



## Pre-announcement of Call 2022

The Call 2022 of CHIST-ERA, to be published in October or November 2022, will target projects in the following topics:

**Security and Privacy in Decentralised and Distributed Systems (SPiDDS)**  
**Machine Learning-based Communication Systems, towards Wireless AI (WAI)**

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**Anticipated Call Deadline: 2 February 2023, 17:00 CET**

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Documents and procedures: <http://www.chist-era.eu>

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Call information: Anna Ardizzoni  
+33 1 7809 8084  
[anna.ardizzoni@anr.fr](mailto:anna.ardizzoni@anr.fr)

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Indicative budget: Approx. 10 M€

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Researchers are encouraged to start discussing possible projects with prospective partners. The call will require that projects are submitted by international consortia with minimum of three eligible and independent partners requesting funding to organisations in the call from at least three different participating countries. Additional partners from other countries may be part of a consortium if they can secure their own funding. The list of countries and funding organisations, which have shown preliminary interest in participating in the Call 2022, is provided in annex.

Please note that this pre-announcement is for information purposes only. It does not create any obligation for the CHIST-ERA consortium nor for any of the participating funding organisations. The official call announcement, to be published later, shall prevail. The contact point of your funding organisation remains at your disposal for any further information (see annex).

**To receive call updates, please subscribe to [NEWSLETTER](#)**

**CHIST-ERA supports European coordinated research on long-term ICT and ICT-based scientific challenges**

CHIST-ERA is supported by the Pathfinder programme of the European Innovation Council



## Key Facts & Figures

### CHIST-ERA

CHIST-ERA is a consortium of research funding organisations in Europe and beyond supporting use-inspired basic research in Information and Communication Technologies (ICT) or at the interface between ICT and other domains. The CHIST-ERA consortium is itself supported by Horizon 2020 and is part of the European Innovation Council's Pathfinder programme.

CHIST-ERA promotes novel and multidisciplinary research with the potential to lead to significant technology breakthroughs in the long term. The funding organisations jointly support high risk and high impact research projects selected in the framework of CHIST-ERA, in order to reinforce European capabilities in promising new or emerging ICT or ICT related research topics.

### Content of the Call

Topics:	Security and Privacy in Decentralised and Distributed Systems (SPiDDS) Machine Learning-based Communication Systems, towards Wireless AI (WAI)
Indicative budget:	Approx. 10 M€
International consortium:	The project consortia must have a minimum of 3 eligible and independent partners requesting funding in at least 3 different countries participating in the call
Standard consortium size:	Three to six partners
Evaluation:	Proposals are evaluated based on criteria of <i>Relevance to the topic, Scientific and technological quality, Impact and Implementation</i>
Funding:	Each partner is funded separately by the national/regional funding organisation they are applying to. They must fulfil the conditions of their funding organisation, as described in the Call Announcement annex.

### Tentative Timeline

2 February 2023, 17:00 CET	Deadline for proposal submission
July 2023	Notification of accepted proposals
October 2023	Tentative start date for accepted projects

## **1<sup>st</sup> Topic: Security and Privacy in Decentralised and Distributed Systems (SPiDDS)**

Ease of access to numerous computational resources, communication channels and increasing data volumes has led to increased interest in decentralised and distributed systems. Decentralised and distributed architectures provide advantages such as the ease of scalability, increased fault tolerance and faster data access. New devices can be more readily configured and added to the network with minimal interference in a decentralised or distributed network, whilst these systems are more resilient with no 'central point of failure'. Whilst there are advantages from the network not relying on a single node, this can lead to a greater number of attack vectors. Depending on how the system is implemented, security can be weaker in both decentralised and distributed systems. Additionally, these systems are more complex to maintain, and whilst privacy can be enhanced, this also provides more scope for cyberattacks. As decentralised and distributed systems become increasingly used, solutions to ensuring privacy and security in a trade-off with performance are sought.

### **Target Outcomes**

Projects should address one or more of the following topics for decentralised and/or distributed systems:

- Design of hybrid software-hardware security and privacy solutions;
- Development of novel authentication protocols;
- Design of verification models for real-world applications of privacy and security solutions;
- Production of advanced use cases;
- Development of self-aware systems to identify and adapt to new threat vectors;
- Development of event driven end-to-end reconfigurable systems;
- Development of user-friendly federated learning techniques that deliver enhanced security or privacy;
- Design of protocols to enable integration of auxiliary devices to achieve high levels of privacy and security.

### **Expected Impact**

Funded projects are expected to significantly advance the state-of-the-art by achieving one or more of the following objectives:

- Develop methods to improve security and/or privacy of distributed and decentralised systems whilst maintaining system performance;
- Identify new opportunities and services to improve security and privacy by implementing a decentralised or distributed system;
- Lead to decentralised and distributed systems which are capable of being adaptable and reconfigurable end-to-end in order to maintain security and privacy for users;
- Support the development of objective benchmarks and evaluation strategies for research in this domain;
- Cross traditional boundaries between disciplines in order to strengthen the community involved in tackling these new challenges.

## **2<sup>nd</sup> Topic: Machine Learning-based Communication Systems, towards Wireless AI (WAI)**

In recent years, we have seen the rapid growth of mobile communications and Internet of Things (IoT) networks. This trend is expected to continue, with global traffic set to increase multi-fold over the next five years. This poses challenges for traditional networks with respect to their design, deployment, operation and optimisation. Future service requirements will include transfer of higher data volumes with ultra-low latency, improved connectivity, increased reliability and reduced power consumption. The next wireless networks should be able to meet the complex scenarios and non-linearity of future environments. Artificial intelligence (AI) is therefore key to achieving future requirements and dynamicity. Wireless AI looks at the implementation of Machine Learning (ML) techniques in Wireless communication systems to improve decision making, network management, and resource allocation. Therefore, in this call we look to discover new solutions to these problems, and create new application scenarios.

### **Target Outcomes**

Projects should accelerate the path towards relevant Wireless AI by successfully integrating software-based solutions and hardware-oriented proof-of-concepts. They should address one or more of the following topics:

- Design of AI-enhanced techniques for resource optimisation in Radio Access Networks;
- Implementation of ML in physical layer signal processing;
- Development of AI-enhanced techniques for MIMO processing & beamforming;
- Design of improved Cognitive Radio Networks;
- Development of hardware and or/software techniques to improve energy efficiency in wireless networks;
- Design of protocols for trustworthy and reliable AI-based Edge processing;
- Use of communications systems for improved sensing;
- Generation and assurance of reliable training data for ML;
- Development of open-access testbeds;
- Design of use-cases to take advantage of these technologies.

Projects should aim at quantitative results. Where appropriate, they should make publicly available all the data, protocol description and software metrics needed to reproduce experiments.

### **Expected Impact**

Funded projects are expected to significantly advance the state-of-the-art by achieving one or more of the following objectives:

- Develop approaches to meet future requirements for high data volumes, ultra-low latency, improved connectivity, higher reliability and/or reduced power consumption;
- Identify new applications and services which could be provided by introducing AI techniques for wireless communications;
- Lead to advances in Wireless AI by successfully integrating software-based solutions and hardware-oriented proof-of-concepts;
- Support the development of objective benchmarks and evaluation strategies for research in this domain;
- Cross traditional boundaries between disciplines to strengthen the community involved in tackling these new challenges.

## Annex: Tentative List of Participating Funding Organisations

Country	Funding organisation	Topic 1 SPiDDS	Topic 2 WAI	Contact
Austria	FWF	Yes	No	<a href="mailto:Veronika.Schoepf@fwf.ac.at">Veronika.Schoepf@fwf.ac.at</a>
Belgium	F.R.S - FNRS	Yes	Yes	<a href="mailto:Florence.Quist@frs-fnrs.be">Florence.Quist@frs-fnrs.be</a>
Brazil	CNPq	Yes	Yes	<a href="mailto:Dileine.Cunha@cnpq.br">Dileine.Cunha@cnpq.br</a>
Brazil	CONFAP	Yes	Yes	<a href="mailto:Elisa.CONFAP@gmail.com">Elisa.CONFAP@gmail.com</a>
Bulgaria	BNSF	Yes	Yes	<a href="mailto:Aleksandrova@mon.bg">Aleksandrova@mon.bg</a>
Czech Republic	TACR	Yes	Yes	<a href="mailto:Aneta.Lizancova@tacr.cz">Aneta.Lizancova@tacr.cz</a>
Estonia	ETAg	Yes	Yes	<a href="mailto:Margit.Suuroja@etagee">Margit.Suuroja@etagee</a>
Finland	AKA	Yes	Yes	<a href="mailto:Katrine.Mahlamaki@aka.fi">Katrine.Mahlamaki@aka.fi</a>
France	ANR	Yes	Yes	<a href="mailto:Anna.Ardizzoni@anr.fr">Anna.Ardizzoni@anr.fr</a>
Ireland	IRC	Yes	Yes	<a href="mailto:RSweeney@research.ie">RSweeney@research.ie</a>
Israel	InnovationAuth	Yes	Yes	<a href="mailto:Rachel.L@iserd.org.il">Rachel.L@iserd.org.il</a>
Latvia	LZP	Yes	Yes	<a href="mailto:Maija.Bundule@lzp.gov.lv">Maija.Bundule@lzp.gov.lv</a>
Lithuania	LMT	Yes	Yes	<a href="mailto:Laura.Kostelnickiene@lmt.lt">Laura.Kostelnickiene@lmt.lt</a>
Luxembourg	FNR	Yes	Yes	<a href="mailto:Helena.Burg@fnr.lu">Helena.Burg@fnr.lu</a>
Poland	NCN	Yes	Yes	<a href="mailto:Alicja.Dylag@ncn.gov.pl">Alicja.Dylag@ncn.gov.pl</a>
Romania	UEFISCDI	Yes	Yes	<a href="mailto:Cristina.Cotet@uefiscdi.ro">Cristina.Cotet@uefiscdi.ro</a>
Slovakia	SAS	Yes	Yes	<a href="mailto:Panisova@up.upsav.sk">Panisova@up.upsav.sk</a>
Spain	AEI	Yes	Yes	<a href="mailto:era-ict@aei.gob.es">era-ict@aei.gob.es</a>
Switzerland	SNSF	Yes	Yes	<a href="mailto:chistera@snf.ch">chistera@snf.ch</a>
Taiwan	MOST	Yes	Yes	<a href="mailto:cmtom@most.gov.tw">cmtom@most.gov.tw</a>
Turkey	TÜBİTAK	Yes	Yes	<a href="mailto:Ozlem.GeziciKoc@tubitak.gov.tr">Ozlem.GeziciKoc@tubitak.gov.tr</a>
United Kingdom	UKRI	Yes	No	<a href="mailto:Rachel.Lamb@epsrc.ukri.org">Rachel.Lamb@epsrc.ukri.org</a>