



Pre-announcement of Call 2021

The Call 2021 of CHIST-ERA, to be published by the end of October or beginning of November 2021, will target research in the following topics:

**Nano-Opto-Electro-Mechanical Systems (NOEMS) for ICT
Foundations for Misbehaviour Detection and Mitigation Strategies in Online
Social Networks and Media**

Anticipated Call Deadline: 17 January 2022, 17:00 CET

Documents and procedures: <https://www.chistera.eu>

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Indicative budget: Approx. 10 M€

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 2021, 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 [CHIST-ERA Call 2021 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 Europe within 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

Nano-Opto-Electro-Mechanical Systems (NOEMS) for ICT

Topics: **Foundations for Misbehaviour Detection and Mitigation Strategies in Online Social Networks and Media**

Indicative budget:	Approx. 10 M€
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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
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Standard consortium size:	Three to six partners
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Evaluation:	Proposals are evaluated based on criteria of <i>Relevance to the topic, Scientific and technological quality, Impact and Implementation</i>
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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.
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Tentative Timeline

17 th January 2022, 17:00 CET	Deadline for proposal submission
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June 2022	Notification of accepted proposals
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October 2022	First possible start date for accepted projects
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1st Topic: Nano-Opto-Electro-Mechanical Systems for ICT (NOEMS)

The combination of optical, mechanical and electronic elements into a single platform allows the manipulation of light via mechanical manipulation and electronics. In reducing the size of these metastructures (to the nanometer range) the strength of the interactions are enhanced and power consumption reduced as the mechanical elements require less power than electro-optic and thermo-optic effects, for example. Specifically, it is the exploitation of the piezo-electric and flexible states of light (intensity, phase, polarization and orbital angular momentum) that brings about a mechanical response which reduces the power consumption. Integration of NOEMS with processing chips potentially opens up applicability of NOEMS to various areas such as information carrying, communication, sensing and computing.

Target Outcomes

Projects should address one or more of the following topics:

- Miniaturisation of NOEMS and integration with circuits on a single device
- Development of multi modal and multi physical capabilities
- Improvement of electro-mechanical energy conversion efficiency
- Modelling of the NOEMS at the nanoscale taking into account Van der Waals forces
- Development of metamaterials/metasurfaces for integration of NOEMS components
- Development of arrays of NOEMS for computing architectures
- Development of testbeds
- Advanced fabrication technologies, exploiting silicon or heterogeneous materials to aid integration

Expected Impact

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

- Develop a deeper fundamental and comprehensive understanding of NOEMS for information and communication technologies
- Identify new opportunities fostered through NOEMS and possibly the transfer from laboratories to industries
- Enable the emerging of innovative, scalable, reliable and reproducible technologies, with increased manufacturability and its repeatability
- Cross traditional boundaries between disciplines in order to strengthen the community involved in tackling these new challenges.

2nd Topic: Foundations for Misbehaviour Detection and Mitigation Strategies in Online Social Networks and Media (OSNEM)

The pervasive nature of internet use, in particular social networking and media has come with immense benefits but also some drawbacks to society. The sharing of culture, experiences and news has increased awareness and understanding across different societal groups. However, these same networks can be used to spread misinformation, low quality news and fake news. Misbehaviour from bots and/or anonymous users can impact political outcomes, social inequalities, and health. This is increasingly spread beyond the text format, and now includes all types of media; image, video and audio. The majority of detection methods and mitigation strategies are only applicable to text and cannot be applied to other media types. This challenge is also exacerbated by the multi-platform and multi-language nature of social networks or media.

Target Outcomes

Projects should address one or more of the following topics:

- Identify most impactful types of misbehaviour (possibly on purpose) and emerging trends
- (Near) real time, robust and scalable technologies to detect misbehaviours
- Address multimodality (i.e. text, video, audio and images), tackling multiple platforms where possible
- Development of AI-based (incl. explainable AI) and Natural Language Processing technologies where necessary
- Availability and sharing of (multilingual) databases and benchmarks

Applicants should also consider the following:

- Interdisciplinary approaches (incl. social sciences, for instance to identify motivation of misbehaviours, understand the effect of conscious and unconscious bias)
- Citizen participation i.e. assessing vulnerability/susceptibility of people, understanding the impact online misbehaviour has on their lives
- Availability of detection technologies in languages other than English if possible
- Awareness of power consumption/requirements
- Give due consideration to objective performance evaluation and experiment reproducibility (grant access to the training data, evaluation data and metrics where possible)
- Possibility to define proposal objectives by relying on research data, created by other research teams and available in open data repositories
- Expand understanding and engage with stakeholders on the issues of long-term security, ethical and legal issues associated with the adoption of intelligent and autonomous systems

Expected Impact

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

- Develop a deeper fundamental and comprehensive understanding of misbehaviour in social networks and media, anticipate future and emerging trends
- Enable the emerging of innovative and reproducible technologies to detect low quality news, misinformation and disinformation (propaganda), and support mitigation strategies
- Increase awareness in society
- Cross traditional boundaries between disciplines in order to strengthen the community involved in tackling these new challenges

Annex: Tentative List of Participating Funding Organisations

Country	Funding organisation	Topic 1 NOEMS	Topic 2 OSNEM	Contact(s)
Belgium	F.R.S.-FNRS	Yes	Yes	international@frs-fnrs.be
Belgium	FWO	Yes	Yes	eranet@fwo.be
Bulgaria	BNSF	Yes	Yes	Aleksandrova@mon.bg
Czech Republic	TACR	Yes	Yes	Aneta.Lizancova@tacr.cz
Estonia	ETAg	Yes	Yes	Maarja.Soonberg@etagee
Finland	AKA	Yes	Yes	Katrine.Mahlamaki@aka.fi
France	ANR	Yes	Yes	Anna.Ardizzoni@anr.fr
Ireland	IRC	Yes	Yes	RSweeney@research.ie
Israel	InnovationAuth	Yes	Yes	Rachel.L@iserd.org.il
Lithuania	LMT	Yes	Yes	Laura.Kostelnickiene@lmt.lt
Poland	NCN	Yes	Yes	Alicja.Dylag@ncn.gov.pl
Slovakia	SAS	Yes	Yes	Panisova@up.upsav.sk
Spain	AEI	Yes	Yes	era-ict@aei.gob.es
Switzerland	SNSF	Yes	Yes	chistera@snf.ch
Taiwan	MOST	Yes	Yes	cmtom@most.gov.tw
Turkey	TÜBİTAK	Yes	Yes	Ozlem.GeziKoc@tubitak.gov.tr
United Kingdom	UKRI	Yes	No	Maryam.Crabbe-Mann@epsrc.ukri.org