The European Research Council

An Introduction to the ERC

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Info on ERC funding opportunities

Grantees share their ERC experience and provide insights on the process:

- Sébastien Merkel (Univ. Lille): AdG-2021 HotCores
(High Temperature Dynamics of Metals and the Earth's Solid Inner Core)
- Thierry Magin (VKI): StG-2010 AEROSPACEPHYS
(Multiphysics models and simulations for reacting and plasma flows applied to the space exploration program)

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Directorate-General Research and Innovation (RTD)

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The Scientific Council

The Executive Agency (ERCEA)

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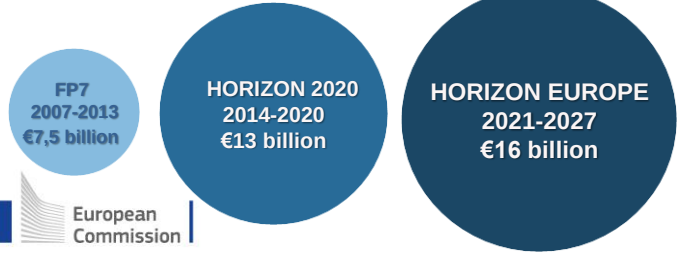
Funding: is part of Horizon Europe

EUR 16 billion

ERC budget in Horizon Europe

17%

of the Horizon Europe budget



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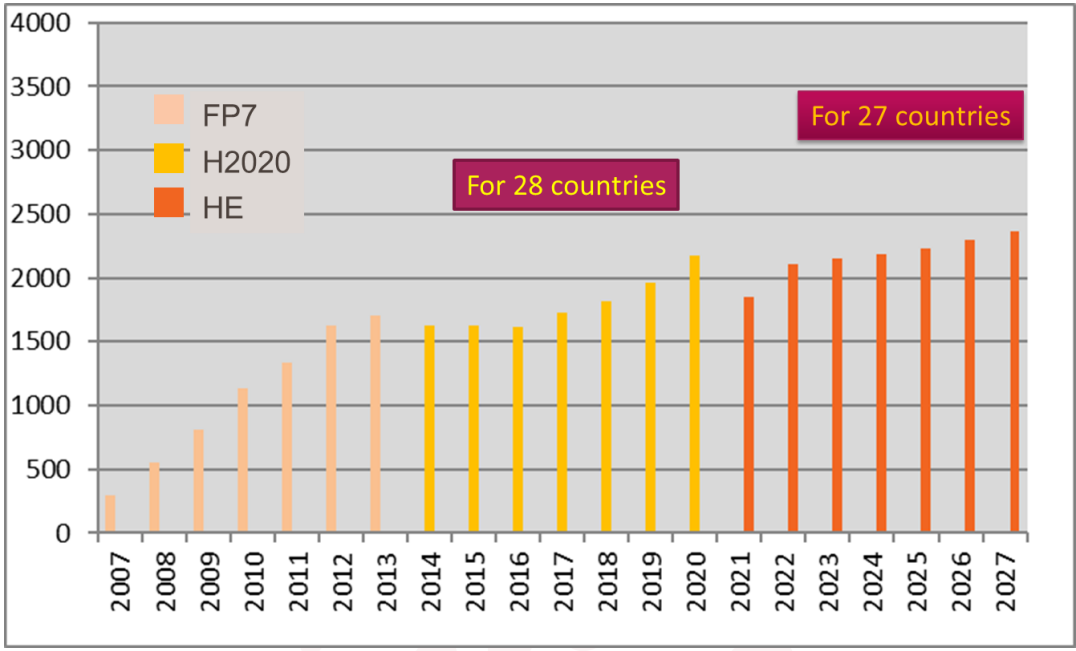
FP7 / H2020 / Horizon Europe budget evolution



ERC funding schemes

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Additional funding available to cover:

- Start-Up costs for scientists moving to EU / Associated Countries
- Purchase of major equipment
- Access to large facilities
- Other major experimental and fieldwork costs, excl. personnel costs

Starting Grant

Size of the grant: up to €1.5 million + up to €1 million
Duration: up to 5 years
2-7 years of experience since completion of their PhD

Extensions of the eligibility window are possible for StG and CoG, e.g. for maternity, paternity, military service

Consolidator Grant

Size of the grant: up to €2 million + up to €1 million
Duration: up to 5 years
7-12 years of experience since completion of their PhD

Advanced Grant

Size of the grant: up to €2.5 million + up to €1 million
Duration: up to 5 years
An excellent scientific track record of recognized achievements in the last 10 years

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ERC funding schemes

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Synergy grant

Size of the grant: €10 million + up to €4 million
Duration: up to 6 years
Be composed of 2 to 4 researchers (co-PIs) and their research groups (**one researcher can be based outside EU/AC)**

Proof of Concept

Size of the grant: €150 000
Duration: up to 18 months
Demonstrate that the idea funded by the original ERC grant has innovation potential and significant economic or societal benefits

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Open to the world

Researchers of any nationality, also if (at the time of application) based outside Europe, can apply to the ERC – but the HI must be in the EU or an Associated Country

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- Additional funding is available to cover 'start-up' costs for scientists moving to Europe
- Dual affiliation is possible: ERC grantees are required to spend 50% of their time in Europe/ERA (EU Member State or Associated Country)
- SyG as of 2019: possible for one co-PI to be based outside the EU or AC
- 48 non-EU/Associated Country PI nationalities >8% of ERC grants to third country PIs
- ~17% of project team members from third countries - can also be based outside ERA

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Visiting ERC projects

https://erc.europa.eu/funding/additional-opportunities#IA:

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- **Visiting Research Fellowship programmes**
  - ✓ **Bucharest (Romania), Politehnica University of Bucharest (UPB)**
  - ✓ **Croatia, with the Croatian Science Foundation (HRZZ)**
  - ✓ **Estonia, with the Estonia Research Council (ETag)**
  - ✓ **Flanders (Belgium), with the Research Foundation Flanders (FWO)**
  - ✓ **Georgia, with the Shota Rustaveli National Science Foundation (SRNSFG)**
  - ✓ **Republic of Serbia, Ministry of Education, Science and Technological Development of the Republic of Serbia (MoESTD)**
  - ✓ **Slovak Republic, with the Slovak Academy of Sciences (SAS) & Pavol Jozef Safarik University in Kosice (UPJS)**
  - ✓ **Slovenia, with the Slovenian Research Agency (ARRS)**

- **International Arrangement Funding**
  - ✓ Argentina, with the Ministry of Science, Technology and Productive Innovation
  - ✓ Australia, with the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC)
  - ✓ Brazil, with the Brazilian National Council of the State funding agencies (CONFAP)
  - ✓ Canada, with the Tri-agency Institutional Programs Secretariat
  - ✓ China, with the National Natural Science Foundation (NSFC)
  - ✓ India, with the Scientific Engineering Research Board (SERB)
  - ✓ Japan, with the Society for the Promotion of Science (JSPS) and the Japan Science and Technology Agency (JST)
  - ✓ Korea, with the Ministry of Science, ICT and Future Planning
  - ✓ Mexico, with the Mexican National Council of Science and Technology (Conacyt)
  - ✓ Singapore with the National Research Foundation Singapore (NRF)
  - ✓ South Africa, with the National Research Foundation (NRF)
  - ✓ United States, signed in July 2012 with the National Science Foundation (NSF)

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Excellence is the sole evaluation criterion

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- Evaluation of *excellence* at two levels:

Excellence of the Research Project

- ✓ Ground-breaking nature
- ✓ Potential impact

  (science & knowledge ≠ economic or societal etc.)
- ✓ Scientific approach (soundness & feasibility)

High risk/High gain!

Excellence of the Principal Investigator

- ✓ Intellectual capacity / ability to conduct ground-breaking research
- ✓ Creativity and independent thinking
- ✓ Relevant scientific expertise and capacity to execute/lead the project

The Host Institution is not an evaluation criterion

Evaluation process

For individual main calls (StG, CoG, AdG): a single submission but a two-step evaluation

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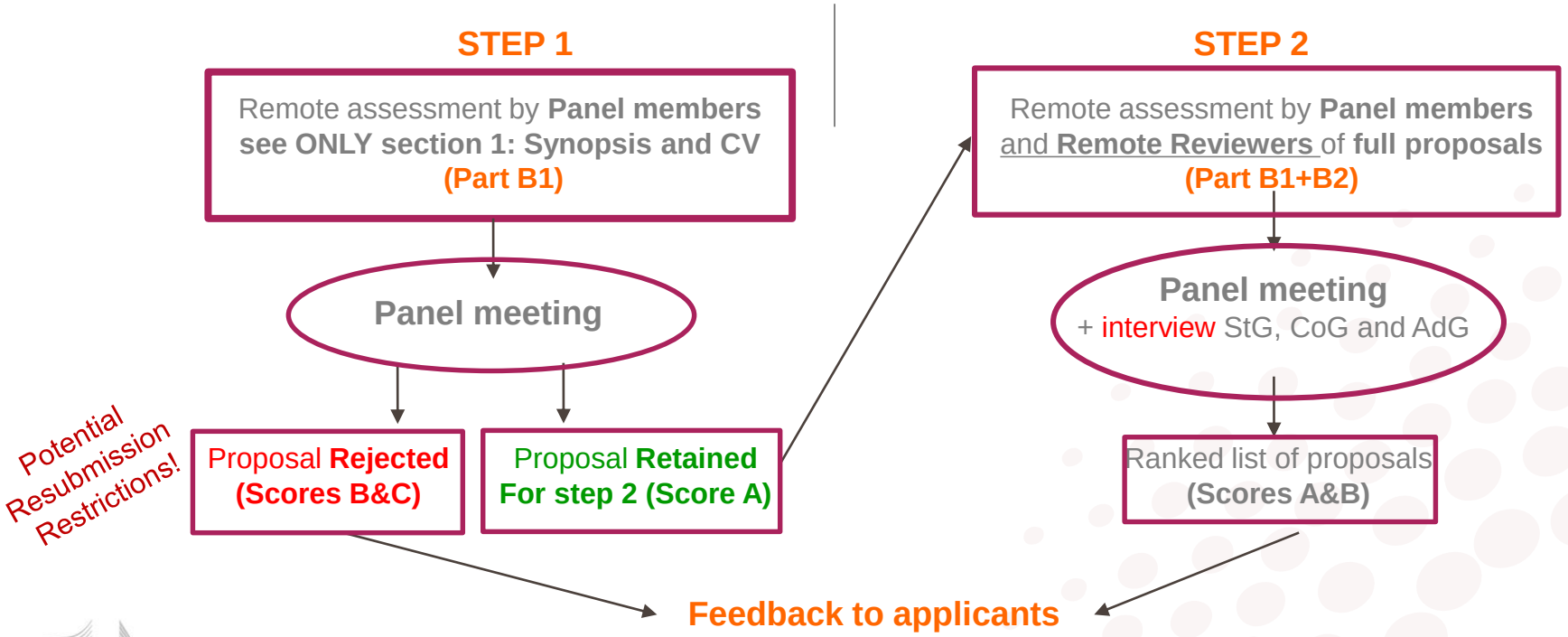

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Some questions applicants should consider

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- Am I internationally competitive as a researcher at my career stage and in my discipline?
- Am I able to work independently, and to manage a 5-year project with a substantial budget?
- Why is my proposed project important?
- Is it timely? (Why wasn't it done in the past? Is it feasible now?)
- Does it promise to go substantially beyond the state of the art? Ground-breaking elements – novelty in the approach?
- Why am I the best/only person to carry it out?
- What is the risk? Is it justified by a substantial potential gain? Do I have a plan for managing the risk?

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Preparing the proposal: Part B1 (Step 1 evaluation)

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Extended synopsis of the research project - 5 pages:

- Is my project new, **innovative**, bringing new solutions/theories?
- Does it promise to go **substantially beyond the state of the art**? – no incremental research. **Think big!**
- Know your competitors – what is the **state of play** and why is your idea and scientific approach outstanding?
- Only the extended Synopsis is read at Step 1: **concise and clear presentation** is crucial (evaluators are not necessarily all experts in the field)
- How can I **prove/support** my case? Have I shown the project's **feasibility**? Are my goals **realistic**?
- What is the **risk**?

Applicant's profile: 2-page CV plus 2-page track record

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Preparing the proposal: Part B2

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In Step 2, both part B1 and B2 are read by Panel Members and specialists around the world (specialised external referees) so in Part B2:

In 14 pages:

- Do not repeat the synopsis (Part B1), provide sufficient details on your **methodology** and **work plan**
- Make sure that the quantitative and qualitative differences to the state of the art are clear and referenced - show you did your homework
- Provide alternative strategies to **mitigate risks**
- Explain **involvement of team members**

In Part A (~1 page): Justify requested **resources – explain your budget properly**

ERC Panel structure

- representing **the three main scientific domains**
- serving the purposes of proposal evaluation and scientific project monitoring
- **panel structure (and descriptors) do not represent specific scientific priorities**
- budget distributed among the scientific panels as a function of demand

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Life Sciences (LS)

- LS1 Molecules of Life: Biological Mechanisms, Structures and Functions
- LS2 Integrative Biology: from Genes and Genomes to Systems
- LS3 Cellular, Developmental and Regenerative Biology
- LS4 Physiology in Health, Disease and Aging
- LS5 Neuroscience and Disorders of the Nervous System
- LS6 Immunity, Infection and Immunotherapy
- LS7 Prevention, Diagnosis and Treatment of Human Diseases
- LS8 Environmental Biology, Ecology and Evolution
- LS9 Biotechnology and Biosystems Engineering

3 Domains / 27 Panels

>4,000
Panel members in 2014-2020 calls

60
European and non-European countries hosting ERC panel members

>45,000
External reviewers in 2014-2020 calls

Social Sciences and Humanities (SSH)

- SH1 Individuals, Markets and Organisations
- SH2 Institutions, Governance and Legal Systems
- SH3 The Social World and Its Diversity
- SH4 The Human Mind and Its Complexity
- SH5 Cultures and Cultural Production
- SH6 The Study of the Human Past
- SH7 Human Mobility, Environment, and Space

Physical Sciences & Engineering (PSE)

- PE1 Mathematics
- PE2 Fundamental Constituents of Matter
- PE3 Condensed Matter Physics
- PE4 Physical & Analytical Chemical Sciences
- PE5 Synthetic Chemistry and Materials
- PE6 Computer Science and Informatics
- PE7 Systems and Communication Engineering
- PE8 Products and Processes Engineering
- PE9 Universe Sciences
- PE10 Earth System Science
- PE11 Materials Engineering

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ERC Panel structure – PE domain

https://erc.europa.eu/news/new-erc-panel-structure-2021-and-2022

(ERC funds "frontier research", including applied research)

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Physical Sciences & Engineering

Maths
- PE1 Mathematics

Physics
- PE2 Fundamental Constituents of Matter
- PE3 Condensed Matter Physics

Chemistry
- PE4 Physical & Analytical Chemical Sciences
- PE5 Synthetic Chemistry and Materials

Engineering
- PE6 Computer Science and Informatics
- PE7 Systems and Communication Engineering
- PE8 Products and Processes Engineering (incl. Aerospace Engineering)
- PE9 Universe Sciences
- PE10 Earth System Science

(incl. Space Exploration & Earth Observation)

- PE11 Materials Engineering

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PE8 Products and Processes Engineering

(Product and process design, chemical, civil, environmental, mechanical, vehicle engineering, energy processes and relevant computational methods)

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Panel descriptors do not represent ERC scientific priorities

PE8_1 Aerospace engineering

PE8_2 Chemical engineering, technical chemistry

PE8_3 Civil engineering, architecture, offshore construction, lightweight construction, geotechnics

PE8_4 Computational engineering

PE8_5 Fluid mechanics

PE8_6 Energy processes engineering

PE8_7 Mechanical engineering

PE8_8 Propulsion engineering, e.g. hydraulic, turbo, piston, hybrid engines

PE8_9 Production technology, process engineering

PE8_10 Manufacturing engineering and industrial design

PE8_11 Environmental engineering, e.g. sustainable design, waste and water treatment, recycling, regeneration or recovery of compounds, carbon capture & storage

PE8_12 Naval/marine engineering

PE8_13 Industrial bioengineering

PE8_14 Automotive and rail engineering; multi-/inter-modal transport engineering

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PE7 Systems and Communication Engineering

(Electrical, electronic, communication, optical and systems engineering)

PE6 Computer Science and Informatics

(Informatics and information systems, computer science, scientific computing, intelligent systems)

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PE7_1 Control engineering

PE7_2 Electrical engineering: power components and/or systems

PE7_3 Simulation engineering and modelling

PE7_4 (Micro- and nano-) systems engineering

PE7_5 (Micro- and nano-) electronic, optoelectronic and photonic components

PE7_6 Communication technology, high-frequency technology

PE7_7 Signal processing

PE7_8 Networks (communication networks, sensor networks, networks of robots, etc.)

PE7_9 Man-machine interfaces

PE7_10 Robotics

PE7_11 Components and systems for applications (in e.g. medicine, biology, environment)

PE7_12 Electrical energy production, distribution, application

……

PE6_6 Algorithms, distributed, parallel and network algorithms, algorithmic game theory

PE6_7 Artificial intelligence, intelligent systems, natural language processing

PE6_8 Computer graphics, computer vision, multi media, computer games

PE6_9 Human computer interaction and interface, visualisation

PE6_10 Web and information systems, data management systems, information retrieval and digital libraries, data fusion

PE6_11 Machine learning, statistical data processing and applications using signal processing (e.g. speech, image, video)

PE6_12 Scientific computing, simulation and modelling tools

……

Panel descriptors do not represent ERC scientific priorities

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2023 Call Calendar

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ERC calls	Call Opening	Submission Deadline
Starting Grants ERC-2023-StG	12/07/2022	25/10/2022
Consolidator Grants ERC-2023-CoG	28/09/2022	02/02/2023
Advanced Grants ERC-2023-AdG	08/12/2022	23/05/2023
Synergy Grants ERC-2023-SyG	13/07/2022	08/11/2022
Proof of Concept ERC-2023-PoC	20/10/2022	24/01/2023, 20/04/2023, 14/09/2023

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Where can you find more information?

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YouTube Videos - ERC Classes

- What to consider before applying
- How to fill-in the application (Parts B1 and B2)
- The interview
- How the evaluation works
- Applying for a PoC

https://www.youtube.com/watch?v=xbFbzkVWgCU&list=PLtv6FnsXqnXAYRk6HCErwMxwML0ZKoMcy

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Where can you find more information?

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Our website:

erc.europa.eu

Our social media channels:

National Contact Points (NCP):

https://erc.europa.eu/funding/national-contact-points

Funding & Tender Opportunities:

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

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Thank you !

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ERC & Aerospace

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All ERC projects featured in CORDIS https://cordis.europa.eu/ and the ERC website https://erc.europa.eu/projects-figures/erc-funded-projects/ & https://erc.europa.eu/projects-figures/stories

A 2019 ERC Aerospace brochure features ERC projects on:

- Bird and formation flight
- Combustion instability
- Material mechanics
- Cubesat clusters
- Space orbit perturbations
- Aerospace communications

https://publications.europa.eu/en/publication-detail/-/publication/933fdca2-88cd-11e9-9369-01aa75ed71a1/language-en/format-PDF/source-99740073

but ERC-funded projects also cover areas indicatively like:

- Structures & materials: fatigue, fracture, morphing
- Flow physics: instabilities & transition, turbulence, flow separation, thermochemical modelling
- Propulsion & alternative (bio)fuel combustion
- Fluid-structure interactions
- Aerial & space robotics, control, bioinspired systems
- Battery technologies
- Hydrogen production and storage
- Fuel Cells
- Hydrogen-enriched combustion
- Space exploration
- Earth observation

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