



EUROPEAN COMMISSION
Directorate-General for Communications Networks, Content and Technology
Digital Excellence and Science Infrastructure
High Performance Computing and Quantum Technology

Detailed planning of HPC-related activities for the period 2018-2020 in Horizon 2020

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Overview of the Implementation of the High Performance Computing (HPC) strategy in Horizon 2020

Europe's HPC strategy was announced in the Communication that the European Commission adopted in April 2016 on the European Cloud Initiative¹ and in May 2017 on the Mid-Term Review on the implementation of the Digital Single Market Strategy.² The HPC strategy aims at establishing a world-class European HPC ecosystem to acquire leadership-class supercomputers, secure its own independent HPC technology and system supply, and deploy HPC services for science, industry and SMEs.

The Horizon2020 work-programmes (WP) 2018-2020 support the implementation of the HPC strategy along 3 main axes working in synergy:

1. **Developing the next generation of key HPC technologies and systems towards exascale:** The LEIT-ICT WP supports a Framework Partnership Agreement (FPA) action for the development of European low-power microprocessors and related technologies, and Extreme Scale Demonstrators to integrate with a co-design approach the technology building blocks developed in the FET and LEIT ICT R&I actions for operational environments. The FET WP complements the microprocessor FPA to address the whole technology spectrum from software, algorithms, programming models and tools, to novel system architectures.
2. **Acquiring and providing access to world-class supercomputing facilities and services for academia and industry:** The e-infrastructure WP supports PRACE³ (ensuring access to the best European HPC infrastructures for European researchers), GEANT⁴ for high speed and highly resilient pan-European communication and the acquisition of innovative HPC solutions through a Public Procurement for Innovation action.
3. **Achieving excellence in HPC applications, and preparing and widening HPC use:** The e-infrastructure WP supports HPC Centres of Excellence (CoEs), developing, preparing and optimising the HPC codes and applications for future exascale systems, complemented with actions for increasing the innovation potential of SMEs using advanced HPC services and focusing on the areas addressed by CoEs. The LEIT-ICT WP supports the development of large-scale HPC-enabled industrial pilot test-beds for big data applications and services, providing secure access and provisioning of highly demanding data use cases for companies and especially SMEs.

The detailed planning of HPC-related activities in the Horizon 2020 WPs 2018-2020 (LEIT-ICT, FET and e-Infrastructure) is provided in the tables below.

¹ COM(2016) 178

² COM(2017) 228 final

³ www.prace-ri.eu/

⁴ <https://www.geant.org/>

2018

	Topic	H2020 programme	EU budget	Objective
1	INFRAEDI-01-2018: Pan-European High Performance Computing infrastructure and services (PRACE) Call deadline: 22/03/2018	eINFRA	24 M€	Support to the next implementation phase of PRACE covering the period 2019-2021
2	INFRAEDI-02-2018: HPC Centres of Excellence on HPC Call deadline: 22/03/2018	eINFRA	74 M€	Application co-design and upscaling towards exascale, around the HPC Centres of Excellence gathering scientific/industrial communities around codes & applications (includes 2 m€ for 1 support action)
3	INFRAEDI-03-2018: Support to the governance of High Performance Computing Infrastructures Call deadline: 22/03/2018	eINFRA	0.9 M€	Support to the governance of High Performance Computing Infrastructures, support action
4	Framework Partnership Agreement in European low-power microprocessor technologies (Phase 1) Call deadline: Q1/2018	LEIT-ICT	80 M€ (SGA)	Design and development of European low-power processors and related technologies for extreme-scale high-performance, big-data and emerging applications
5	ICT-14-2019: Co-designing Extreme-Scale Demonstrators (EsD) Call deadline: 14/11/2018	LEIT-ICT	80 M€	Co-design and operations of extreme scale systems in close cooperation with the scientific disciplines and other stakeholders (Prototypes demonstrating scalability up to exascale-class capabilities)

	Topic	H2020 programme	EU budget	Objective
6	ICT-11-2018-2019: HPC and Big Data enabled Large-scale Test-beds and Applications Call deadlines: a) 17/04/2018 b) 14/11/2018	LEIT-ICT	(a) 50 M€ (b) 40 M€	Building industrial large-scale application test-beds that integrate HPC, Big Data, Cloud and IoT technologies and that make best use of available HPC and data infrastructures a) large-scale HPC-enabled pilot test-beds supporting big data applications and services b) large-scale IoT/Cloud-enabled pilot test-beds for big data applications by combining relevant technologies
7	FETHPC-01-2018: HPC International Cooperation Target countries: Mexico and Brazil Call deadline: 15/05/2018	FET	4 M€	Collaboration for the development of state-of-the-art (HPC) applications (codes, software tools, etc.) in domains of common interest with Mexico and Brazil
8	Other actions: SGA (a) Research and Education Networking – GÉANT Call deadline: Q1/2018	eINFRA	112 M€	Development of European high-speed connectivity, targeting collaboration with other European e-Infrastructure providers through the seamless availability of network, data and computing services
9	Other actions: SGA (b) Procurement of long-term backbone capacity – GÉANT Call deadline: Q1/2018	eINFRA	16 M€	Securing access to capacity and services in the long term and providing a stable and reliable environment for communities

2019

	Topic	H2020 programme	EU budget	Objective
10	FETHPC-02-2019 : HPC - Extreme scale computing technologies, methods and algorithms for key applications and support to the HPC ecosystem Call deadline: 24/09/2019	FET	68 M€	Extreme scale computing technologies, methods and algorithms for key applications addressing Societal Challenge (includes 4 M€ for one HPC ecosystem support action)
11	INFRAINNOV-01-2019: Stimulate the innovation potential of SMEs Call deadline: 29/01/2019	eINFRA	8 M€	Supporting the innovation potential of SMEs as users of advanced HPC services, focusing in the areas addressed by the CoEs in the topic INFRAEDI-02-2018

2020 [Indicative only - not approved]

	Topic	H2020 programme	EU budget	Objective
12	Framework Partnership Agreement in European low-power microprocessor technologies (Phase 2) Call deadline: Q1/2020	LEIT-ICT	40 M€ (SGA)	Design and development of European low-power processors and related technologies for extreme-scale high-performance, big-data and emerging applications
13	INFRAEDI-04-2020: Support to Public Procurement of innovative HPC systems Call deadline: Q1/2020	eINFRA	80 M€	Support to public procurement of the 2 pre-exascale systems
14	FETHPC-03-2020 : Co-design of extreme scale HPC systems and applications Call deadline: 2020	FET	100 M€	Prototypes and sub-systems with focus on exascale application performance and emerging computationally and data intensive application areas