**Scoping paper**

**Call for proposals**

**« *2-year ERC Postdoctoral Fellowship*»**

**Challenge 2 – CAP 20-25**

# OBJECTIVE

In order to strengthen its research efforts in an innovative and dynamic environment, Challenge 2 proposes this year an open call for projects for a postdoctoral fellowship. The laureate will be required to develop a competitive and excellent research in one of the fields of Challenge 2, and to meet the eligibility criteria for an international ERC Starting Grant in order to respond within two years of recruitment to the UCA.

# CONTEXT

Challenge 2, entitled "Intelligent systems and services for production and transport", aims to design and develop high-performance and intelligent technological bricks that respond to strong societal challenges recently identified by the Ministry of Industry. More specifically, the scientific advances and technological solutions developed must contribute to "transport systems of the future", "intelligent production systems" and "innovative agro-technologies".

The main scientific themes at the heart of Challenge 2 are :

* materials and intelligent sensors (physics, chemistry, mechanics);
* multi-sensory perception (automatic);
* robot design and control (mechanical, automatic);
* assistance in the piloting of complex systems and decision making (computer science, mathematics);
* attention, perception, understanding and acceptability and acceptance of new technologies (cognitive and social psychology, ergonomics).

To address the identified locks, Challenge 2 has been structured into five themes:

* Innovative Mobility : This theme is centered around the IMobS3 LabEx, itself focused on three specific challenges:
  + Challenge 1 "Intelligent Vehicles and Machines" which aims to develop new systems to increase the performance and operating safety of objects (vehicles/robots) mainly dedicated to transport;
  + Challenge 2 "Services and Systems for Innovative Mobility", which focuses on the design of models and decision-making tools to enable the efficient integration of new generations of vehicles/robots into operational mobility systems;
  + Challenge 3 "Energy Production Processes for Mobility" which focuses on innovative and efficient processes and bioprocesses for the intensive production of energy carriers for mobility as well as life-cycle analysis techniques for production processes.
* Factory of the Future : This theme is particularly supported by the FactoLab joint laboratory (partners: Manufacture MICHELIN, LAPSCO, LIMOS, Institut Pascal). The aim is to lift scientific and technological barriers to cope with the current process known as "digitalisation" of productive environments (4th industrial revolution), particularly through the implementation of collaborative robots, innovative digital technologies and associated systems, working methods and management. The objective is to develop new systems and/or new organisations that will make it possible to eliminate some of the painful or stress-generating tasks and improve the attractiveness of the job. More generally, the work supported will make it possible to encourage the emergence of new work models in order to contribute to industrial efficiency.
* Agro-technologies : This theme focuses on innovation in the agricultural world around mobility, robotics, safety, agricultural inputs and digital data. This research work participates in the activities of the AgroTechnoPôle - Technological Innovation Platform for Agro-technologies, Mobility in Natural Environments and Forestry Technologies built with the support of CAP20-25.
* Resourcing : The objective of this theme is to develop key generic technologies that can eventually be integrated into realistic demonstrators related to the three targeted sectors. As such, it is the place for upstream resourcing of Challenge 2 and prepares the future in the medium to long term.
* Prototyping and industrialization : The aim of this theme is to define a new model for transferring scientific results into technological innovations. The aim is to synergize academic skills, start-ups close to laboratories, and SMEs members of the CIMES competitiveness cluster, in order to be able to offer complete solutions in response to specifications linked to complex industrial needs. The use of experimental platforms such as PAVIN ("Plateforme Auvergne pour des Véhicules INtelligents") and Equipex ROBOTEX will be encouraged.

# ELIGIBILITY REQUIREMENTS

In order to strengthen its research efforts in an innovative and dynamic environment, Challenge 2 wishes to propose this year an open PAA for a postdoctoral fellowship. The laureate will be required to develop a competitive and excellent research in one of the fields of Challenge 2, and to meet the eligibility criteria for an international ERC Starting Grant in order to respond within two years of recruitment to the UCA. The laureate will be hosted for 2 years in one of the research laboratories involved in Challenge 2, and will benefit from a 60k€ annual salary.

The recruitment of a post-doctoral student at the international level is encouraged. Post-doctoral candidates, coming from French doctoral schools will only be eligible after 2 years of post-doctoral stay abroad. Post-doctoral students already in place in the relevant units of the site are eligible for this call for projects, provided they have previously completed 2 years of post-doctoral stay abroad. The cumulative duration of their post-doctoral contracts (contracts with the university/EPST plus "I-SITE" contract) may not exceed 4 years in accordance with the UCA charter concerning contractual staff recruited on research contracts (article 4).

**All applicants are requested to contact the person(s) responsible for the theme(s) into which their project fits (see table below) before submitting their application.**

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| **Persons in charge of the themes** | |
| ☐ Intelligent Vehicles and Machines  ☐ Services and Systems for Innovative Mobility  ☐ Energy Production Processes for Mobility  ☐ Factory of the Future  ☐ Agro-technologies  ☐ Resourcing  ☐ Prototyping and industrialization | ⇨ Roland Chapuis ([Roland.Chapuis@uca.fr](mailto:Roland.Chapuis@uca.fr))  ⇨ Alain Quilliot ([Alain.QUILLIOT@isima.fr](mailto:Alain.QUILLIOT@isima.fr))  ⇨ Gilles Dussap ([C-Gilles.dussap@uca.fr](mailto:C-Gilles.dussap@uca.fr))  ⇨ Marie Izaute ([marie.izaute@uca.fr](mailto:marie.izaute@uca.fr))  ⇨ Michel Berducat ([Michel.Berducat@inrae.fr](mailto:Michel.Berducat@inrae.fr))  ⇨ Eric Tomasella ([Eric.TOMASELLA@uca.fr](mailto:Eric.TOMASELLA@uca.fr))  ⇨ Arnaud Bocquillon ([a.bocquillon@cimes-hub.com](mailto:a.bocquillon@cimes-hub.com)) |

# FILE REVIEW AND SCHEDULE

Each file will be examined by the supporting theme(s) and the final arbitration will be carried out at a future Challenge Steering Committee meeting, based on the following criteria:

* coherence of the project in relation to the objectives of the Challenge 2 of CAP 20-25;
* scientific excellence of the proposed project and the scientific environment in which it is to be carried out;
* the foundation of the project on preliminary results;
* capacity of the project to enable the results to be exploited in the form of an international publication and/or patent;
* international dimension of the project.

Applications should be sent by 29 May 2020 at the latest to [michel.dhome@uca.fr](mailto:michel.dhome@uca.fr) and [sabrina.juarez@uca.fr](mailto:sabrina.juarez@uca.fr) and to the persons responsible for the corresponding themes.

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| **Call for proposal « *2-year ERC Postdoctoral Fellowship* »**  **Challenge 2- 2020** |

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| **Proposal title** | |
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| **Applicant information** | |
| Name  First Name |  |
| Current position |  |
| CV (2 pages maximum) |  |
| Scientific production |  |
| **Scientific proposal** | |
| (6 pages maximum, figures included, bibliography not included) | |
| **Thème(s)** | |
| ☐ Intelligent Vehicles and Machines (LabEx IMobS3)  ☐ Services and Systems for Innovative Mobility (LabEx IMobS3)  ☐ Energy Production Processes for Mobility (LabEx IMobS3)  ☐ Factory of the Future  ☐ Agro-technologies  ☐ Resourcing  ☐ Prototyping and industrialization | |
| ***NB : Several themes can be selected*** | |