

Appendix

List of Cybersecurity Organisations

In the following, a non-exhaustive list of organisations (both public and private) that are active in the cybersecurity domain are presented with a focus on European Organizations. First, several groups of international organisations are listed including a short description and the respective URL. Then, a selection of national organisations is presented to the reader.

International Organisations: Global

Electronic Frontier Foundation

The Electronic Frontier Foundation is the leading non-profit organization defending civil liberties in the digital world.

<https://www EFF.org/de>

International Telecommunication Union

ITU is the United Nations specialized agency for information and communication technologies. Founded on the principle of international cooperation between governments (Member States) and the private sector (Sector Members, Associates and Academia), ITU is the premier global forum through which parties work towards consensus on a wide range of issues affecting the future direction of the ICT industry.

<https://www.itu.int/>

NATO Cooperative Cyber Defense Centre of Excellence

The NATO Cooperative Cyber Defence Centre of Excellence is a multinational and interdisciplinary cyber defence hub. It does research, training and exercises in four core areas: technology, strategy, operations and law.

<https://ccdcoe.org/>

World Wide Web Consortium

The World Wide Web Consortium (W3C) is an international community where Member organizations, a full-time staff, and the public work together to develop Web standards. W3C's mission is to lead the Web to its full potential, especially by developing protocols and guidelines that ensure long-term growth for the Web.

<https://www.w3.org/>

International Organisations: European Union Related

Art. 29 Data Protection Working Party

The Article 29 Working Party (Art. 29 WP) was the independent European working party that dealt with issues relating to the protection of privacy and personal data until 25 May 2018 (entry into application of the GDPR).

<https://ec.europa.eu/newsroom/article29/news-overview.cfm>

Computer Emergency Response Team EU

After a pilot phase of one year and a successful assessment by its constituency and its peers, the EU Institutions have decided to set up a permanent Computer Emergency Response Team (CERT-EU) for the EU institutions, agencies and bodies in 2012. It cooperates closely with other CERTs in the Member States and beyond as well as with specialised IT security companies.

<https://cert.europa.eu/>

DG Connect: Directorate General for Communications Networks, Content and Technology

The 'Directorate General for Communications Networks, Content and Technology' is the European Commission's department responsible to develop a digital single market to generate smart, sustainable and inclusive growth in Europe. It develops

and carries out the Commission's policies on: Digital economy and society, Research and innovation, business and industry, as well as culture and media.

https://ec.europa.eu/info/departments/communications-networks-content-and-technology_en

Directorate E: Future Networks

The Directorate 'Future Networks' is responsible for strategic advancement of the policy, technological research and standardisation on all-encompassing Future Internet dimension, ensuring an innovative intertwining of all these aspects so that Europe can lead in the design, piloting and roll-out of the Internet of tomorrow.

Directorate H: Digital Society, Trust and Cybersecurity

The Directorate 'Digital Society, Trust and Cybersecurity' provides a strategic approach to the societal dimension of the DSM, focusing on applications that combine digital policy, digital Research and Innovation, and deployment and provide for leadership in cybersecurity and digital privacy and digital trust policy, legislation and innovation.

European Cybercrime Centre, Europol

Europol set up the European Cybercrime Centre (EC3) in 2013 to strengthen the law enforcement response to cybercrime in the EU and thus to help protect European citizens, businesses and governments from online crime. Since its establishment, EC3 has made a significant contribution to the fight against cybercrime.

<https://www.europol.europa.eu/about-europol/european-cybercrime-centre-ec3>

European Cybercrime Training and Education Group, Europol

The European Cybercrime Training and Education Group (ECTEG) is composed of European Union and European Economic Area Member States law enforcement agencies, international bodies, academia, private industry and experts. In close cooperation with Europol-EC3 and CEPOL it aims to support international activities to harmonise cybercrime training across international borders to build the capacity of countries to combat cybercrime.

<https://www.ecteg.eu/>

European Data Protection Supervisor

The European Data Protection Supervisor (EDPS) is the European Union's (EU) independent data protection authority. The objective of the EDPS is among other duties to monitor and ensure the protection of personal data and privacy when EU institutions and bodies process the personal information of individuals.

<https://edps.europa.eu/>

European Network and Information Security Agency

The European Union Agency for Cybersecurity, which was established in 2004, is actively contributing to European cybersecurity policy, in order to support member states and European Union stakeholders to support a response to large-scale cyber incidents that take place across borders in cases where two or more EU member states have been affected. This work also contributes to the proper functioning of the digital single market. The agency works closely together with member states and private sector to deliver advice and solutions as well as improving their capabilities.

<https://www.enisa.europa.eu/>

European Network for Cyber Security

The European Network for Cyber Security (ENCS) is a non-profit member organization that brings together critical infrastructure stake owners and security experts to deploy secure European critical energy grids and infrastructure.

<https://encs.eu/>

International Organisations: Private

Chaos Computer Club

The Chaos Computer Club e.V. (CCC) is Europe's largest association of hackers, providing information about technical and societal issues, such as surveillance, privacy, freedom of information, hacktivism and data security for more than 30 years. As the most influential hacker collective in Europe, the CCC organizes campaigns, events, lobbying and publications as well as anonymizing services and communication infrastructure.

<https://www.ccc.de/en/>

ECO: Association of the Internet Industry

With more than 1100 members, eco is the largest Association of the Internet Industry in Europe. As a network of experts, ECO encourage communication between enterprises in the industry and support the marketing of their products and also lobbies on current issues such as Internet law, infrastructure, online services, and e-business, in political arenas and before international entities.

<https://international.eco.de/>

European Cyber Security Organisation

The European Cyber Security Organisation represents the contractual counterpart to the European Commission for the implementation of the Cyber Security contractual Public-Private Partnership. ECSO members include a wide variety of stakeholders such as large companies, SMEs and Start-ups, research centres, universities, end-users, operators, clusters and association as well as European Member State's local, regional and national administrations, countries part of the European Economic Area (EEA) and the European Free Trade Association (EFTA) and H2020 associated countries.

<https://ecs-org.eu/>

European Digital Rights

European Digital Rights (EDRi) is an international not-for-profit association of digital human rights organisations. The aim is to defend and promote rights and freedoms in the digital environment, such as the right to privacy, personal data protection, freedom of expression, and access to information.

<https://edri.org/>

European Network of Forensic Science Institutes

The European Network of Forensic Science Institutes (ENFSI) was founded to improve the mutual exchange of information in the field of forensic science. This, as well as improving the quality of forensic science delivery in Europe have become the main issues of the network.

<http://enfsi.eu/>

ISF: Information Security Forum

The ISF is a non-profit organisation, dedicated to investigating, clarifying and resolving key issues in information security and risk management, by developing best practice methodologies, processes and solutions and therewith supplying authoritative opinion and guidance on all aspects of information security and delivering practical solutions to overcome the wide-ranging security challenges that impact business information.

<https://www.securityforum.org/>

Privacy International

PI is a independent charity that challenges the governments and companies that want to know everything about individuals, groups, and whole societies. PI conducts campaigns against companies and governments, driven by charitable aims: to promote the human right of privacy throughout the world.

<https://privacyinternational.org/>

SANS Institute

The SANS Institute was established in 1989 as a cooperative research and education organization. Its programs now reach more than 165,000 security professionals around the world. SANS is the largest source for information security training and security certification in the world. It also develops, maintains, and makes available at no cost, the largest collection of research documents about various aspects of information security.

<https://www.sans.org/>

National Organisations: Computer Emergency Response Teams

A Computer Emergency Response Team (CERT) is an expert group that handles computer security incidents. Alternative names for such groups include Computer Emergency Readiness Team and Computer Security Incident Response Team (CSIRT). The following list contains cyber security organizations on a national level in Europe and their online presences:

- *Austria*: Computer Emergency Response Team Austria; <https://www.cert.at/>
- *Belgium*: Centre for Cybersecurity Belgium; <https://ccb.belgium.be/>
- *Catalonia*: Centre of Information Security of Catalonia; <https://ciberseguretat.gencat.cat/en/inici/>

- *Croatia*: National CERT Croatia; <https://www.cert.hr/en/home-page/>
- *Czech Republic*: National Cyber Security Center; <https://www.govcert.cz/en/>
- *Denmark*: Danish Computer Security Incident Response Team; <https://www.cert.dk/en>
- *Estonia*: CERT Estonia; <https://www.ria.ee/en/cyber-security/cert-ee.html>
- *Finland*: Finnish CERT (Traficom); www.viestintavirasto.fi/en/cybersecurity.html
- *France*: Centre Expert contre la Cybercriminalité Français (CECyF); <https://www.cecyl.fr/>
- *Germany*: German Federal Office of Information Security (BSI); www.bsi.bund.de/
- *Greece*: National CERT; <http://www.nis.gr/portal/page/portal/NIS/NCERT>
- *Hungary*: National Cyber Security Center; <https://nki.gov.hu/>
- *Iceland*: CERT-IS; <https://www.cert.is/en/node/2.html>
- *Ireland*: National Cyber Security Centre; <https://www.ncsc.gov.ie/>
- *Italy*: Agenzia per l'Italia Digitale; <https://www.agid.gov.it/>
- *Latvia*: CERT.LV; <https://cert.lv/en/about-us>
- *Lithuania*: National Cyber Security Centre; <https://www.nksc.lt/en/>
- *Luxembourg*: Computer Incident Response Center Luxembourg; <https://www.circl.lu/>
- *Netherlands*: Cyber Security Council, Netherlands; <https://www.cybersecurity-raad.nl/>
- *Norway*: NorCERT; <https://www.nsm.stat.no/norcet/norcet-eng/>
- *Poland*: CERT Polska; <https://www.cert.pl/en/>
- *Portugal*: National Cyber Security Centre Portugal; <https://www.cncs.gov.pt/en/>
- *Romania*: Romanian National Computer Security Incident Response Team; <https://cert.ro/>
- *Slovak Republic*: Slovak Computer Emergency Response Team; <https://www.sk-cert.sk/en/about-us/index.html>
- *Slovenia*: Information Commissioner, Republic of Slovenia; <https://www.ip-rs.si/en/>
- *Spain*: Instituto Nacional de Ciberseguridad; <https://www.incibe.es/en/>
- *Sweden*: National Defence Radio Establishment Sweden (FRA); <https://www.fra.se/>
- *Switzerland*: Swiss National CERT; <https://www.govcert.admin.ch/>
- *United Kingdom*: The National Cyber Security Centre; <https://www.ncsc.gov.uk/>

National Organisations: Selection of Cybersecurity Expert Organisations

Below, a non-exhaustive selection of European academic, public and private organisations with a strong focus on cybersecurity is provided.

Austria: SBA Research

SBA Research is a research centre for Information Security funded partly by the national initiative for COMET Competence Centers for Excellent Technologies. Within a network of more than 70 companies, 15 Austrian and international universities and research institutions, and many additional international research partners we jointly work on research challenges ranging from organizational to technical security to strengthen Europe's Cybersecurity capabilities.

<https://www.sba-research.org/>

Austria: Vienna Centre for Societal Security

Vienna Centre for Societal Security (VICESSE) is a private non-profit research and consulting organisation, focussing on the analysis of a wide array of security issues in a broader societal context. Locating security problems and proposed solutions emerging at local, national and European levels in wider social and historical contexts VICESSE operates at the interface between science, technology, law and policy.

<https://www.vicesse.eu/>

Austria: TU Graz, Institute of Applied Information Processing and Communications

The Institute of Applied Information Processing and Communications (IAIK) focuses on information security. Fifty researchers at IAIK conduct research, teach, and consult private and as public organizations. The institute is part of the Faculty of Computer Science at Graz University of Technology.

<https://www.iaik.tugraz.at/>

Belgium: Brussels Privacy Hub

The Brussels Privacy Hub (BPH) is an academic privacy research centre with a global focus. As an entity of the Vrije Universiteit Brussel (Free University of Brussels or VUB), it uses its location in Brussels, the capital of Europe, to engage EU policymakers, data protection regulators, the private sector, and NGOs, and to produce innovative, cutting-edge research on important questions of data protection and privacy law and policy.

<https://brusselsprivacyhub.eu/index.html>

Belgium: KU Leuven, Computer Security and Industrial Cryptography (COSIC) Group

COSIC is part of the Department of Electrical Engineering at the KU Leuven. COSIC focuses on the protection of digital information. COSIC develops advanced cybersecurity solutions to protect data in the cloud and in the Internet of Things (IoT) and to protect the privacy of users.

<https://www.esat.kuleuven.be/cosic/>

Bulgaria: Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences

The Information Technologies for Security Department of the Institute of Information & Communication Technologies studies the interrelation between the development of information technologies and the new security challenges of the twenty-first century. The interdisciplinary research team explores advances and applies methodologies and tools for IT governance and change management, design and analysis of architectures and capabilities, modelling and simulation for the security sector, and information security management.

<http://it4sec.org/>

Denmark: Technical University of Denmark, Department of Applied Mathematics and Computer Science

DTU Compute is an internationally unique academic environment spanning the scientific disciplines mathematics, statistics, computer science, and engineering. Our interdisciplinary research areas are big data and data science, artificial intelligence (AI), Internet of things (IoT), smart and secure societies, smart manufacturing and life sciences.

<https://www.compute.dtu.dk/english>

Finland: University of Helsinki, Department of Computer Science

The Department of Computer Science is a leading teaching and research unit in its area in Finland. The research groups address significant research challenges in their areas of expertise, such as data analytics, AI, and security and privacy.

<https://www.helsinki.fi/en/computer-science>

Finland: Aalto University, Department of Computer Science

The Department of Computer Science provides research and education in modern computer science to foster future science, engineering and society. The work combines fundamental research with innovative applications.

<https://www.aalto.fi/en/department-of-computer-science>

France: Ecole Normale Supérieure, CASCADE Team

The research activity of the project-team Construction and Analysis of Systems for Confidentiality and Authenticity of Data and Entities (CASCADE) at the ENS of Paris addresses the following topics, which cover most of the areas that are currently active in the international cryptographic community, with a focus on public-key algorithms: Implementation of cryptographic algorithms, and applied cryptography; Algorithm and protocol design, and provable security; Theoretical and practical attacks.

<https://crypto.di.ens.fr/web2py>

France: Eurecom

EURECOM is a Graduate school and Research Centre in digital sciences located in the Sophia Antipolis technology park (French Riviera), a major European place for telecommunications activities. It was founded in 1991 in a consortium form [GIE] that allowed EURECOM to build a large network of renowned academic and industrial partners. EURECOM research teams are made up of international experts.

<http://www.eurecom.fr/en>

Germany: Association of Data Protection Officers

The Association of Data Protection Officers (BvD) represents the interests of about 1500 company and official data protection officers and consultants in Germany. It was founded in 1989 and is the oldest association representing the interests of the sector. Headquartered in Berlin, we are promoting modern and feasible data protection.

<http://www.bvdnet.de>

Germany: Centre for Research in Security and Privacy

The National Research Center for Applied Cybersecurity CRISP is an institution of the Fraunhofer-Gesellschaft for its two Darmstadt-based institutes SIT and IGD, in cooperation with Technische Universität Darmstadt and Darmstadt University of

Applied Sciences. This unique and innovative collaboration model of university and non-university research combines the Fraunhofer competencies and strengths with the competencies and strengths of the universities.

<https://www.crisp-da.de/>

Germany: Cybersicherheitsrat Deutschland e.V.

The Cyber-Security Council Germany aims to advise businesses, government agencies and policymakers on issues relating to cyber security and to strengthen the fight against cybercrime. Objectives are to increase collaboration between politics, public administration, business and academia, to set up initiatives and projects, to develop a nationwide cyber-security network in a European and international context and to provide a knowledge platform, forum and network for members of the association.

<https://www.cybersicherheitsrat.de/english/>

Germany: Deutscher CERT Verbund

The German CERT Network is the alliance of German security and computer emergency teams that cooperate in collecting and processing Information. Furthermore, it aims to ensure the protection of the national information technology networks and the fast and common reaction on Internet security incidents.

<https://www.cert-verbund.de/>

Germany: Deutsche Vereinigung für Datenschutz

Founded in 1977 the German Privacy Association (DVD) represents interests of citizens as data subjects as a nonprofit association. The purpose of DVD is to give people advice concerning the risk in using electronic data processing and the possible restriction of their right to informational self-determination.

<https://www.datenschutzverein.de/>

Germany: German Association for Data Protection and Data Security

The German Association for Data Protection and Data Security (GDD) was founded in 1976 and stands as a non-profit organization for practicable and effective data protection. The GDD interacts with government officials, data protection authorities, associations and privacy experts world-wide. Main tasks are support for businesses, public authorities and data protection officers and promoting effective corporate self-regulation and self-monitoring.

<https://www.gdd.de/international/english>

Germany: Horst Görtz Institute for IT-Security

The Horst Görtz Institute for IT Security (HGI), Research Department of the Ruhr-Universität Bochum, was founded in 2002 to address shortcomings in IT security research in Europe as a whole. The HGI currently hosts 26 professors and their teams, who conduct research in electrical engineering and information technology, mathematics and computer science as well as the humanities and social sciences.

<https://hgi.rub.de/en/home/>

Germany: Technische Universität Berlin, Center for Technology and Society

The Zentrum Technik und Gesellschaft (ZTG; Center for Technology and Society) is an institution of the Technische Universität Berlin which was established to enable research beyond disciplinary boundaries. Since current and future challenges are complex, they carry out projects with a broad range of scientists and researchers from various fields, along with individuals, groups and institutions from civil society, business and government.

https://www.tu-berlin.de/ztg/menue/startseite_ztg/parameter/en/

Ireland: University College Dublin, Centre for Cybersecurity and Cybercrime Investigation

UCD Centre for Cybersecurity & Cybercrime Investigation (CCI) is a unique, world-class education and research centre with strong and well-established collaborative relationships with law enforcement and industry.

<http://www.ucd.ie/cci/>

Netherlands: Cyber Security Academy

Leiden University, Delft University of Technology and The Hague University of Applied Sciences have combined their knowledge and expertise in education for professionals in this field in the Cyber Security Academy (CSA) in The Hague. The CSA is an initiative of the municipality of The Hague. At the CSA scholars and lecturers together with experts from private and public sectors translate these issues into a varied range of multidisciplinary learning tracks for highly educated professionals.

<https://www.csacademy.nl/en/>

Netherlands: Maastricht University, European Centre on Privacy and Cybersecurity

Whilst a digital world brings enormous economic benefits, it also creates new vulnerabilities. Cyberspace is prone to malicious activities and the misuse of personal data. The delicate balance between privacy and security is an important issue within the scope on law enforcement in cyberspace. To tackle such challenges, the Faculty of Law at Maastricht University (UM) established the European Centre on Privacy and Cybersecurity (ECPC).

<https://www.maastrichtuniversity.nl/research/maastricht-european-centre-privacy-and-cybersecurity>

Netherlands: The Hague University of Applied Sciences – Centre of Expertise Cyber Security

Building and securing of developed expertise, insights and knowhow in the field of Cyber Security: is the mission of the Centre of Expertise Cyber Security of The Hague University of Applied Sciences. They provide state-of-the-art research and education.

<https://www.thehagueuniversity.com/research/centre-of-expertise/about-centre-of-expertise-for-cyber-security>

Norway: Sintef

SINTEF is one of Europe's largest independent research organisations. Every year we carry out several thousand projects for customers large and small. We apply our multidisciplinary approach in a wide range of projects, from small test and verification projects and expertise evaluations, to multinational research programmes with several partners. Our research on cyber security analyses technical, organisational and human aspects of cyber security and personal privacy.

<https://www.sintef.no/en/>

Norway: University of Bergen, Department of Informatics, Selmer Center

The Selmer Center is a research centre for secure and reliable communication at the University of Bergen. The Selmer Center currently has 26 members with primary research fields including cryptology, coding theory and its application, cryptographic Boolean functions and discrete structures, quantum information theory and machine learning.

<https://www.uib.no/en/rg/selmer>

Switzerland: CERT for the Swiss University Network

SWITCH-CERT protects members of the Swiss academic community, holders of.ch and.li domains, Swiss banks and the entire Swiss Internet community against cyber-attacks.

<https://www.switch.ch/security/>

Switzerland, EPFL, Security, Privacy & Cryptography Group

EPFL has both a Swiss and international vocation and focuses on three missions: teaching, research and innovation. Research in the Security, Privacy & Cryptography Group covers the underlying mathematical principles and applications of cryptography; the foundations of secure and privacy-preserving machine learning; techniques to secure and verify large and complex software codebases; or the principles to design secure and privacy-preserving systems based on decentralized architectures (e.g., blockchains and cryptocurrencies).

<https://www.epfl.ch/schools/ic/research/security-privacy-cryptography/>

Switzerland: ETH Zürich, Institute of Information Security

The Institute of Information Security at ETH Zurich carries out research across the spectrum of information security, ranging from mathematical foundations of cryptography to building solutions to pressing problems in securing networks, cyber-physical systems, and applications. As security is highly interdisciplinary, work is collaborative, with strong links to industrial partners and other faculty areas.

<https://informationsecurity.ethz.ch>

Switzerland: Reporting and Analysis Centre for Information Assurance

MELANI is the Reporting and Analysis Centre for Information Assurance in Switzerland. MELANI is active in the area of security of computer systems and the Internet and protection of critical national infrastructures.

<https://www.melani.admin.ch/melani/en/home.html>

United Kingdom: Imperial College London, Institute for Security Science and Technology

Imperial College has a vibrant cyber security community tackling cutting edge research challenges, educating the next generation, and working with industry. Our community includes academics from the Department of Computing, Institute for Security Science and Technology (ISST), Department of Mathematics, and the Centre for Cryptocurrency Research and Engineering.

<https://www.imperial.ac.uk/security-institute/>

United Kingdom: Royal Holloway University of London, Information Security Group

The Information Security Group (ISG) at Royal Holloway University of London is a world-leading interdisciplinary research group dedicated to research and education in the area of information (cyber) security. The ISG comprises more than fifteen full-time academic faculty members, including a mix of computer scientists, mathematicians and social scientists.

<https://royalholloway.ac.uk/research-and-teaching/departments-and-schools/information-security/>