons can be useful to introduce the tool to a wider user base.
    - Organize conference or training events on privacy and security for NFVs, e.g., in cooperation with SecAppDev, for companies and researchers with an interest in the intersection of legal and technological frameworks for privacy in telecom services.
- Standardization and political bodies
    - Suitable results may be developed into pre-standards as input to technical standardization organizations and corresponding Ericsson delegates
    - Results in the privacy law area may be provided as position papers, compliance guidelines, or policy recommendations to relevant EU or national legislative, executive, or judicial organizations.

Below we list planned and ongoing activities for dissemination. The list will be constantly updated as new results are available.

## Current and planned activities

| **Activity** | *Scientific Publications* |
|---|---|
| **Description** | Project Task 5.3 sets a goal of at least eight scientific articles to be published in the course of the project. Moreover, a joined publication summarizing the results of the project is scheduled for M40. |
| **Target Audience** | Possible targets are conferences and journals in the following areas:<br>• Computer Security and Privacy, e.g.:<br>ACM S&P, EuroS&P, CCS, SP, ESORICS, NDSS, USENIX Security, TrustCom, SOUPS, IFIP, JCS<br>• (Mobile) Networks and Communication, e.g.:<br>INFOCOM, SIGCOMM, NSDI, MobiCom, EuCNC, IC3N |

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| | |
|---|---|
| | • Cloud Computing, e.g.:<br>IEEE CLOUD, USENIX ATC, EuroSyS, ACM/IFIP Middleware, ICSOC, IEEE ICDCS, USENIX OSDI, HotEdge<br>• General CS, Programming, and (formal) SW Engineering, e.g.:<br>POPL, ETAPS, USENIX ATC, ASPLOS, PLDI, SOFSEM<br>• Formal Methods, e.g.:<br>CAV, FM, NFM, SEFM, IJCAR, TACAS, VMCAI, JAR, POPL<br>• Privacy Law, e.g.: CPDP, European 5G Conference, Annual Privacy Forum, International Telecommunications Society Conference |
| **Responsibilities** | Supervisors will encourage and assist the ESRs in publishing their results in suitable venues. Generally, joined publications between Ericsson and KU Leuven are desired. |
| **Timeframe** | Ongoing effort, update activities in CDEP regularly |

# Communication

Besides the dissemination of our technical results within our professional communities, we also plan to communicate them to a wider audience, targeting society as a whole. As a guideline, our activities shall be strategically planned with a clear message in the right medium, highlighting the role of our EU-funded research to tackle important societal challenges.

## Possible communication channels

We have identified the following means to communicate our results to the public:

- Our main communication channel shall be the project website with the following features:
  - A common visual identity, e.g., logo and style that shall be also used in other dissemination activities, e.g., presentations or posters
  - Regular updates and newsletters shall present new results and ongoing activities
  - An archive of publications and activities
  - High-level summaries of research results may be provided to allow a layman the assessment of our work
  - Videos and or demos may be provided to accompany our publications
- Social media accounts on popular platforms shall report project news to the public, linking to corresponding announcements on the project website.
- The “Ericsson Blog” at www.ericsson.com/en/blog/ is an established outlet for newsworthy public updates from all departments at Ericsson including Research. We will aim to publish updates from 5GhOSTS as blog posts on a regular basis.
- The "CiTiP Blog" at https://www.law.kuleuven.be/citip/blog/ is a collection of short texts on a wide variety of ICT & IP law related topics. Its main goal is to convey academic research to a broader audience in an understandable and concise manner. The blog reflects the broad palette of research areas people at our Centre are working on, ranging from privacy and data protection to intellectual property and media law.
- DistriNet R&D Bites (https://distrinet.cs.kuleuven.be/events/DistriNetR&DBites.jsp) is a series of evening sessions where industry and academia come together. In an informal setting, you get invaluable insights into state-of-the-art technologies, latest developments and current best practices. The topics are closely related to the research problems that the imec-DistriNet

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research group is working on, such as cloud security, internet-of-things, or high-performance networking.

- Newspaper and magazine articles, as well as TV segments are a traditional way to present important results to a wide audience.

## Current and planned activities

| **Activity** | *Project Website* |
|---|---|
| **Description** | Project Task 5.2 requires the setup and continuous update of the 5GhOSTS website, providing information on ongoing research and results.<br>*Progress:*<br>• The website is running at 5ghosts.eu<br>• 5GhOSTS logo has been created and is in use<br>• Recruiting information has been published on the website<br>*Remaining Tasks:*<br>• Establish ways of working and content management systems |
| **Target Audience** | • General public<br>• Fellow researchers<br>• Industry partners and customers<br>• EU and national government and funding body officials |
| **Responsibilities** | KU Leuven is hosting the website, both partners will provide content |
| **Timeframe** | Ongoing effort, update and add content regularly |


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