



## Pre-announcement of Call 2023

The Call 2023 of CHIST-ERA, to be published in January 2024, will target projects in the following topics:

**Multidimensional Geographic Information Systems (MultiGIS)**  
**Smart Contracts for Digital Transformation Ecosystems (SmartC)**

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**Anticipated Call Deadline: 15 March 2024, 17:00 CET**

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

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Indicative budget: Approx. 11,56M€

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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 2023, 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:	Multidimensional Geographic Information Systems (MultiGIS) Smart Contracts for Digital Transformation Ecosystems (SmartC)
Indicative budget:	Approx. 11,56M€
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

15 March 2024, 17:00 CET	Deadline for proposal submission
October/November 2024	Notification of accepted proposals
December 2024	Tentative start date for accepted projects

## **1<sup>st</sup> Topic: Multidimensional Geographic Information Systems (MultiGIS)**

Research and development efforts in recent years have made geographic information systems (GIS) technology robust and widely consolidated. However, there are application domains for which the current state of the art in GIS research does not provide effective solutions. The proliferation of sensors (e.g., GPS, satellites, unmanned vehicles) is allowing the massive collection of multidimensional big data (e.g. 3D, spatio-temporal...) that is currently not properly stored, processed, exploited, and visualized due to the lack of adequate technology. To fully support geographic information considering multidimensional data, complex research efforts must be carried out that advance technology in the areas of data collection, data model definition and implementation, efficient data structures for information representation, or software engineering for information systems development.

### **Target Outcomes**

Projects should address one or more of the following topics:

- A focus on the development of novel software, hardware and/or architectures to improve performance and scalability of GIS systems.
- The development of general-purpose and automatic tools with outlier detection and data consolidation from multiple sources for GIS applications.
- A focus on the development of policy and best practice to ensure desirable (AI) application properties e.g. transparency, privacy, fairness, regulatory compliance and certification by working with a variety of disciplines.
- Use of GIS-backed geostatistical AI analysis solutions in monitoring risk management and additional applications within urban and rural landscapes.
- The development of novel data management systems and/or the reapplication or integration of existing knowledge management systems to handle the complexity of GIS data at scale.
- New and novel application of computing techniques for real-time and edge-computing related to spatiotemporal data processing, especially for applications in the field. Creating solutions to the challenges around data types and data integration by successful management of large, heterogeneous data sets.

### **Expected Impact**

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

- The development of open-source outputs that can be utilized by the community and the integration of tools to aid accessibility.
- Novel development of database systems for storing and accessing disparate data sets.
- Increased development and application of GIS 'plug and play' tools for integrating real and simulated data from IoT and robots.
- Ensuring desirable (AI) application by working with policymakers to inform change and regulation.
- Co-creation by design to challenge siloed working and develop a community who cross traditional boundaries to integrate cross-model/multi-modal data modelling for GIS applications.
- Production of new approaches to data access both through novel modelling and software but also in approaches to policy and accessibility.

## **2<sup>nd</sup> Topic: Smart Contracts for Digital Transformation Ecosystems (SmartC)**

Service chains have led to digital services being seen not as isolated silos, but as part of a growing ecosystem of co-dependent organizational systems that must interoperate seamlessly to foster a more efficient and responsible digital transformation. However, the ability of the computational part of an information system to self-adapt to changes in data sources and to take full advantage of the capabilities of its human component remains limited. The main limiting factors lie in the processing and analysis, both manual and automatic, of digital contracts and the legislations that govern them. New approaches are needed that address the problem from a more holistic perspective: Towards a new notion of smart contract as dynamic and machine-readable; New type of ecosystem that adapts to changes in smart contracts with minimal human intervention; New ecosystems endowed with co-evolutionary hybrid intelligence (human / computational).

### **Target Outcomes**

Projects should address one or more of the following topics:

- Exploitation of smart contracts to accelerate the adoption of digital technologies within human-centered approaches.
- Optimization of processes to reduce the energy consumption and resource usage of the solutions for smart contract components.
- Design solutions to reduce transaction payload and communication costs associated with the use of off-chain cryptographic protocols.
- The development of plugins or add-ons to current frameworks that support smart-contract development as proof of concept of theoretical solutions.
- The design of security aware mechanisms for processing transactions to smart contracts.
- A focus on development of AI-based personalized and context-aware guidance for enabling the service-chain ecosystem to co-evolve with smart contracts by use of feedback-generate data.
- Approaches to monitoring and analyzing service performance, regulation compliance and customer satisfaction feedback to provide automated responses to changes in smart contracts.

Applicants should also consider the following:

- Legal aspects and implications of automatic execution of contracts.
- Computational constraints such as limitations of bandwidth, CPU, memory and storage.
- Adaptation of specifications to be open source, openly available and user-friendly.

### **Expected impact:**

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

- A reduction in the resource usage of smart contracts.
- The acceleration of the adoption of digital technologies within human-centered approaches.
- Standardized representation of smart contracts as dynamic and machine-readable entities, understandable by both humans and machines.
- Solutions to narrow gaps in smart contract verification including security aspects.
- The development of a variety of advanced use cases.

## Annex: Tentative List of Participating Funding Organisations

Country	Funding organisation	Topic 1 MultiGIS	Topic 2 SmartC	Contact
Belgium	F.R.S - FNRS	Yes	Yes	<a href="mailto:international@frs-fnrs.be">international@frs-fnrs.be</a>
Brazil	CNPq	Yes	Yes	<a href="mailto:Dileine.Cunha@cnpq.br">Dileine.Cunha@cnpq.br</a>
Bulgaria	BNSF	Yes	Yes	<a href="mailto:Aleksandrova@mon.bg">Aleksandrova@mon.bg</a>
Czech Republic	TACR	Yes	Yes	<a href="mailto:magdalena.pillasagua@tacr.cz">magdalena.pillasagua@tacr.cz</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>
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	TBA	TBA	<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	NSTC	Yes	Yes	<a href="mailto:cmtom@nstc.gov.tw">cmtom@nstc.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:Abigail.Miller@epsrc.ukri.org">Abigail.Miller@epsrc.ukri.org</a>