

# Digital Security

Dr Florent Frederix

DG CNECT, Unit H1 - Cybersecurity & Digital Privacy

## Contents

- **Introduction**
- **Grants - Call for proposals in Digital Security**
- **Horizon Prize - Online seamless authentication**
- **Other related topics**

# Introduction

# Cyberspace: a backbone of digital society & economic growth

**315 million** Europeans use the Internet everyday



across all areas of the digital society



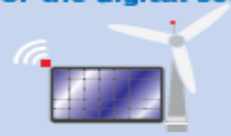
ehealth



e-commerce



smart mobility



energy  
(e.g. smart grids)



finance  
(e.g. e-banking)



Internet of Things

Cybersecurity incidents are  
**increasing** at an **alarming pace**  
with potentially profound effect on daily  
functioning of society & economy,  
both online and offline

## Cybersecurity incidents may

disrupt the supply of essential services such as



water, healthcare, electricity or mobile services

Undermine trust in digital services & products

only 22% of Europeans



have **full trust** in companies  
such as **search engines, social  
networking** sites & **e-mail** services

Only 38% of Europeans feel



**confident** about  
**online purchasing**  
from **another EU Member State**

...as well as financial theft, loss of intellectual property, data breaches, etc.

# What does this mean in practice?



The survival of strong European cybersecurity industry all together is at stake!

# Cybersecurity is also an opportunity!



The **global cyber security market** is expected to be among the **fastest growing** segments of the ICT sector in the coming decade. It is expected to **grow to \$80-120 billion** by 2018.

# Cybersecurity contractual Public-Private Partnership (cPPP)



- Stimulate the **competitiveness and innovation** capacities of the digital security and privacy industry in Europe
- Ensure a sustained **supply of innovative cybersecurity products and services** in Europe



THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

# HORIZON 2020



- **H2020 = legal framework** for the establishment of the cPPP
- **H2020 LEIT-ICT** to focus on technology-driven digital security building blocks and horizontal requirements
- **H2020 Societal Challenge 'Secure Societies'** to deliver societal benefits for users of technologies (citizens, SMEs, critical infrastructures...).
- **H2020 public funds to be matched by private sector investment**

**Seaside Matchmaking Cybersecurity 2016**

# Call for proposals in Digital Security

## Call – Digital Security Focus Area – Topics

- DS-06-2017: Cybersecurity PPP: **Cryptography**
- DS-07-2017: Cybersecurity PPP: **Addressing Advanced Cyber Security Threats and Threat Actors**
- DS-08-2017: Cybersecurity PPP: **Privacy, Data Protection, Digital Identities**

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DS-06-2017: Cybersecurity PPP: Cryptography

## DS-06-2017: Cybersecurity PPP: Cryptography (RIA)

- *In line with technological developments and emerging threats, the improvement of performance and efficiency of cryptographic solutions is a persistent need across ICT.*
  
- Nine thematic research challenges, including:
  - Ultra-lightweight
  - High speed
  - Implementation
  - Authenticated encrypted tokens
  
- Increase trust in ICT and online services
  
- Protect the European Fundamental Rights of Privacy, Data Protection



DS-07-2017: Cybersecurity PPP: Addressing  
Advanced Cyber Security Threats and Threat Actors

# DS-07-2017: Cybersecurity PPP: Addressing Advanced Cyber Security Threats and Threat Actors

- Situational Awareness (RIA);
  - Detect and quickly and effectively respond to sophisticated cyber-attacks;
  - Interdisciplinary research to counter threat actors and their methods;
  - Assess and address the impact to fundamental rights, data protection and privacy in particular;
- Simulation Environments, Training (IA);
  - Prepare those tasked with defending high-risk organisations;
  - Realistic environments; Tools for producing both benign and malicious system events;
  - May also address crisis management and decision making processes in relation to obligations stemming from applicable legal frameworks

# DS-08-2017: Cybersecurity PPP: Privacy, Data Protection, Digital Identities

## CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION TITLE II – FREEDOMS

### *Article 6*

#### **Right to liberty and security**

Everyone has the right to liberty and security of person.

### *Article 7*

#### **Respect for private and family life**

Everyone has the right to respect for his or her private and family life, home and communications.

### *Article 8*

#### **Protection of personal data**

1. Everyone has the right to the protection of personal data concerning him or her.
2. Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified.
3. Compliance with these rules shall be subject to control by an independent authority.



## DS-08-2017: Cybersecurity PPP: Privacy, Data Protection, Digital Identities (IA)

- Privacy-enhancing Technologies (PET)
- General Data Protection Regulation in practice
- Secure digital identities
- Support for Fundamental Rights in Digital Society.
- Increased Trust and Confidence in the Digital Single Market
- Increase in the use of privacy-by-design principles in ICT systems and services

## Call - DS – 2017 - Planning

<u>Two separate opening dates - deadlines for submission</u>		
<b>Topic(s)</b>	DS-06-2017	DS-07-2017 DS-08-2017
<b>Opening</b>	08 Dec 2016	01 Mar 2017
<b>Deadline</b>	25 Apr 2017	24 Aug 2017

Topic	Instr.	Funding (M)
DS-06-2016	RIA	20.50
DS-07-2016	RIA	10.0
	IA	8.0
DS-08-2016	IA	17.6



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# Horizon Prize

## Online seamless authentication

Seaside Matchmaking Cybersecurity 2016



# What are inducement prizes?

- A novel funding instrument, different from e.g. grants (a usual way to co-fund research projects).
- Prize contests address **technological and/or societal challenges**.
- A **target** is specified through **award criteria**.
- The reward goes to the contestant who (first/best) reaches the target.

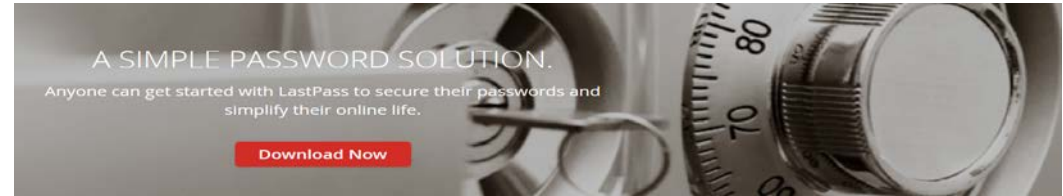
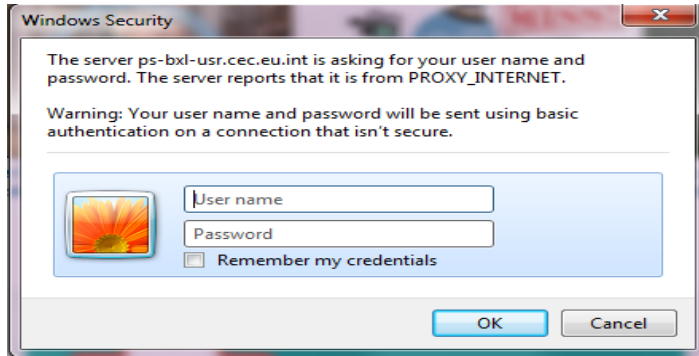


# Why "Horizon prizes" matter?

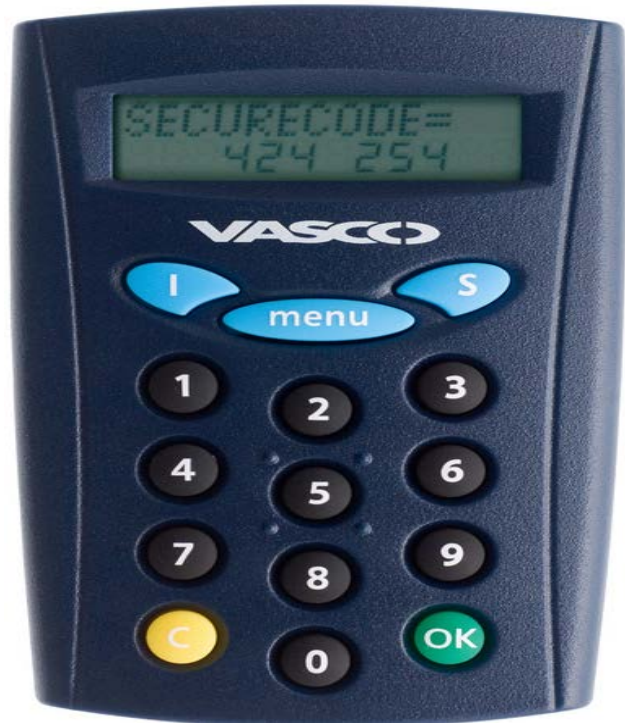
- A way to induce and advance **innovations** for cutting-edge solutions to problems.
- **Leverage** research and innovation (R&I) **investment** from the private sector in a given direction.
- **Simplification and outcome orientation**, as only the outputs from the contestants are evaluated.
- **Entrepreneurship**: Reduce barriers to participation compared with traditional instruments.



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- *Passwords are a daily burden for online users*
- *Password security can be compromised by*
  - Being guessed,
  - brute force attack, or
  - data breach.



- *Multi-factor authentication*
- *Concerns:*
  - Can be convoluted for the user
  - Need to have at hand another hardware gadget in addition to the main one used for the transaction



- *Biometrics are more convenient than passwords and multi-factor authentication methods.*
- *Concerns with biometrics:*
  - Lack of revocability after being spoofed.
  - When reliable, they require costly hardware infrastructure
  - Might be privacy intrusive



# Expected results in seamless authentication prize



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An information and communication technologies (ICT) solution that enables citizens to seamlessly authenticate themselves across a wide range of applications and devices.

The solution should be easy to use, reliable, robust against cyber-attacks, privacy-friendly and compatible as well as affordable and open.

It should be ready to benefit a wide range of the EU population, from healthy to impaired citizens of all **ages**.

# Essential award criteria (1 of 3)

- significant contribution by the contestant in development and/or integration.
- The solution is **usable, convenient and easily accessible** by a wide range of users hence requiring low effort to adopt it from both end-users and service providers.
- The solution is **reliable**, satisfying high rates of accuracy for correctly authenticating users.
- The solution is **secure, robust and resilient** against state-of-the-knowledge cyber-attacks.



# Essential award criteria (2 of 3)

- The solution takes into account the **privacy and data protection principles**.
- The solution is
  - applicable, working across a relevant collection of applications (including, but not limited to: social networks, email services, messaging services, online banking,...)
  - compatible, working across a relevant set of hardware devices and of operating systems
  - affordable for deployment in large scale and cost-effective, requiring low implementation and infrastructure costs for service providers and for end users.



# Essential award criteria (3 of 3)

- The solution is **open**. The extent of open source software included in the solution should be maximum, in order to facilitate (a) its further tailor and development and (b) the assessment of its fulfilment of the award criteria (robustness, privacy and data protection principles).

# Indicative timetable and budget



Stages	Indicative period
Opening of the contest	First quarter 2017
Deadline for submission of application	Third quarter 2018
Evaluation and solutions demonstration	Fourth quarter 2018
Award of the prize	Fourth quarter 2018

Horizon Prize	Funding (M€)
Online Security- seamless authentication	4.0

# Other related topics

Where else to find cybersecurity and privacy  
R&D&I in H2020?

**Everywhere!**

change of mindset

# Examples of related topics

- CIP-01-2016-2017 : Prevention, detection, response and mitigation of the combination of physical and cyber threats to the critical infrastructure of Europe.
- SMEinst-13-2016-2017 : Engaging SMEs in security research and development



# References and support (1 of 2)

## Work programme 2016-2017:

Secure societies – Protecting freedom and security of Europe and its citizens

<http://europa.eu/!BG38Bf>

## National Contact Points (NCPs)

<http://europa.eu/!up97Wv>

- Guidance on choosing relevant H2020 topics and types of action
- Advice on administrative procedures and contractual issues
- Training and assistance on proposal writing
- Distribution of documentation (forms, guidelines, manuals etc.)
- Assistance in partner search

# References and support (2 of 2)

Work programme 2016-2017:

5.i. Information and Communication Technologies

Inducement prize: Online security - Seamless personal authentication

<http://europa.eu/!RX49uX>

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*Follow us in Twitter* **@EU\_TrustSec**

[CNECT-H1@ec.europa.eu](mailto:CNECT-H1@ec.europa.eu)

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florent.frederix@ec.europa.eu

EXTRA SLIDES BEYOND THIS POINT



# Cyber Attacks - recent examples



**Bundestag: servers infected  
with malware**  
-> rebuilding of nearly all IT  
systems



**TALKTALK: "significant cyber-attack" ->  
4+ million customers' data potentially  
accessed**



# Key EU Objectives and Actions

**Increase  
capabilities  
& cooperation**

NIS Directive - NIS platform – ENISA  
- CEF

**Strengthen EU  
Cybersecurity  
industry**

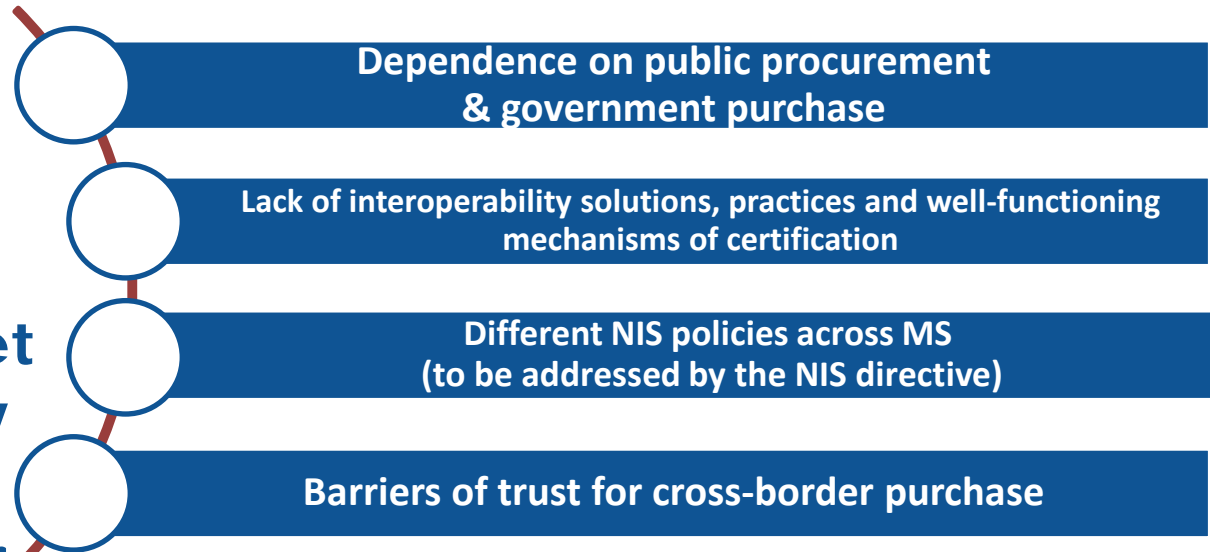
Strengthening industrial  
capabilities– cPPP - 450M in H2020

**Mainstream  
cybersecurity  
in EU policy**

Cooperation on new policy initiatives –  
Sectorial cybersecurity  
strategies

# Cyberspace is borderless by nature...

unlike  
**heavily**  
**fragmented**  
European market  
for ICT security  
products &  
services due to:



# Objectives of the cPPP

**Gather industrial and public resources to deliver innovation against a jointly-agreed strategic research and innovation roadmap.**

**Maximize available funds through better coordination with MS.**

**Focus on a few technical priorities defined jointly with industry.**

**Seek synergies to develop common, sector-neutral technological building blocks with maximum replication potential**

**Obtain economies of scale through engagement with users/demand side industries and bringing together a critical mass of innovation capacities.**

**Be a platform to discuss other supporting measures for the industry**