EuroHPC JU:
aktuální info a budoucí plány

Vít Vondrák

IT4Innovations national supercomputing center

EuroHPC governing board member

EuroHPC Joint Undertaking

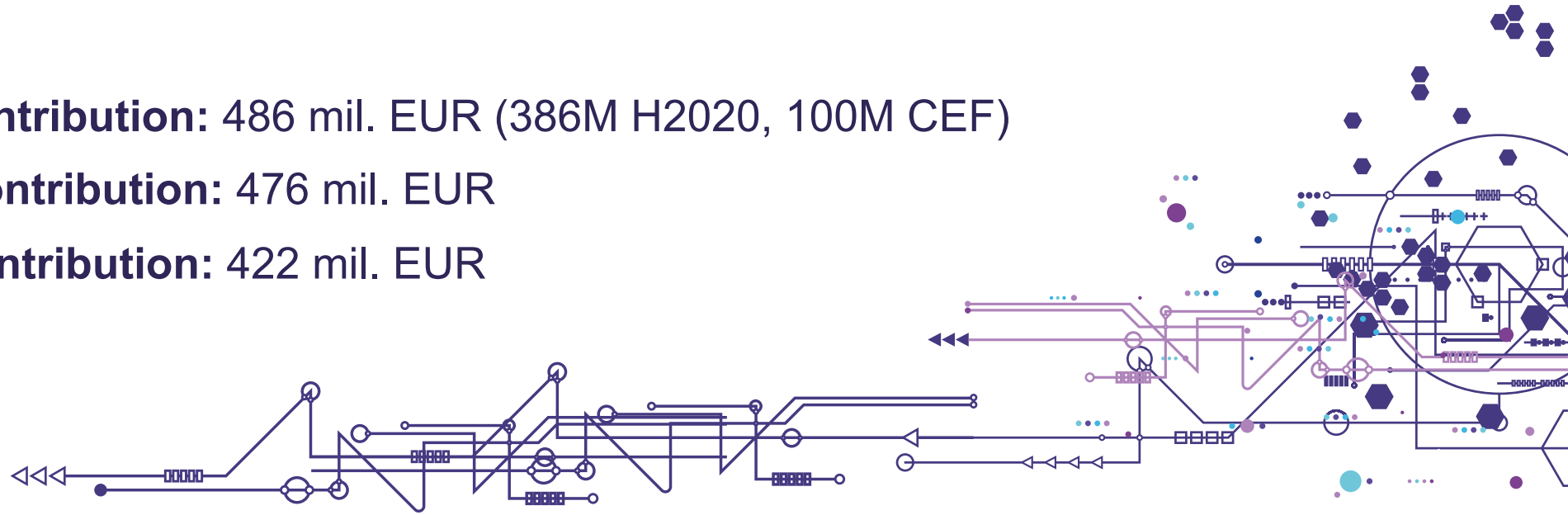
Council Regulation (EU) 2018/1488 of 28 September 2018
establishing the European High Performance Computing Joint Undertaking

The mission of the Joint Undertaking shall be to develop, deploy, extend and maintain in the Union an integrated world-class supercomputing and data infrastructure and to develop and support a highly competitive and innovative High-Performance Computing ecosystem.

Union's financial contribution: 486 mil. EUR (386M H2020, 100M CEF)

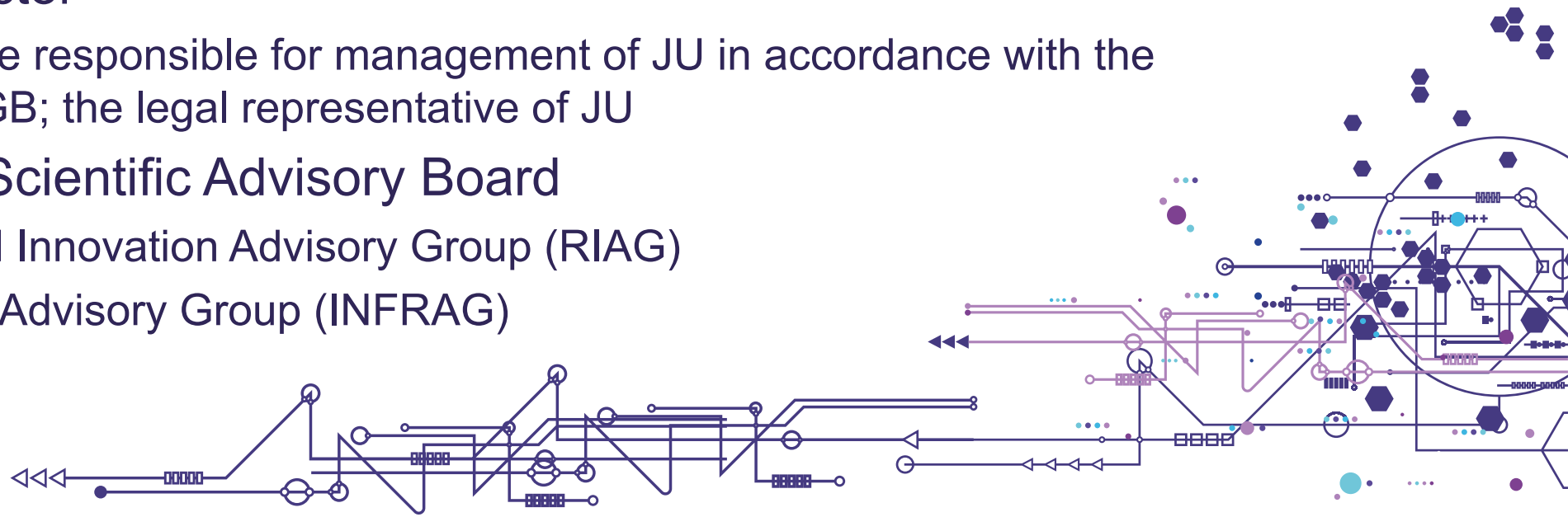
Participate states contribution: 476 mil. EUR

Private members contribution: 422 mil. EUR



EuroHPC governance

- EC + 31 participating states + 3 private members (ETP4HPC, BDVA, QuIC)
- Governing board
  - responsible for strategic policy making and funding decisions related to the activities
  - representatives of the EU and Participating States
- Executive Director
  - chief executive responsible for management of JU in accordance with the decisions of GB; the legal representative of JU
- Industrial and Scientific Advisory Board
  - Research and Innovation Advisory Group (RIAG)
  - Infrastructure Advisory Group (INFRAG)



Building European HPC infrastructure

- **5 petascale supercomputers**
  - Karolina (CZ)
  - Meluxina (LU)
  - Deucalion (**PT**, ES)
  - Vega (SI)
  - PetaSC (BG)
- **3 pre-exascale supercomputers**
  - LUMI (**FI**,SE,NO,DK,BE,PL,CH,**CZ**, EE, IS)
  - BSC (**ES**, HR, PT, TR)
  - Leonardo (**IT**, SI, SK, AT, HU)
- **1 quantum simulator**
  - HPCQS (**DE, FR**, ES, IT, IE)

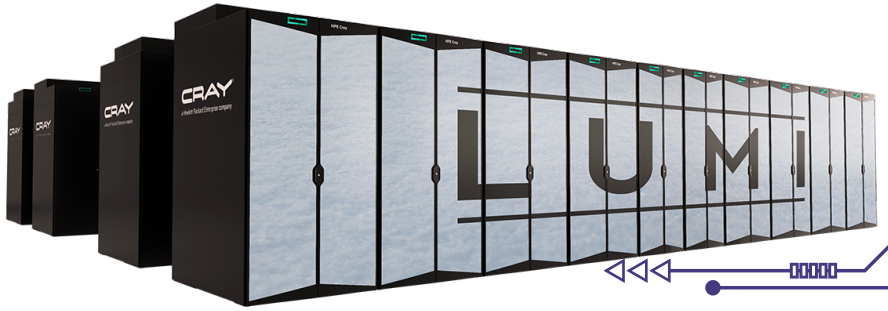
Karolina supercomputer

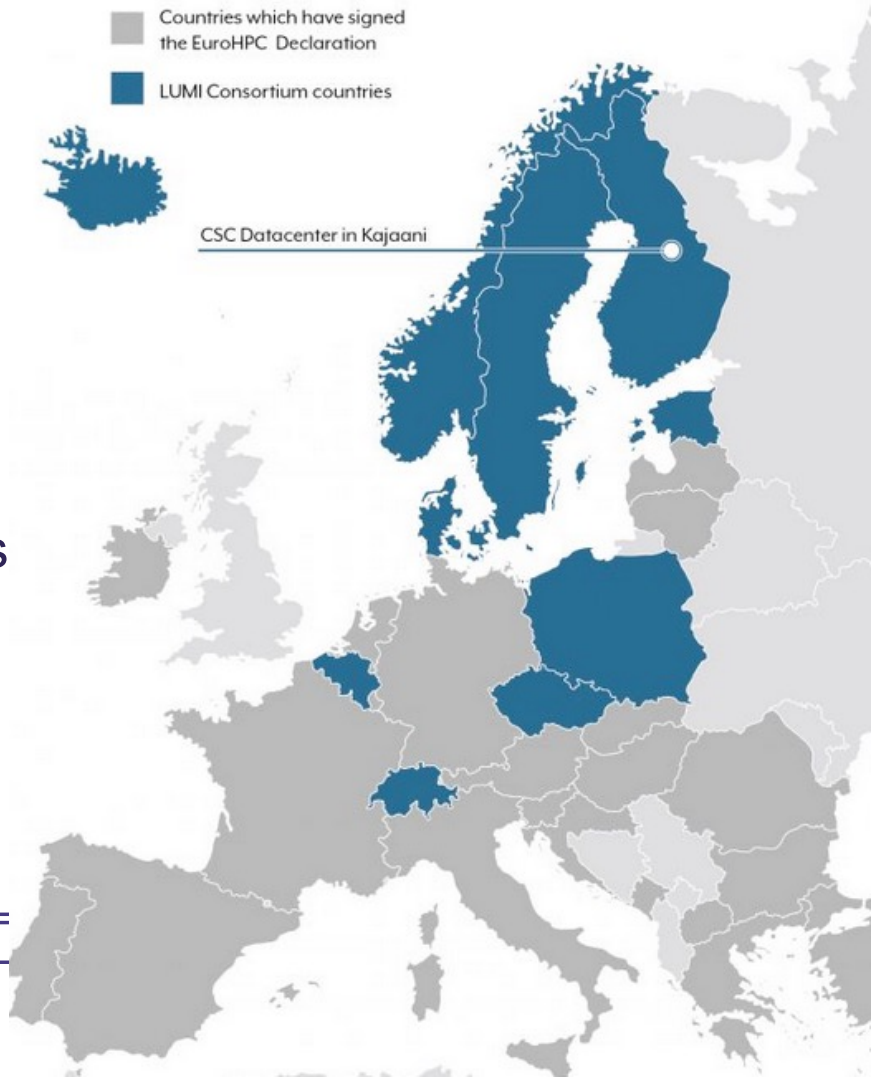
- Period of operation: 2021-2026
- Total acquisition cost: 15M€
  - 60% (9,00 M€) OP Research, Development and Education
  - 5% (0,75 M€) VSB-Technical University of Ostrava
  - 35% (5,25 M€) EuroHPC JU
- Performance
  - CPU partition: 2.8 PFlop/s (HPL)
  - GPU partition: 6.6 PFlop/s (HPL)
  - Top500: #69 (GPU)
  - Green500: #8 (GPU)

- 65% of the resources will be available to the Czech users
- 35% of the resources will be available to the EuroHPC users

LUMI supercomputer

- LUMI = Large Unified Modern Infrastructure
- Period of operation: 2021-2026
- Total budget: 207.1M€
  - 50% (103,6M€) LUMI consortium
  - 50% (103,6M€) EuroHPC JU
- Peak performance to be installed in 2021/2022
  - LUMI-G 552 PFlops
  - TOP500 #1 FUGAKU 537 PFlops - November 2021
- Approx 3,5% of the resources will be available to the Czech users
  - Access provided through IT4I Open Access calls





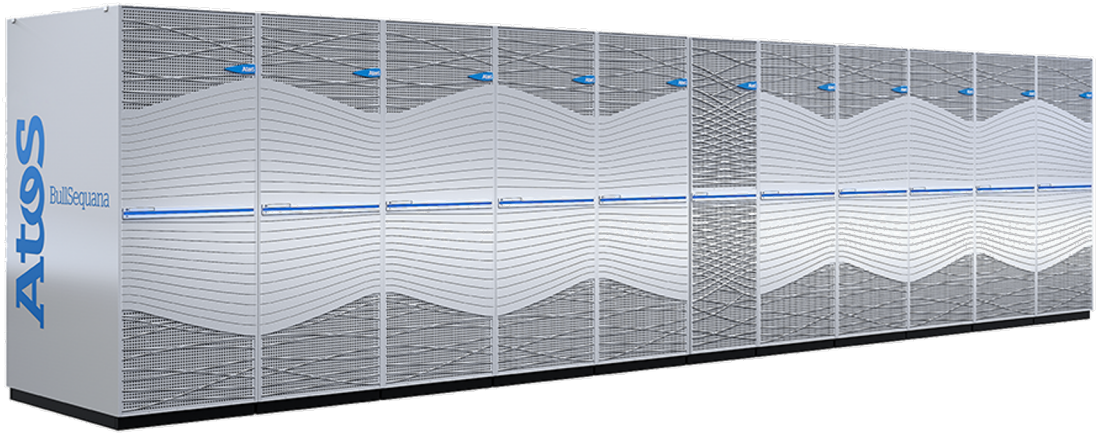
Petascale supercomputers in operation

Meluxina (LU)
Atos BullSequana XH2000
12 PFlops HPL
AMD EPYC
NVIDIA Ampere A100

Discoverer (BG)
Atos BullSequana XH2000
4.5 PFlops HPL
AMD EPYC

Vega (SI)
Atos BullSequana XH2000
6.9 PFlops HPL
AMD EPYC
NVIDIA Ampere A100

Supercomputers in installation



Leonardo (IT)

Atos BullSequana XH2000

250 PFlops HPL

Intel Ice Lake, Intel Sapphire Rapids, NVIDIA Ampere

Deucalion (PT)

Atos BullSequana + Fujitsu

7.2 PFlops HPL

A64FX (ARM), AMD EPYC, NVIDIA Ampere

Accessing EuroHPC supercomputers

Access Mode	Extreme Scale	Regular	Benchmark	Development	Academic Fast Track	Industry Fast Track
Duration	1y renewable	1y renewable	2 to 3 months	1y renewable	< 6 months	1y renewable
Periodicity	Continuous calls, bi-yearly cut-offs	Continuous call, cut-offs every four months (3 cut-offs per year).	Continuous call, monthly cut-offs	Continuous call, monthly cut-offs	Continuous call, cut-offs ev. 2w/1m	Continuous call, cut-offs ev. 2w/1m
Share of resources	~70% Mostly pre-exascale	20 to 30% Mostly multi-petascale	Few % All systems	Few % All systems	~5% All systems	~5% All systems
Data storage needs	Large storage for medium to long term	Large storage for medium to long term	Limited	Data processing environment and platform		

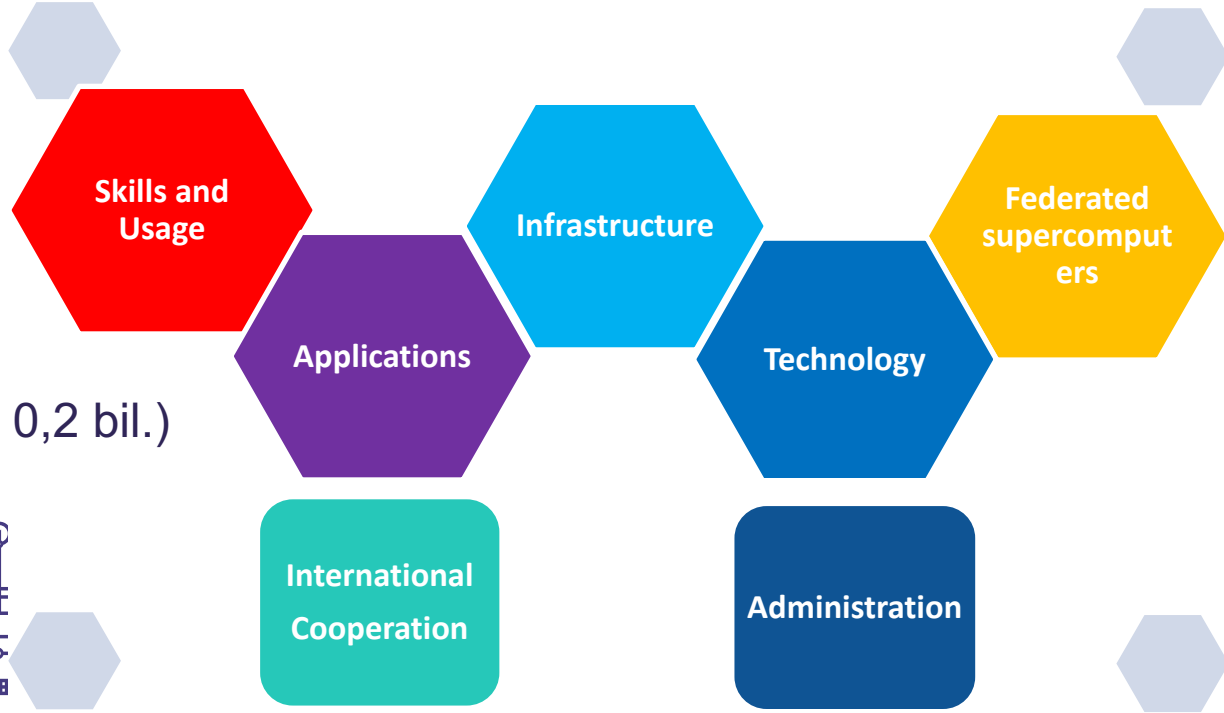
Calls for access

- EuroHPC JU Call For Proposals For Regular Access Mode
  - The cut-off dates for the year 2022 are:
    - 4 March 2022 – 10:00 AM CET
    - 1 July 2022 – 10:00 AM CEST
    - 4 November 2022 – 10:00 AM CET
  - https://prace-ri.eu/hpc-access/eurohpc-access/eurohpc-ju-call-for-proposals-for-regular-access-mode/
- EuroHPC JU Benchmark And Development Access Calls
  - Cut-off date for review on 1st of every month 11:00 AM CET
  - https://prace-ri.eu/hpc-access/eurohpc-access/eurohpc-ju-benchmark-and-development-access-calls/

EuroHPC new regulation

Council Regulation (EU) 2021/1173 of 13 July 2021
on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488

- Acquisition and ownership of supercomputers
  - High-end supercomputers (exascale, post-exascale)
  - Quantum computers and quantum simulators
  - Industrial-grade EuroHPC supercomputers
  - Mid-range supercomputers
  - Upgrading of supercomputers
- 1 administrative and 6 technical activity pillars
- Financial contributions
  - EU: 3.1 bil. EUR (HE: 0.9 bil., DEP: 2 bil., CEF: 0,2 bil.)
  - Participating states: 3.1 bil. EUR
  - Private: 0.9 bil. EUR



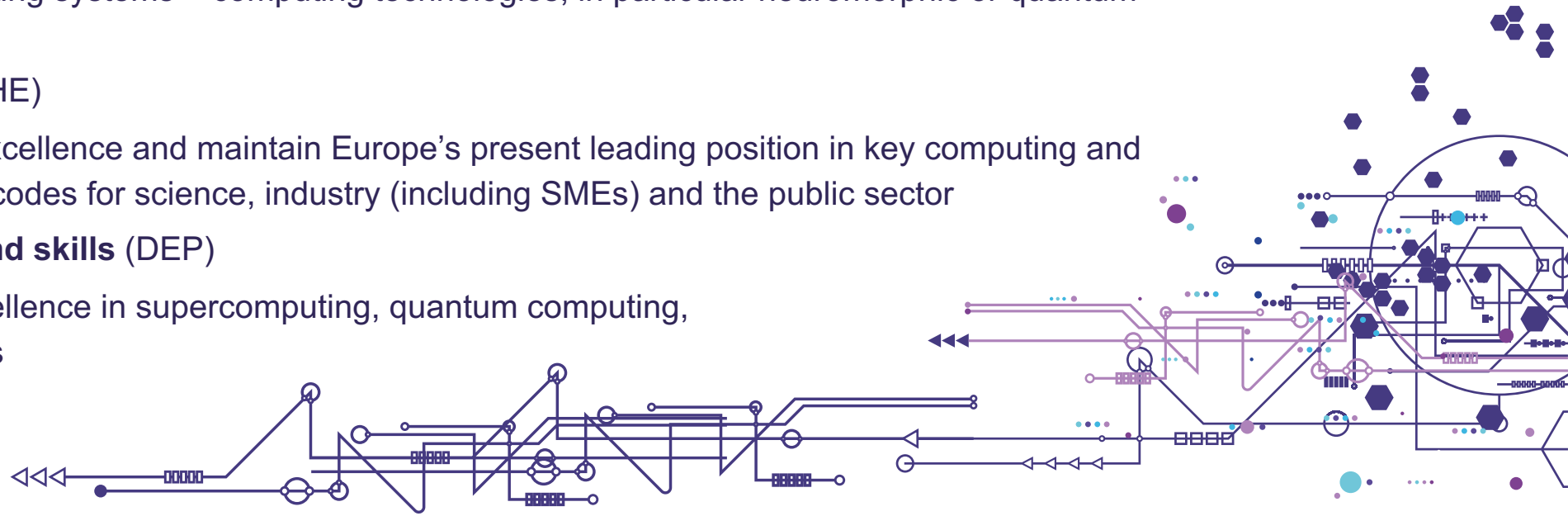
Overview of HPC system acquisitions (2021-2027)

	2021	2022	2023	2024	2025	2026	2027
HPC infrastructure	Call for Hosting Entities	Several mid-range HPCs (peta and pre-exascale) systems and 2 high-end (exascale) systems				One or more high-end HPC systems (exascale and post-exascale) system and an industrial mid- range system	
Quantum infrastructure	Call for Hosting Entities	Quantum simulators and 1st generation of experimental quantum computers				2nd Generation of experimental quantum computers	

DECISION OF THE GOVERNING BOARD OF THE EuroHPC JOINT UNDERTAKING
No 24/2021
Approving the Multi-Annual Strategic Plan 2021-2027

EuroHPC new pillars of activity

- **Pilar 1: Infrastructure** (DEP, CEF)
  - The acquisition, deployment, and operation of a world-class supercomputing infrastructure but also a quantum computing infrastructure
- **Pilar 2: Federation of supercomputing services** (DEP, CEF)
  - Union-wide, cloud-based access to federated, secure supercomputing, quantum computing and data resources
  - The interconnection of the High Performance Computing, quantum computing and data resources
- **Pilar 3: Technology** (HE)
  - Classical supercomputing systems + computing technologies, in particular neuromorphic or quantum computing
- **Pilar 4: Application** (DEP, HE)
  - Activities to achieve excellence and maintain Europe's present leading position in key computing and data applications and codes for science, industry (including SMEs) and the public sector
- **Pilar 5: Widening usage and skills** (DEP)
  - Activities to foster excellence in supercomputing, quantum computing, and data use and skills

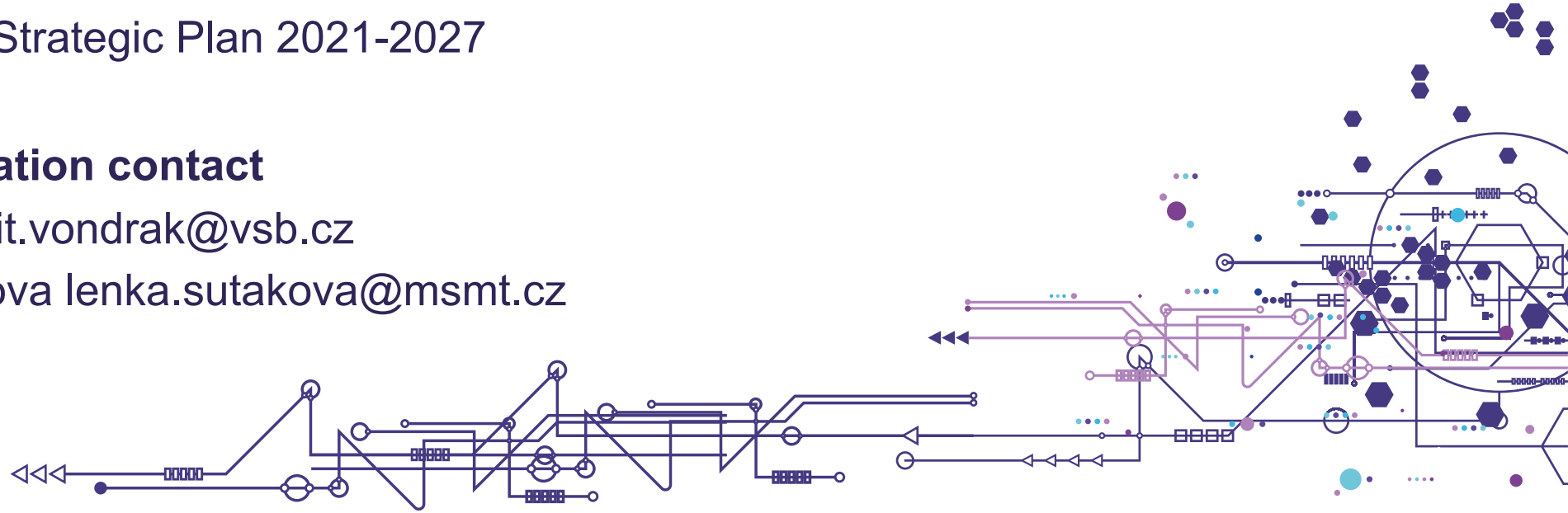


Current and future EuroHPC calls

- List of current and previous calls
  - https://eurohpc-ju.europa.eu/current-calls
  - https://eurohpc-ju.europa.eu/previous-calls

- https://eurohpc-ju.europa.eu/documents
  - Joint Undertaking's Work Plan and Budget for the year 2022
  - Multi-Annual Strategic Plan 2021-2027

- **For more information contact**
  - Vít Vondrák vit.vondrak@vsb.cz
  - Lenka Šuťákova lenka.sutakova@msmt.cz



Napište nám

info@e-infra.cz