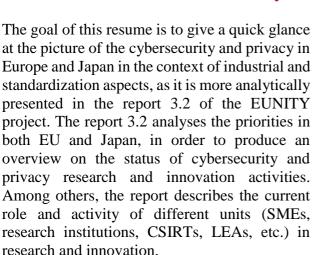# Cybersecurity and privacy dialogue between Europe and Japan

A resume of the revised version of
the Cybersecurity Research Analysis Report for the two regions

Industry and Standardization aspects

The goal of this resume is to give a quick glance at the picture of the cybersecurity and privacy in Europe and Japan in the context of industrial and standardization aspects, as it is more analytically presented in the report 3.2 of the EUNITY project. The report 3.2 analyses the priorities in both EU and Japan, in order to produce an overview on the status of cybersecurity and privacy research and innovation activities. Among others, the report describes the current role and activity of different units (SMEs, research institutions, CSIRTs, LEAs, etc.) in research and innovation.

The report 3.2 is based on an analysis of the Strategic Research and Innovation Agendas (SRIA) of industrial associations and technology associations, as well as reports from ENISA, to understand the efforts and measures undertaken and challenges identified by the European industry when it comes to cybersecurity. The analysed initiatives have been chosen considering several criteria: scope of action (cross-cutting technologies and vertical markets), impact and activity level. Several of these organizations were established to manage different contractual public-private partnerships (cPPP) on different topics. A cPPP is an instrument co-funded by the European Union for research and innovation activities in crucial sectors of Europe's economy, bringing together companies, universities, research laboratories, SMEs and other organizations. These cPPPs develop strategic research and innovation agendas where the R&I priorities and challenges of the industry are structured and defined.

Associations and clusters at EU level

Table 1 and Table 2 contain the industry associations and vertical sectors related to the ICT sector that have among others, a strong focus on research and are taken into account in the study. As a summary and after the wide evaluation of topics and efforts of associations in Europe dealing with cybersecurity research & innovation, we can sum up several priorities related to cybersecurity, proposed by these

Acronym &Name	Main Industry
ECSO - European Cyber Security Organization	Cybersecurity service and product providers, operators of essential services (energy, telecom, finance)
BDVA - Big Data Value Association	Service operators, data management industry, technology providers, cybersecurity product providers
NESSI - Networked Software and Services Initiative	Software, services & data
EOS - European Organisation for Security	ICT, energy, finance, transport, services, research
ECSEL - Electronic Components and Systems for European Leadership	Smart Mobility, Smart Society, Smart Energy, Smart Health, Smart Production, Design Technology, Cyber-Physical Systems, Smart Systems, Safety and Security

Table 1 European technology associations

Vertical sector	Industrial Associations and Organizations studied
Internet of Things (IoT)	Alliance for Internet of Things Innovation (AIOTI), ENISA reports
Communication Infrastructures	5G Infrastructure Public Private Partnership (5G-PPP), European Telecommunication Network Operators' Association (ETNO)
Security	European Organization for Security (EOS)
Transport and mobility	ERTICO, European Road Transport Research Advisory Council (ERTRAC)
Manufacturing	European Factories of the Future Research Association (EFFRA)
Health	European Federation for Medical Informatics (EFMI), MedTech Europe Association

Table 2 European vertical sectors studied

Acronym	Name	Main Industry
Keidanren	Japan Business Federation	All industries
JNSA	Japan Network Security Association	Network Security
VLED	Vitalizing Local Economy Organization by Open Data & Big Data	Open Data & Big Data
5GMF	Fifth Generation Mobile Communication Promotion Forum	5G
IoTAC	IoT Acceleration Consortium	IoT

Table 3 Associations and clusters in Japan

organizations in their Strategic Research and Innovation Agendas (SRIA). The main priorities of these associations and vertical sectors are summarized in Table 4. All the analysed associations have a common interest in making their industries secure markets, and all of them dedicate great efforts to promote research and innovation of cybersecurity solutions. This fact implies that cybersecurity is not just a common interest for the industries, but a requirement. We see several common topics of interest across industries and associations: privacy, cryptography and risk management are referenced in several of these European level groups.

Detailed information on each association and sector can be found in report 3.2 of the EUNITY project. The report also lists and describes associations and initiatives at Member States level, which are left out in this short resume.

Associations and clusters in Japan

There are a number of industry associations that influence research activities in Japan through reports, policy dialogue, representation at government subcommittees, as well as deliberations through working groups. The most important industry associations related to the ICT sector, which may have a potential impact on the cybersecurity market in Japan, are listed in Table 3.

In addition to the associations listed in Table 3 it is worth paying attention to the Society 5.0 as a national strategic effort in Japan. Society 5.0 serves as a common thread to connect industry associations as it is driven by commonly accepted values, while at the same time proposing to incorporate enabling technologies such as IoT, big data and cybersecurity into people's daily lives. Major industry associations thus adopt the term, in order to engage in the industry and policy dialogue to explore variety of innovation pathways toward Society 5.0.

Common Topics of Interest

Industry in both regions has identified a strong interest in areas like 5G and big data, with specific organizations created in both spaces to promote these technologies and to address cybersecurity challenges in these areas. In the EU, BDVA and 5GPPP have emerged, and in Japan the VLED and 5GMF were created with some similar objectives. There are IoT efforts also in both regions in the form of associations. The Japan Network Security Association has also similar counterparts in some European countries, although an EU-level equivalent does not exist as such. Some of the EU-level organizations (such as ECSO) address some of the similar objectives as JNSA, to some extent. In conclusion, we can see that several key areas of industry-led research around cybersecurity that are common in both regions can be found in applications and technologies around Big Data, 5G and IoT. Common research interests include privacy of big data, availability and reliability of open data, security of 5G communication networks and protocols, cryptography, and regulatory aspects of cybersecurity to enable new applications and technology developments.

Summary of horizontal association interests
- ECSO
  - Data security and privacy technologies
  - Distributed identity and trust management
  - User centric security and privacy
  - ICT infrastructure protection
  - Quantum-resistant cryptography
  - Trusted supply chain
  - Security and privacy by design
- BDVA
  - Privacy-aware big data analytics
  - Threat intelligence
  - Assurance in gaining trust
  - Protection of data algorithms
  - Homomorphic Encryption
- NESSI
  - Data Everywhere
  - Dynamic policies and behavior
  - Built-in protection of assets and actors
  - Regulation in societies of services
- ECSEL
  - Security & privacy by design
  - Fully homomorphic encryption
  - Cryptography
  - Identity and access management
  - Data protection
  - Safety and security patterns
  - Trusted devices identities

Summary of vertical industries interests
- Internet of Things
  - Hardware and software security
  - Trust and integrity management
  - Cryptography
  - Data protection and compliance
  - Authentication
  - Monitoring and auditing
- Communication Infrastructures
  - Trusted 5G architecture
  - Multi-Domain and Multi-Layer Security
  - Security as a service
- Security
  - Policy and EU policy regulation harmonization
- Transport and Mobility
  - Blockchain technologies for security
  - Privacy
  - eCall
  - Risk management
  - Reliability and security
  - Standardization
- Manufacturing
  - Security and privacy frameworks
  - Trust management
  - Cryptography
  - Machine learning
  - Critical data management
  - Data exchange and trade
- Health
  - Privacy and security
  - Security risk management
  - Trustworthy EHR system solutions

Table 4. Priorities of European technology associations and vertical sectors