chist-era

Pre-announcement of Call 2020

The Call 2020 of CHIST-ERA, to be published in December 2020 or January 2021, will target research in the following topics:

Advanced Brain-Computer Interfaces for Novel Interactions

Towards Sustainable ICT

Anticipated Call Deadline:	**1 March 2021, 17:00 CET**
Documents and procedures:	https://www.chistera.eu
Information:	Anna Ardizzoni +33 1 7809 8084 anna.ardizzoni@anr.fr
Indicative budget:	Approx. 11M€

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 2020, 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, subscribe to CHIST-ERA Call 2020 Newsletter

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

CHIST-ERA is supported by the Horizon 2020 FET programme of the EU

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 the European Union's Future & Emerging Technologies (FET) 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 emerging topics.

Content of the Call

Topics:	**Advanced Brain-Computer Interfaces for Novel Interactions (BCI)** **Towards Sustainable ICT (S-ICT)**
Indicative budget:	Approx. 11M€
International consortium:	The project consortia must have a minimum of 3 eligible and independent partners requesting funding in at least 3 different countries participating it the call
Standard consortium size:	Three to six partners
Evaluation:	Proposals are evaluated based on criteria of *Relevance to the topic*, *Scientific and technological quality*, *Impact* and *Implementation*
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

1 March 2021, 17:00 CET	Deadline for proposal submission
July 2021	Notification of accepted proposals
October 2021	First possible start date for accepted projects

1st Topic: Advanced Brain-Computer Interfaces for Novel Interactions (BCI)

The challenge is to improve Brain Computer Interfaces (BCIs) as they become an increasingly explored technology most notably in the healthcare sector. BCIs obtain, analyse and relay brain signals in order to carry out a specific action. Challenges with BCIs include the quality of brain signal received by the interface, variability in test subjects, lack of co-creation with users and data capturing. In addressing these, the applications of BCIs will be able to move beyond human-computer interactions but also include human to human interactions and human to object interaction. Currently, active BCIs (i.e., where the application is directly oriented towards the task the user is trying to accomplish), are the mainstay in BCI technology. But there is an opportunity for passive BCIs (i.e., where the application is not directly related to the task the user is performing), which can enhance human computer interaction, to be developed and push the technology into novel interactions and application sectors.

Target Outcomes

- Focus on user experience: In order to push BCIs out of the laboratory, the experience of the user needs to be met. Co-creating with end-users could increase intuitiveness, user training and comfort;
- Low power wearables: Increasing complexity means increased power consumption. This trade off needs to be carefully managed with efficiency and sustainability considered;
- Better signal processing; improving the signal to noise ratio. Ensuring only relevant and reliable signals are captured. These signals should be clear and easily discernible from noise. Weak signal quality can be countered with better signal processing, especially where non-invasive modalities are used;
- Acquisition of large datasets: In order to use Artificial Intelligence to develop better algorithms.

Applicants should also consider the following:
- Patient/public citizen engagement in order to improve the acceptability of BCIs;
- Interdisciplinary approach, i.e. involving clinicians in clinical relevant BCI development, or working with digital signal processing engineers to improve the robustness of signals.

Expected Impact

- New BCI paradigms that allow for ambitiously novel, intuitive, real or virtual interactions; Modelling of inter/intra-variability of subject response to BCI; Improved acceptability of BCIs alongside efficiency; Multi modal methodologies for augmented accuracy and usability;
- Openly shared data, in particular large datasets, in order to unify/standardise protocols and help build momentum beyond the project consortia. Promoted reusability of datasets and addressed privacy issues;
- Participation throughout Europe by involving partners from the Widening Countries;
- Reinforced innovation capacity across Europe by involvement of key actors, for example young researchers, high-tech SMEs or first-time participants.

2ⁿᵈ Topic: Towards Sustainable ICT (S-ICT)

The increasingly complex nature of ICT has gone hand in hand with an increase in its energy demands. It is predicted ICT will consume up to 20% of the world's electricity consumption by 2030. Across the entire industry, from cloud computing to wireless networks, from the manufacture of hardware (devices) to the extraction of natural resources, and finally, disposal. Each stage of the pipeline contributes to the energy consumed and pollution released by ICT.

Sustainability needs to be applied across to all areas of ICT and brings about an overall reduction the negative impact ICT has on the environment. Harnessing novel approaches to modelling, materials, manufacturing and power management are all necessary to bring this to fruition. E-waste is also a major consequence of fast-moving developments in ICT, moving towards recyclable and modular devices that can be reused and/or repaired will lessen the burden on nations that take in the discarded electronics.

Faster computing is driven by industrial and consumer demand; therefore, it is equally important that end users are aware of the negative environmental impacts associated with ICT use.

The systemic nature of ICT means it is ideally placed to undergo a complete reformation in its practices and this is what this call for research proposals in sustainable ICT and all its frugality aspects hopes to initiate.

Target Outcomes

- Reduction of e-waste through the use of organic materials and moving away from rare earth metals;
- Wireless power management and optimising wireless networks;
- Improved the efficiency of mmWave technologies;
- Improvements to the modelling of power consumption with links to AI;
- Recyclable components, modular devices and extended lifetimes – designed for disassembly and repairability;
- Consideration of both energy and natural resources consumption.

Expected Impact

- Novel sustainable device manufacturing paradigms; Power consumption not only related to devices but their manufacturing, data traffic and power used to dispose of the device; Increased computing power without increased power consumption;
- R&I stakeholders and end users awareness of the ICT footprint (energy, resources, carbon, e-waste) to foster sustainable ICT; Influence and unified policies on sustainable ICT;
- Cross traditional boundaries between disciplines in order to strengthen the community involved in tackling these new challenges. A broad range of disciplines needed to cover the breadth of this topic should be considered and could include expertise and skills in ICT, material, energy, behaviour modelling, sustainability policies, among others;
- Widened participation throughout Europe by involving partners from the Widening Countries;

- Reinforced innovation capacity across Europe by involvement of key actors, for example young researchers, high-tech SMEs or first-time participants.

Annex: Tentative List of Participating Funding Organisations

Country	Funding organisation	Topic 1 BCI	Topic 2 S-ICT	Contact(s)
Belgium	F.R.S.-FNRS	Yes	Yes	Florence.Quist@frs-fnrs.be
Belgium	FWO	Yes	Yes	eranet@fwo.be
Bulgaria	BNSF	Yes	Yes	Aleksandrova@mon.bg
Czech Republic	TACR	Yes	Yes	Michaela.Kriklanova@tacr.cz
Finland	AKA	Yes	Yes	Katrine.Mahlamaki@aka.fi
France	ANR	Yes	Yes	Anna.Ardizzoni@anr.fr
Hungary	NKFIH	Yes	Yes	Edina.Nemeth@nkfih.gov.hu
Ireland	IRC	Yes	Yes	RSweeney@research.ie
Israel	InnovationAuth	Yes	Yes	Rachel.L@iserd.org.il
Italy	INFN	Yes	No	Alessia.DOrazio@bo.infn.it
Latvia	VIAA	Yes	Yes	Maija.Bundule@viaa.gov.lv
Lithuania	LMT	Yes	Yes	Laura.Kostelnickiene@lmt.lt
Poland	NCN	Yes	Yes	Alicja.Dylag@ncn.gov.pl
Québec (Canada)	FRQNT	Yes	Yes	Laurence.MartinGosselin@frq.gouv.qc.ca
Romania	UEFISCDI	Yes	Yes	Cristina.Cotet@uefiscdi.ro
Slovakia	SAS	Yes	Yes	Panisova@up.upsav.sk
Spain	AEI	Yes	Yes	era-ict@aei.gob.es
Switzerland	SNSF	Yes	Yes	chistera@snf.ch
Turkey	TÜBITAK	Yes	Yes	ncpfet@tubitak.gov.tr
United Kingdom	UKRI	No	Yes	Maryam.Crabbe-Mann@epsrc.ukri.org