



## Pre-announcement of Call 2019

The Call 2019 of CHIST-ERA, to be published in December 2019, will target research in the following emerging topics:

**Explainable Machine Learning-based Artificial Intelligence**

**Novel Computational Approaches for Environmental Sustainability**

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**Anticipated Call Deadline:** 14 February 2020, 17:00 CET

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

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Indicative budget: Approx. 16 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 (including minimum 2 EU Member States or EU Associated 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 2019, 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 2019 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:	<b>Explainable Machine Learning-based Artificial Intelligence (XAI)</b> <b>Novel Computational Approaches for Environmental Sustainability (CES)</b>
Indicative budget:	Approx. 16 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 (including min. 2 EU Member States or EU Associated Countries): Austria, Belgium, Bulgaria, Québec (Canada), Czech Republic, Estonia, Finland, France, Greece, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Spain, Sweden (topic 1 only), Switzerland, Turkey, United Kingdom (topic 1 only)
Standard consortium size:	Three to six partners
Evaluation:	Proposals are evaluated based on criteria of <i>Relevance to the topic (short proposals only)</i> , <i>Scientific and technological quality</i> , <i>Implementation</i> and <i>Impact</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

14 February 2020, 17:00 CET	Deadline for short proposal submission
April 2020	Notification of accepted short-proposals
June 2020	Deadline for full proposal submission
October 2020	Notification of accepted proposals
1 December 2020	First possible start date for accepted projects

## 1<sup>st</sup> Topic: Explainable Machine Learning-based Artificial Intelligence (XAI)

Explanation of decisions made by Artificial Intelligence (AI) systems is seen as important for the trust and social acceptance of AI. It is likely in the future that there will be a 'right to an explanation' for decisions that affect an individual. The objective of research on this topic is to make machine learning-based AI explainable.

To do this effectively, it is expected that explanation will need to be designed and integrated into AI systems from the outset, including the data collection and training of algorithms that are the basis of machine learning-based AI.

Along with the technical challenges, it is important to consider that explanation is required at different levels for different stakeholders with different levels of technical knowledge, and in different application domains. It is also important to measure the effectiveness of the explanation at the human and the technical levels, for example by evaluating how transparency, trust and usability are enhanced.

### Target Outcomes

- Integration of explainability into new and existing AI systems, including:
  - ✓ Explainability for identification and elimination of biases in data collection
  - ✓ Explainability in the training of machine learning algorithms
  - ✓ Development of algorithms and user interfaces for explainability
- Integration of social and ethical aspects of explainability into AI systems including: User requirements, bias, objectivity and trust
- Developing a means to measure the effectiveness of explainable systems for different stakeholders (objective benchmarks and evaluation strategies for research in this domain)

Applicants should also consider the following:

- Give due consideration to performance evaluation and experiment reproducibility
- The benefits of international collaboration
- Co-creation of projects with stakeholders, including end users, policy makers and industry
- Potential for development of standards or frameworks
- Responsible research and innovation including: Use and protection of data; The legal and ethical issues of providing explanations (what level of explanation is required or appropriate for whom); Open access to research data and publications

### Expected Impacts

- Development of novel, ambitious and reliable technologies for the different components of explainable machine learning-based AI, including: AI systems with integrated explanations in a variety of application areas; Frameworks for integrating explainability into AI (Explainability by Design); Methods for putting explainability into current AI systems; Use cases in specific application areas
- Identification of new opportunities and applications fostered through explainable AI
- Enhanced interdisciplinarity; Stakeholders involvement in design and implementation of explainable AI systems; Consideration of the ethical and social aspects of explainability in AI systems.
- 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

## 2<sup>nd</sup> Topic: Novel Computational Approaches for Environmental Sustainability (CES)

With the challenge of environmental changes being highlighted, it is important that scientists are able to understand and model the environment so they can understand and predict upcoming changes. As environmental models become more complex and more adaptable in real time, it is necessary to change the way we work with these models, to be more integrative, more reactive and reduce the amount of computational power being used. This will improve the computational models that we have and allow better predictions on the future of our planet.

Better data → Better model → Better prediction → Better decision/action

### Target Outcomes

- Improvements to computational systems so that data be collected and modelled
  - ✓ In real time
  - ✓ At different levels of complexity and granularity
- Integration of models to improve overall knowledge of an area or system
- Displaying the outputs of a model in a way that different stakeholders are able to understand and make decisions from them
- Modelling of uncertainty in a way that is easy to understand and make decisions from

Applicants should also consider the following:

- Cross traditional boundaries between disciplines in order to strengthen the communities involved in tackling these new challenges
- The benefits of international collaboration
- Co-creation of projects with stakeholders, including end users, policy makers and industry
- Potential for development of standards or frameworks
- Responsible research and innovation including: Use and protection of modelling data; How to reduce the environmental impact of the computational power used for modelling; Open access to data, models and publications

### Expected Impacts

- Novel and ambitiously improved methods for environmental modelling, including whole systems approaches; Increased integration of models and data; Increased standardisation of environmental data approaches and storage
- Improved tools for displaying the outputs of the modelling, including the uncertainty in the system; Effective usage of these tools by stakeholders and policy makers using these tools
- Enhanced interdisciplinarity; Stakeholders involvement in research projects design and implementation
- 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 XAI	Topic 2 CES	Contact(s)
Austria	FFG	Yes	No	<a href="mailto:ana.almansa@ffg.at">ana.almansa@ffg.at</a> <a href="mailto:anita.hipfinger@ffg.at">anita.hipfinger@ffg.at</a>
Austria	FWF	Yes	Yes	<a href="mailto:christian.maszl-kantner@fwf.ac.at">christian.maszl-kantner@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> <a href="mailto:joel.groeneveld@frs-fnrs.be">joel.groeneveld@frs-fnrs.be</a>
Belgium	FWO	Yes	Yes	<a href="mailto:eranet@fwo.be">eranet@fwo.be</a>
Bulgaria	BNSF	Yes	Yes	<a href="mailto:aleksandrova@mon.bg">aleksandrova@mon.bg</a>
Czech Republic	TACR	Yes	Yes	<a href="mailto:michaela.kriklanova@tacr.cz">michaela.kriklanova@tacr.cz</a>
Estonia	ETAg	Yes	Yes	<a href="mailto:aare.ignat@etag.ee">aare.ignat@etag.ee</a>
Finland	AKA	Yes	Yes	<a href="mailto:jukka.tanskanen@aka.fi">jukka.tanskanen@aka.fi</a>
France	ANR	Yes	Yes	<a href="mailto:anna.ardizoni@anr.fr">anna.ardizoni@anr.fr</a>
Greece	GSRT	Yes	Yes	<a href="mailto:m.koniaris@gsrt.gr">m.koniaris@gsrt.gr</a>
Hungary	NKFIH	Yes	Yes	<a href="mailto:edina.nemeth@nkfi.gov.hu">edina.nemeth@nkfi.gov.hu</a>
Ireland	IRC	Yes	Yes	<a href="mailto:rsweeney@research.ie">rsweeney@research.ie</a>
Israel	InnovationAuth	Yes	Yes	<a href="mailto:nir.s@iserd.org.il">nir.s@iserd.org.il</a>
Italy	INFN	Yes	No	<a href="mailto:alessia.dorazio@bo.infn.it">alessia.dorazio@bo.infn.it</a>
Italy	MIUR	Yes	Yes	<a href="mailto:giorgio.carpino@miur.it">giorgio.carpino@miur.it</a> <a href="mailto:aldo.covello@miur.it">aldo.covello@miur.it</a>
Latvia	VIAA	Yes	Yes	<a href="mailto:maiya.bundule@viaa.gov.lv">maiya.bundule@viaa.gov.lv</a>
Lithuania	LMT	Yes	Yes	<a href="mailto:laura.kostelnickiene@lmt.lt">laura.kostelnickiene@lmt.lt</a>
Poland	NCN	Yes	Yes	<a href="mailto:anna.wieczorek@ncn.gov.pl">anna.wieczorek@ncn.gov.pl</a> <a href="mailto:alicja.dylag@ncn.gov.pl">alicja.dylag@ncn.gov.pl</a>
Portugal	FCT	Yes	Yes	<a href="mailto:nuno.moreira@fct.pt">nuno.moreira@fct.pt</a>
Québec (Canada)	FRQNT	Yes	Yes	<a href="mailto:laurence.martingosselin@frq.gouv.qc.ca">laurence.martingosselin@frq.gouv.qc.ca</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>
Sweden	VR	Yes	No	<a href="mailto:camilla.grunditz@vr.se">camilla.grunditz@vr.se</a>
Switzerland	SNSF	Yes	Yes	<a href="mailto:chistera@snf.ch">chistera@snf.ch</a>
Turkey	TÜBITAK	Yes	Yes	<a href="mailto:ncpfet@tubitak.gov.tr">ncpfet@tubitak.gov.tr</a>
United Kingdom	UKRI	Yes	No	<a href="mailto:maryam.crabbe-mann@epsrc.ukri.org">maryam.crabbe-mann@epsrc.ukri.org</a>