

Bundesministerium für Verkehr, Innovation und Technologie

RTI Initiative ICT of the FUTURE

Intelligent Data Management and Analytics and special research topics

Call Guideline

Transnational Cooperative R&D Projects, Austria – Chinese Academy of Sciences, CAS, China

SUBMISSION DEADLINE Austria, FFG:

20 July 2017, 11:00 C.E.T. Central European Time

Joint Proposal Austria - CAS and national application, RTI Initiative ICT of the Future at <u>https://ecall.ffg.at</u>

SUBMISSION DEADLINE China, CAS:

20 July 2017, **18:00 C.S.T.** China Standard Time

Joint Proposal submitted electronically by email attachment to Ms. Haihua GONG

Email: hhgong@cashq.ac.cn

In addition submission as hard copy to CAS: Refer to the call in Chinese on http://www.bic.cas.cn/tzgg/

21 April 2017



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0 Key Facts at a Glance

The present Call Guidelines provide information about the international call of the RTI Initiative 'ICT of the Future' organised by **Austria and the Chinese Academy of Sciences, CAS, China**. The call promotes the bilateral collaboration in application oriented research and development projects. A total of **EUR 1.000.000** in funding is available for Austrian partners. The call is carried out jointly by the Austrian Research Promotion Agency (FFG) and Chinese Academy of Sciences.

Programme	FFG, ICT of the Future	CAS, Chinese Academy of Sciences	
Instrument	Cooperative R&D project		
Research category	Industrial research or experimental development	Basic research, industrial research, experimental development	
Topics	Topics (see	Chapter 3)	
	1.Intelligent Data Management an 2.Selection of research topics	d Analytics and/or	
Key data	Key data		
Funding amount	min. EUR 100,000 to max. EUR 1.000,000 for total project duration	CNY 300,000 per year (approx. EUR 41,000 per year). total: max. CNY 900,000 for 3 years	
Funding rate	max. 85%	approx. 50% (see Call Fiche)	
Duration	max. 36 months	max. 36 months	
Cooperation required	Yes, is required, see present guidelines	Yes	
Total budget	EUR 1.000.000	open	
Funding provider	Austrian Federal Ministry for Transport, Innovation and Technology (bmvit)	Chinese Academy of Sciences (CAS)	
Submission	Joint Proposal via FFG eCall & CAS: 20 July 2017, 11:00 C.E.T.		
deadlines	Austrian Annex and Cost Plan: 20 July 2017, 11:00 C.E.T.	CAS additional documents: 20 July 2017, 18:00 C.S.T.	
Language	FFG eCall Joint Proposal: English FFG eCall Austrian Annex: English	CAS Joint Proposal: English CAS national proposal: Chinese	
Contact	Mag. Anita Hipfinger, T: +43 (0)57755-5025 E: anita.hipfinger@ffg.at	Haihua GONG, Tel: 86-10-6859-7396 E: <u>hhgong@cashq.ac.cn</u>	
Information on the Web	https://www.ffg.at/en/ict-china	http://www.bic.cas.cn/tzgg/	

Table 1: Overview

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The present Call Guidelines apply to the Austrian partners. They summarise information about the first bilateral call under the RTI Initiative 'ICT of the Future' and refer to the related call documents (in particular Technical Guidelines, application forms, Cost Guideline).

The call documents can be found at https://www.ffg.at/en/ict-china

The full set of application documents must be submitted via eCall (<u>https://ecall.ffg.at</u>) by the submission deadline.

Please note:

If the application does not meet the formal requirements for project submissions in accordance with the conditions and criteria of the respective funding instrument and if the deficiencies cannot be corrected the application will be excluded from the further procedure and will be formally rejected without exception in accordance with the principle of equal treatment of applications.

1 Motivation

ICT of the Future is the funding programme of the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) for the promotion of challenging technology development and innovation in information and communication technology, interlinked with application areas and societal challenges. The programme supports ICT innovation in a comprehensive perspective. It aims to contribute to the goal of the federal government to bring Austria from the group of so-called Innovation Followers to the group of Innovation Leaders – to become one of the most innovative countries within the EU. The Community European Research Area (ERA) provides a frame of reference for this national programme, which will over its run-time complement both existing and new European initiatives within Horizon 2020.

This Call of the RTI Initiative 'ICT of the Future' will focus on the bilateral collaboration between Austria and China with the Chinese Academy of Sciences, CAS, in applicationoriented research. The strategic aim of 'strengthening European and international collaborations and networks' will be addressed in particular. Intelligent Data Management and Analytics and a selection of special research topics are designed to

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leverage common fields of expertise of Austria and the Chinese Academy of Sciences in China.

2 **Objectives**

The objectives of ICT of the Future are the following:

• Develop lead technologies

Increase both the quantity and the quality of ICT-research and development that can achieve and sustain technological leadership

Enable the exploration of new ICT research topics and application areas

• Achieve lead positions in competitive markets

Strengthen the capability of firms to innovate, support firms in establishing and extending their competitive position

• Establish and extend a lead position as a location for research

Secure and improve Austria's visibility, interconnectedness and attractiveness in the international context in the area of ICT research and development

• Train and attract lead researchers

Improve the availability of a sufficient number of trained researchers as the backbone of excellent ICT-research and development



3 Call Topics

A multitude of different trends – e.g. the growth of mobile computing, social networks, and low-cost cameras - are catalysts for rapidly growing amounts of user-generated data. At the same time, more and more data is generated and exchanged between machines through machine-to-machine communication (M2M), e.g. in networks of surveillance cameras and other sensors and systems. There is a massive tendency towards linking of all this different heterogeneous systems. Added value is only generated if the used information provides better services, higher productivity, higher efficiency, additional functionality and the overall system works reliable and secure. Intelligent sensors, data analytics- and interpretation-procedures as well as simulation-, prognosis-, diagnosis- and optimisation-procedures play an important role. Here the focus is not only on miniaturisation and new physical measuring principles, but mostly on increasing intelligence of the analysis, interpretation as well as on prediction and automated decision finding techniques. For example, social network of industries, smart homes, intelligent transport systems, intelligent ticketing, indoor and outdoor tracking, route optimisation, localisation and environment monitoring are application fields which are enabled by the above mentioned trends.

In special consideration of the above mentioned trends and potentials and in order to take advantage, technological developments are necessary. In this call, projects can be funded that contribute to the solutions of the following research challenges:

1. Intelligent Data Management and Analytics and/or

2. Selection of research topics

1. Intelligent Data Management and Analytics

- Intelligent data management establishes the connection from raw data to information and knowledge.
- **Research on data search**, information retrieval and data analysis and integration improves ways to process and analyse data in any format (e.g. images, video, audio, speech). Some challenges in this area are:
 - o aggregation and fusion of data



- o novel methods for dealing with real-time data
- o data complexity
- Pseudonymization and anonymization must be considered where relevant.
- o Image/video caption
- Deep learning for video/image analysis
- **Semantic processing** adds structure to data in order to facilitate understanding and dealing with structured data in multi-faceted ways. This extension of data with semantic information leads to content-level exploration and to automatic processing. Special aims are:
 - de-duplication of data by eliminating redundant data, and to use context information.
 - knowledge-extraction and -abstraction in order to automate knowledge processes
 - Semantic link discovery and semantic link network model
 - o Natural language processing as a key component of semantic data analysis
 - Authentication of multimedia data by background knowledge mining.
- **Cognitive systems** model human understanding and human intellect end explore paradigms for cognitive technical systems. Relevant for the call are:
 - contributions to applied cognitive science, e.g. for measuring, modelling and accommodating user attention in end user systems
 - algorithms for prediction from data (Machine Learning, Reasoning, decision support) and recommender systems and engines are highly relevant, as well as
 - video based attention recognition for improving knowledge transfer processes.
- **Knowledge Service** for data-intensive scientific exploration means to solve the challenging problem of transforming data into knowledge and providing precise knowledge services for data-intensive scientific exploration. This concerns structuring and interpreting big academic and scientific data (scientific publications, empirical data from investigations, LabData, textbooks, bibliographies etc).



- **Algorithmic efficiency** refers to developing efficient algorithms that are able to process larger amounts of data in a shorter time, it can be enhanced through the use of the following techniques, e.g.:
 - o Parallel algorithms
 - Graphics Processing Units (GPUs)
 - Manycore parallel computing
 - On-demand use of shared virtualized computing resources that require new ways of fast offloading, running and executing data analytics tasks in a predictable, cost-effective and low overheads fashion.

2. Selection of research topics

- **Cyber-Physical Systems**, which are defined as systems of physical objects and corresponding virtual objects that communicate via omnipresent information networks. In this context the following interconnections could be addressed:
 - Efficient execution/modelling/simulation of Cyber Physical Systems
 - Software-design-methods of Cyber Physical Systems
 - Dependable Cyber Physical Systems and natural language processing and machine learning
- Wearable Computing
- Deep Learning and Optimal Control in Mobile Clouds
- **Ubiquitous security**: Innovative, scalable approaches are required on all levels to prevent misuse of these systems, starting with hardware- and network-architecture, covering reliable and secure communication protocols, fault-tolerant operating systems, up to distributed applications and proactive malware detection.
- Quantum Cryptography
- **Interoperability** refers to seamless ICT-solutions that are necessary for components communication and interconnection. Relevant for the call are:
 - Near Field communication and intelligent ticketing
 - methods for improving interoperability in 5G systems (e.g. handover)
 - o smart grid devices and services
- Multi Agent Based Simulation
- **Testing and assessing internet networks,** wireless networks and Software defined networking
- Block chain and electronic contracts Version 0.3, 21 April 2017



• Fundamental Theory and Key Technologies of Intelligent Transportation Systems (ITS) with Big Data



4 Requirements

4.1 General requirements for the Chinese-Austrian consortium

The requirements and procedures described in the 'Call Fiche' apply to the consortium. The following criteria must be met:

- The consortium shall consist of at least one partner from CAS Chinese Academy of Sciences and at least one Austrian partner.
- The consortium shall include **at least one Austrian industrial partner**.
- **Individual enterprises** account for a maximum of 70% of the eligible project costs with shares of affiliated companies counting as one enterprise.
- **Companies share** is a minimum of 20% and a maximum of 90%.
- The **research institution(s) bear(s) at least 10% and a maximum of 80% of the eligible costs** (relates to the total share of Austrian research institutions and CAS research groups). This applies to the entire bilateral consortium in deviation from the Austrian Technical Guidelines for Cooperative R&D Projects at a Transnational Level. Therefore as a matter of fact, chapter 1.2 in the Technical Guidelines for Cooperative R&D Projects is not valid for this call.
- The research institution(s) shall be entitled to publish the **results of the research** carried out by the respective institution(s).
- The applicant must ensure that the bilateral projects submitted are not aimed at developing weapons or violence-promoting products.
 This provision must be specifically included in the Consortium Agreement.
 The payment of funding depends on compliance with this requirement.
- The applicant must ensure that the bilateral projects submitted are not aimed at gambling of any kind (i.e. games in which the outcome is determined exclusively or predominantly by chance).
 This provision must be specifically included in the Consortium Agreement. The payment of funding depends on compliance with this requirement.
- Any other **commercial and/or export restrictions** currently in place must be observed.
- A **Consortium Agreement** signed by all partners must be forwarded to FFG via eCall and to CAS Chinese Academy of Sciences prior to the preparation of the national funding agreement.



- The Joint Proposal must be submitted via FFG eCall (<u>https://eCall.ffg.at</u>) by 20 July 2017, 11:00 C.E.T. Central European Time at the latest.
- The Joint Proposal must be submitted to CAS Chinese Academy of Sciences by 20 July 2017, 18:00 C.S.T. China Standard Time at the latest.
- The **Joint Proposal** submitted to FFG and CAS Chinese Academy of Sciences **must be identical**. In the event of deviations, FFG reserves the right to reject the proposal for formal reasons.

4.2 National requirements for ICT of the Future

Bilateral cooperative research and development projects between Austria and China falling into the research categories 'Industrial Research' or 'Experimental Development' may only be submitted under this call.

The following requirements shall apply to submissions by Austrian participants to the RTI Initiative 'ICT of the Future' **in addition to** the general requirements specified in Chapter 3.1 above:

- the provisions of **the Technical Guidelines for Cooperative R&D Projects at Transnational Level** (download: https://www.ffg.at/en/ictchina/downloadcenter)
- In addition to the Joint Proposal the **Austrian national Annex** must be uploaded via eCall. **The application documents must be submitted via eCall** (https://eCall.ffg.at) by **20 July 2017, 11:00 C.E.T.** at the latest.

The following provisions apply in deviation from the Technical Guidelines for Cooperative R&D Projects at Transnational Level:

- The amount of funding requested by the Austrian partners must be between **EUR 100,000 and EUR 1.000,000**.
- The following requirements shall apply to the entire Austrian-Chinese consortium instead of the requirements specified in Chapter 1.2 of the Technical Guidelines:
 - the research institution(s) bear(s) at least 10% and a maximum of 80% of the eligible costs;
 - \circ Companies share is a minimum of 20% and a maximum of 90%.
 - the research institution(s) shall be entitled to **publish the results of the research** carried out by the respective institution(s);
 - A Consortium Agreement signed by all partners must be forwarded to FFG via eCall prior to the preparation of the national funding agreement.



- The requirements specified in Chapter 1.2 of the Technical Guidelines shall be replaced by the requirement that at least **one Austrian company** must participate in the Austrian-Chinese consortium.
- The Chinese applicant and partners must be from one or more CAS research groups.
- Companies are eligible to apply if they have a permanent establishment or branch (according to Council Directive 2011/96/EU of 30 November 2011, in conjunction with Art. 11 (5) a GBER, No. 651/2014 of 17 June 2014) in Austria at the time of submission of the application and payment of funding.
 Art. 2 (b): 'Permanent establishment' means a fixed place of business situated in a Member State through which the business of a company of another Member State is wholly or partly carried on in so far as the profits of that place of business are subject to tax in the Member State in which it is situated by virtue of the relevant bilateral tax treaty or, in the absence of such a treaty, by virtue of national law;

- Art. 3 (1) Definition of parent company and subsidiary

- Companies are eligible to apply if their main focus is on research and the exploitation of results is in Austria. Subsidiaries based in China may act as sub-contractors in the consortium, if required.
- The EUR-CNY conversion rate of the European Central Bank ECB at the date of submission shall apply. This can either be the reference date specified in the Joint Proposal or the conversion rate provided by the ECB on a monthly basis <u>http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/inforeuro_en.cfm</u>).

The rate must be specified in the Joint Proposal. The conversion rate shall apply for the duration of the project and for all reports related thereto.

• The participation and financing of additional international partners in the consortium shall be excluded in this second bilateral call in deviation from the provisions of the Technical Guidelines.

Austrian partners and partners of CAS may cover their costs by own funds and/or grants provided by Austria or China. Partners from other countries shall be excluded from participating in the consortium.

Organisations from outside Austria or China may be involved as sub-contractors of Austrian partners.

FFG will check whether the Austrian project part is properly allocated to the research category of 'Industrial Research' or 'Experimental Development' based on the Joint Proposal. This may involve a reduction in the funding rate.

BMVIT will take the funding decision for the Austrian project partners. CAS shall be responsible for the funding decision for the Chinese partners.



5 Call Documents

5.1 Joint call documents Austria – CAS Chinese Academy of Sciences

Joint transnational call documents Download at: https://www.ffg.at/en/ict-china				
Call Fiche	Call Fiche Joint call guidelines FFG and CAS			
Application form	Joint Proposal Joint project description Austria – CAS			

5.2 National call documents for 'ICT of the Future'

The following national call documents for the 'ICT of the Future' programme shall apply in addition to the joint call documents:

Additional documents to be submitted by Austrian participants under the RTI Initiative 'ICT of the Future' Download at: https://www.ffg.at/en/ict-china				
Call Guideline (present document)	<u>Call Guideline</u> <u>RTI Initiative 'ICT of the Future' (Version 0.2)</u>			
Application forms: for transnational cooperative R&D projects IR or ED*	 <u>Technical Guidelines</u> for Cooperative R&D Projects at Transnational Level <u>Project Description - Austrian Annex</u> <u>Declaration of SME Status</u> (if required)** 			
General cost regulations	Cost Guidelines_2.0 (eligibility of costs in FFG projects			
Legal basis	Guideline for the Promotion of Industrial/Technological Research, Technology Development and Innovation (FTI-Richtlinie 2015 -Themen-FTI-RL)			

* IR Industrial Research, ED Experimental Development

** If there is no information available in the Austrian Business Compass (e.g. for associations and start-ups), a Declaration of SME Status must be provided upon submission of the proposal. In the template provided by the FFG, applicants must (as far as possible) categorise their business for the last three years according to the SME definition.



National applications must be submitted electronically **via eCall** at <u>https://ecall.ffg.at</u>. The **Joint Proposal** and **the Austrian Annex** must be uploaded via eCall as part of the electronic application.

Applicants are requested to use the specific templates provided for the 'ICT of the Future' Initiative.

The call documents can be found in the download centre at: https://www.ffg.at/en/ict-china/downloadcenter

The cost plan must show the project costs broken down to **work package level**. This also applies to accounts rendered as part of the reporting process.

Applicants are requested to use the specific templates provided for the submission of their projects. The funding conditions, application procedure and funding criteria are described in the corresponding Technical Guidelines and in the transnational call documents.

More detailed information on the call and the relevant call documents can be found at

- National website 'ICT of the Future': https://www.ffg.at/en/ict-china
- eCall submission: <u>https://ecall.ffg.at</u>
- National contact: Mag. Anita Hipfinger, E: anita.hipfinger@ffg.at T: +43 (0)57755-5025 Programme Manager

Mag. Doris Vierbauch, E: doris.vierbauch@ffg.at T: +43 (0)57755-5024 Programme Manager

5.3 National call documents for CAS Chinese Academy of Sciences

For the Chinese partners, the following national call documents of CAS shall apply in addition to the joint call documents.

The Chinese partners will find more detailed information on the call and the relevant call documents at:

- National website of CAS: <u>http://www.bic.cas.cn/tzgg/</u>
- National contact at CAS: Ms. Haihua GONG, Bureau of International Cooperation E: <u>hhgong@cashq.ac.cn</u> Tel: 86-10-6859-7396



6 Legal Basis

This Call is based on the RTI Guidelines for the Promotion of Industrial/Technological Research, Technology Development and Innovation (FTI-Richtlinie 2015 – Themen-FTI-RL) published at https://www.ffg.at/recht-finanzen/rechtsgrundlagen.

The company size shall be established in accordance with the corresponding SME definition specified in EU competition law. For more information go to: https://www.ffg.at/recht-finanzen/rechtliches_service_KMU.

All national and EU provisions shall be applicable as amended.



7 Further Funding Options

FFG offers a broad range of funding options and support for the participation in international programmes.

The following overview shows further international funding options related to this call. For further information please contact the FFG experts indicated below.

European Programmes: HORIZON 2020 – the next EU Framework Programme (2014-2020); Initial Information at https://www.ffg.at/europa/h2020/leit

ICT

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