CHIST-ERA Conference 2022
Presentation of CHIST-ERA

May 24-26, Edinburgh & Online

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Outline

- ❑ Conference objectives
- ❑ CHIST-ERA
  - ✓ Overview, statistics, targeted research
  - ✓ Call topic selection and definition
- ❑ Call 2022 key facts
- ❑ Additional funding activities
  - ✓ Call Open Science
  - ✓ "Challenge" call
- ❑ Connect with CHIST-ERA

❑ Scope the Call 2022 topics

- ✓ *Security and Privacy and Decentralised and Distributed Systems (SPiDDS)*
- ✓ *Machine Learning-based Communication Systems, towards Wireless AI (WAI)*
- ✓ **Draft** topics description: https://www.chistera.eu/call-2022-draft-topics-keywords

❑ Networking event

CHIST-ERA Overview

- A network (ERA-NET) of research funding organisations in Europe and beyond
  - Covering most European countries + Québec + Taiwan
  - Call consortium is a sub-set of CHIST-ERA consortium (participation on a topic by topic basis)
- Supporting long term research targeting emerging digital technologies
  - Investing in the identification and definition of promising topics
  - Give an impulse to 2 promising topics per year
    - Typically 10-15 projects of approx. 0.8 - 1 M€ each, involving at least 3 countries each
  - Promoting Open Science, Responsible Research and Innovation, Widening Countries, Ethics
- Relying on a well-established yearly call cycle
  - One-step high quality evaluation process
- Fostering cross-fertilisation across topics and strategic thinking through a yearly Funded Projects Seminar
- Diversification of funding activities: Call Open Science & Challenge Call
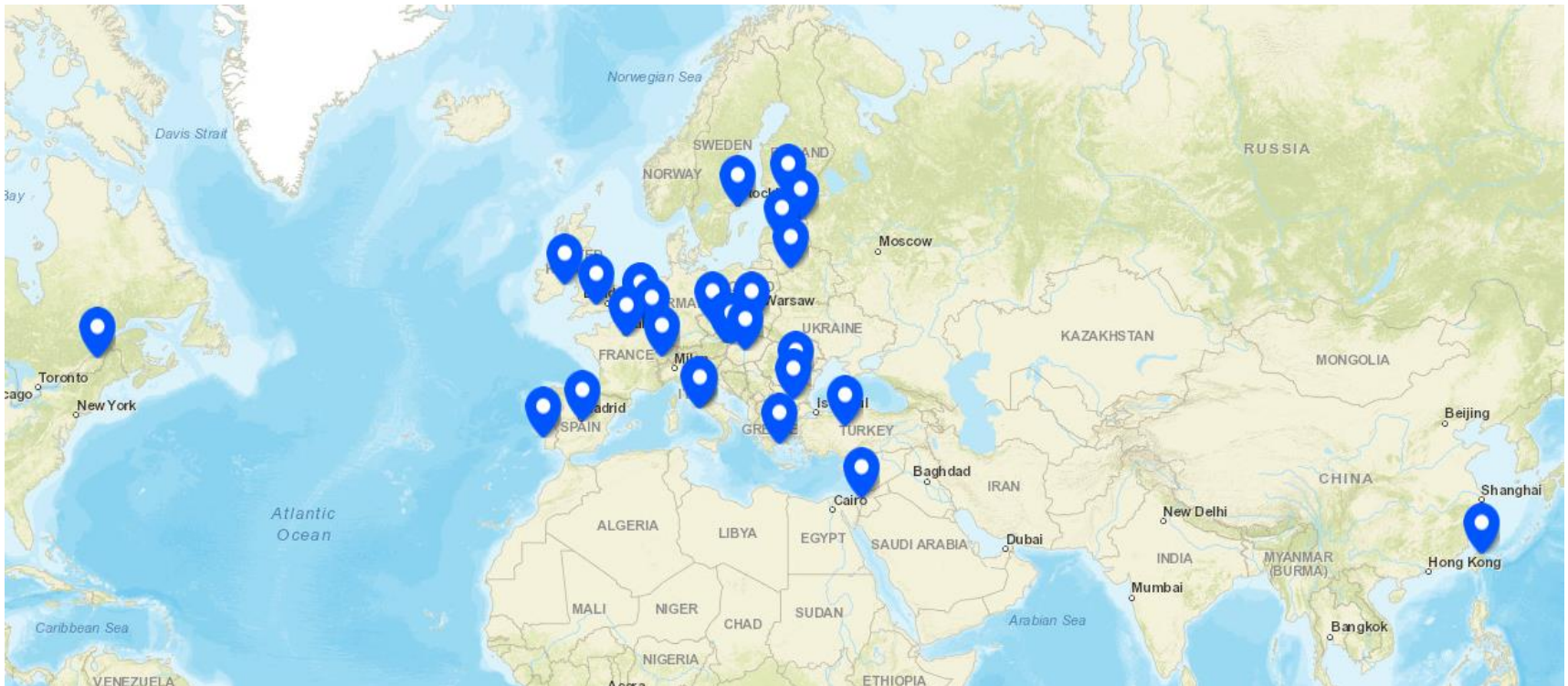
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Network of Research Funders

Steady growth

CHIST-ERA 2022

29 funders from 26 countries

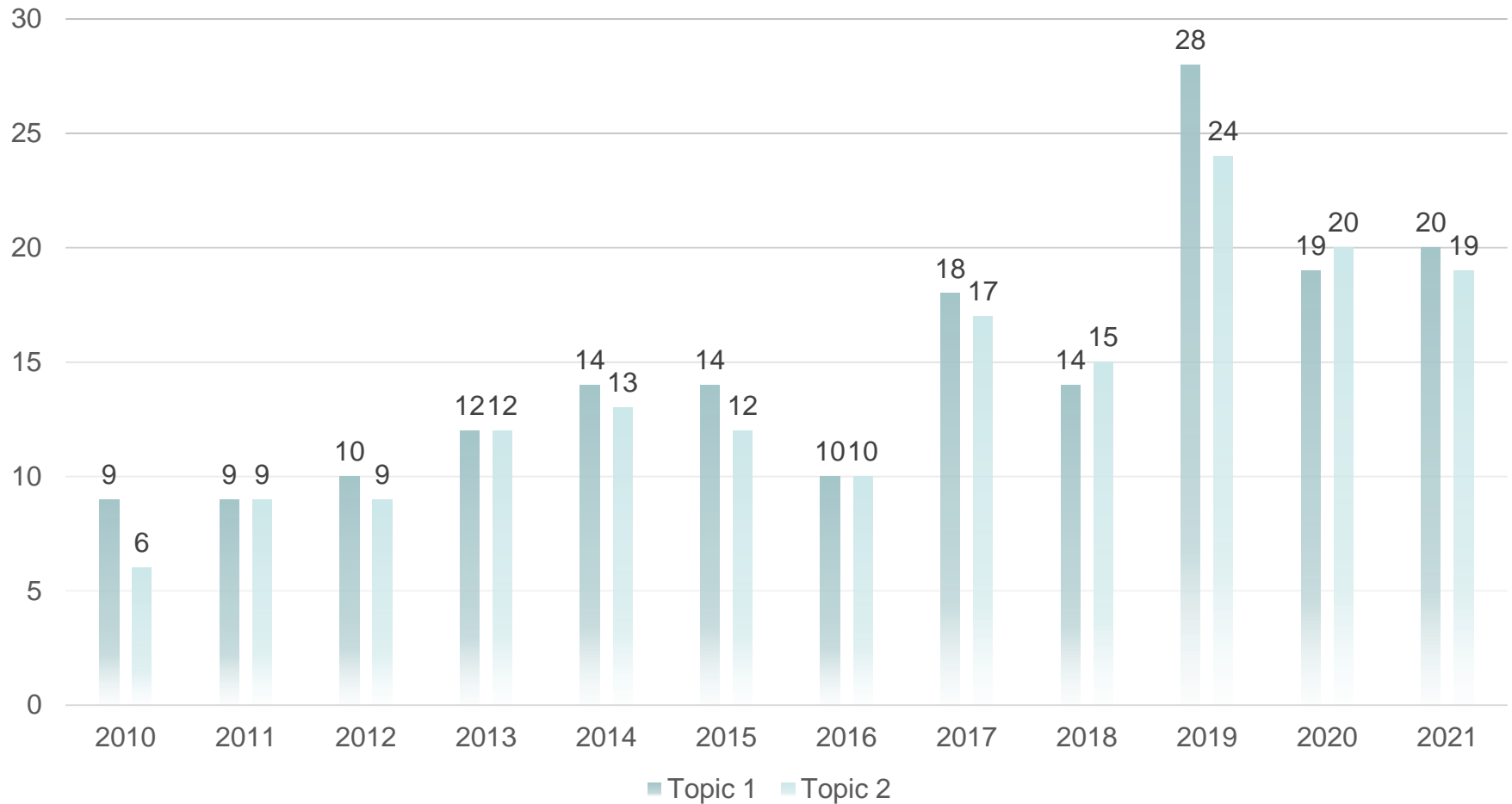**CHIST-ERA 2010**

9 funders - 9 countries

- ❑ Call topics selection workshop (among funding organisations & scientific advisory board)
  - ✓ Elaborate topic selection process open to new ideas
  - ✓ Selection based on well-defined criteria and thorough discussion
- ❑ Call topics definition conference (for all researchers interested in a selected topic)
  - ✓ Advertises the call
  - ✓ Contributes to call scoping
  - ✓ Networking event for the applicants
- ❑ Funded Projects Seminar (for all representatives of active projects)
  - ✓ Contributes to project follow-up
  - ✓ Networking event for projects within and across topics
  - ✓ Fosters strategic thinking

Fostering Strategic Thinking and Topic Maturation

❑ Relying on the Funded Projects Seminar

- ✓ Put the items below on the agenda of the thematic parallel sessions and ask to cover them in the presentation in plenary session
- ✓ Connection with H2020 and development of strategic research agendas
  - ▪ Discuss the relevant parts of H2020 for the topic, whether they fulfil the needs, and potential evolutions
- ✓ Technology Transfer
  - ▪ Discuss and present the potential achievements and needs in connecting to users and/or industry
- ✓ Responsible R&I, Open Science
  - ▪ Promote high RRI and Open Science standards in research practices
- ✓ Impact analysis
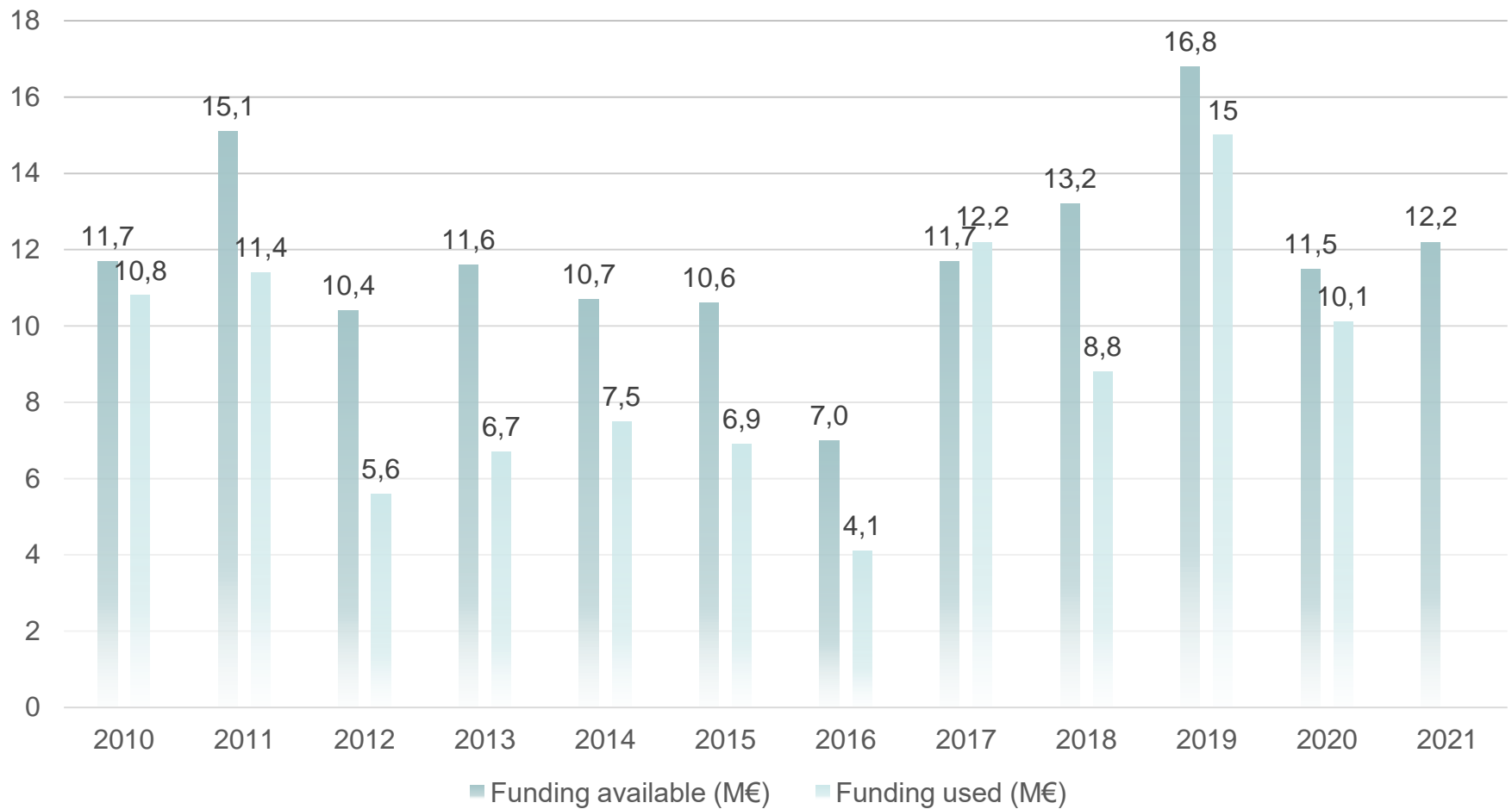 - ▪ Offer to attend editions of the Seminar beyond project end

Funder Participation in Calls

Budget in Calls

Funding available (M€) vs Funding used (M€)

Year	Funding available (M€)	Funding used (M€)
2010	11,7	10,8
2011	15,1	11,4
2012	10,4	5,6
2013	11,6	6,7
2014	10,7	7,5
2015	10,6	6,9
2016	7,0	4,1
2017	11,7	12,2
2018	13,2	8,8
2019	16,8	15
2020	11,5	10,1
2021	12,2	

Success Rate in Calls

Success rate (average): 17.4%

- ❑ CHIST-ERA is a project of the European Innovation Council Pathfinder programme

- ❑ Support to basic research for future and emerging ICT (Pathfinder-like research)
  - ✓ Long term interdisciplinary research
  - ✓ Risky with potential high impact
  - ✓ Favour novelty

- ❑ Focus on performance evaluation

ICT & ICT-based

CHIST-ERA

Pathfinder programme of the EIC
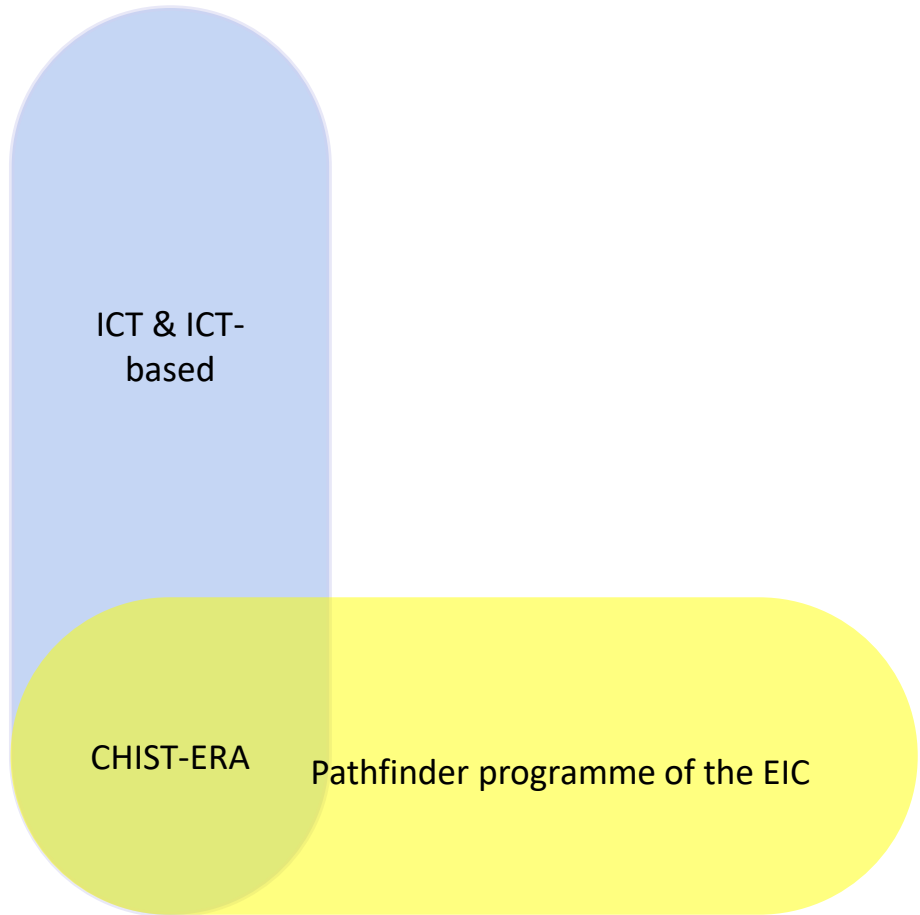
"Smarter"
Examples of call topics

Call	Topic
2011	From Data to New Knowledge
2012	Intelligent User Interfaces
2013	Adaptive Machines in Complex Environments
2014	Human Language Understanding: Grounding Language Learning
2016	Lifelong Learning for Intelligent Systems
2017	Object recognition and manipulation by robots
2017	Big data and process modelling for smart industry
2019	Novel Computational Approaches for Environmental Sustainability

Call	Topic
2014	Resilient Trustworthy Cyber-Physical systems
2015	User-Centric Security, Privacy and Trust in the Internet of Things
2016	Visual Analytics for Decision Making under Uncertainty
2019	Explainable Machine Learning-based Artificial Intelligence

"Leaner"
Examples of call topics

Call	Topic
2010	Quantum Information Foundations and Technologies
2011	Green ICT, towards Zero-Power ICT
2012	Context- and Content-Adaptive Communication Networks
2013	Heterogeneous Distributed Computing
2015	Terahertz Band for Next-Generation Mobile Communication Systems
2018	Analog Computing for Artificial Intelligence
2018	Smart Distribution of Computing in Dynamic Networks

Topic Selection Criteria

❑ Scientific interest and innovation potential

    ✓ Novelty & ambition

    ✓ Multidisciplinary and/or transformative

    ✓ Clarity and measurability

    ✓ Timeliness

    ✓ Potential impact

❑ Suitability for a CHIST-ERA call

    ✓ Need for transnational cooperation

    ✓ Complementarity with existing calls

    ✓ Suitability of topic size

Topic Definition Phases

❑ 1st phase: Identification of potential topics

- ✓ A preliminary topic list compiled from suggestions from the CHIST-ERA research funding organisations and Advisory Board members, and from inputs from FET and other EU programmes
- ✓ Discussion between funders and Advisory Board members for a common understanding of the topics

❑ 2nd phase: Selection of two topics

- ✓ Each funder indicates for each topic if it would be funded in case it is finally selected
- ✓ Preliminary ranking list of topics compiled from scores given by funders and Advisory Board members
- ✓ Funders meeting to select two topics

❑ 3rd phase: Definition of scientific call text

- ✓ The chosen topics are published on the CHIST-ERA web site
- ✓ Gathering renowned scientific experts
- ✓ Scientific call text preparation

Conference

Call 2021 Key Facts

- Launch in the fall 2022
- Pre-announcement published in Sept 2022
- Tentative deadline: Mid-January 2023

- See up-to-date list of funding organisations considering joining the call at https://www.chistera.eu/call-2022-draft-topics-keywords

- Support to applicants (call webpage to be published in Sept 2022)
  - ✓ Partner Search Tool
  - ✓ FAQ
  - ✓ Webinars for applicants
  - → Scientific expectations + Open Science policy, Widening Countries policy…

Country	Funding organisation	Participation status	Contact point
Austria	FFG	To be announced	Ana.Almansa@ffg.at
Austria	FWF	To be announced	Veronika.Schoepf@fwf.ac.at
Belgium	F.R.S.-FNRS	Considered	Florence.Quist@frs-fnrs.be
Belgium	FWO	To be announced	eranet@fwo.be
Bulgaria	BNSF	To be announced	Aleksandrova@mon.bg
Czech Republic	TACR	Considered	Michaela.Kriklanova@tacr.cz
Estonia	ETAg	Considered	Maarja.Soonberg@etag.ee
Finland	AKA	Considered	Katrine.Mahlamaki@aka.fi
France	ANR	Considered	Anna.Ardizzoni@anr.fr
Greece	GSRT	Not considered	M.Koniaris@gsrt.gr
Hungary	NKFIH	To be announced	Edina.Nemeth@nkfih.gov.hu
Ireland	IRC	To be announced	RSweeney@research.ie
Israel	InnovationAuth	Considered	rachel.l@iserd.org.il
Italy	INFN	To be announced	Alessia.dOrazio@bo.infn.it
Italy	MIUR	To be announced	Giorgio.Carpino@miur.it
Latvia	VIAA	To be announced	Maija.Bundule@viaa.gov.lv
Lithuania	LMT	Considered	Laura.Kostelnickiene@lmt.lt
Luxembourg	FNR	Considered	Helena.Burg@fnr.lu
Poland	NCN	Considered	Alicja.Dylag@ncn.gov.pl
Portugal	FCT	To be announced	Germana.Santos@fct.pt
Québec (Canada)	FRQNT	Not considered	Michel.Garceau@frq.gouv.qc.ca
Romania	UEFISCDI	To be announced	Cristina.Cotet@uefiscdi.ro
Slovakia	SAS	Considered	Panisova@up.upsav.sk
Spain	AEI	Considered	ers-ict@aei.gob.es
Sweden	VR	To be announced	tomas.andersson@vr.se
Switzerland	SNSF	Considered	chistera@snf.ch
Turkey	TÜBITAK	To be announced	Ozlem.GeziciKoc@tubitak.gov.tr
United Kingdom	UKRI	Considered	Maryam.Crabbe-Mann@epsrc.ukri.org

Additional funding activities

❑ Call Open Science: *Research Practices and Open Research Data*

- ✓ Challenges of research data structuring, accessibility, reuse, interoperability, citation, sharing and openness
- ✓ Support to European projects to develop and disseminate appropriate research practices across the various research communities
- ✓ Express your interest to the funding organisations in CHIST-ERA!
- ✓ Call publication date: June or July 2022

❑ Challenge Call

- ✓ It targets a focused objective. Selected projects all share this common objective
- ✓ Their progress toward this objective is assessed every year through evaluation campaigns gathering all the projects
- ✓ The evaluation campaigns involve metrics and protocols implemented by the evaluation campaign organisers
- ✓ The scheme combines competition among selected projects and cooperation: Data sharing and networking across projects are promoted
- ✓ Express your interest to the funding organisations in CHIST-ERA!
- ✓ Call publication date: 2023?

Connect with CHIST-ERA

- www.chistera.eu
- Twitter: https://twitter.com/chistera_net
- LinkedIn: https://www.linkedin.com/company/chist-era-era-net
- Contact: chistera@anr.fr

Call 2022 Topics

Security and Privacy and Decentralised and Distributed Systems (SPiDDS)

❑ More and more computer applications are decentralised or distributed
  - ✓ Technical trends: Increasing miniaturisation of computing devices and availability of massive hardware parallelism in data centers
  - ✓ Societal trends: Increasing globalisation and sharing of information

❑ Security and privacy issues in computer systems are exacerbated
  - ✓ Epecially with applications becoming more complex by spanning multiple tiers or hardware infrastructures, and integrating different subsystems and components

❑ New approaches are needed to achieve and reason about security and privacy guarantees in a comprehensive end-to-end fashion in such applications
  - ✓ In particular, formal techniques for verifying properties are needed for increasing automation and rigor in the face of increasingly complex systems.

❑ *Application sectors: Blockchains, edge and fog, 5G / 6G applications and systems, IoT, cloud*

❑ *Keywords: Security, privacy and trust in distributed systems; Secure mobile, edge and cloud computing; Formal models of security and privacy; Automated verification of security and privacy properties in software; Secure distributed ledgers and coordination*

Machine Learning-based Communication Systems, towards Wireless AI (WAI)

❑ Large growth in IoT networks and data traffic

❑ New service requirements become also more and more demanding:
- ✓ Higher data volumes, ultra-low latency, massive connectivity, higher reliability and lower power consumption.

❑ Next generation wireless networks push forward towards radically new approaches

❑ ML techniques can help
- ✓ Potential to handle giant amount of information to outperform current application scenarios and deliver novel ones

❑ Components that could be enhanced (partial list):
- ✓ Resource optimization in Radio Access Network (scheduling)
- ✓ Physical layer signal processing
- ✓ Spatial (MIMO) processing & beamforming
- ✓ Spectrum sensing & spectrum access for Cognitive Radio Networks
- ✓ Learning at the edge of wireless networks

❑ The call topic will aim at accelerating the path towards relevant Wireless AI by successfully integrating software-based solutions and hardware-oriented proof-of-concepts

❑ *Application sectors: Communication systems, AI*

❑ *Keywords: Wireless communication, Machine Learning, Radio Access Networks, signal processing, MIMO, spectrum sensing, Cognitive Radio Networks, 5G, optimization algorithms, Dynamic Spectrum Allocation*

Thank you!