Bringing engineering @ exascale with EXCELLERAT

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Overview

- EXCELLERAT in a nutshell
- The service portal and the service provision funnel

EXCELLERAT in a nutshell

Ambition of EXCELLERAT P2

- **Duration**: 1st Jan. 2023 – 31st Dec 2026
- **Call**: Centres of Excellence for HPC applications
- **Topic**: Centres of Excellence for supporting supercomputing applications for Science and Innovation
- *Exascale engineering applications as targeted by EXCELLERAT consider three types of use case scenarios:*
  1. **Hero runs:** targeting maximum accuracy to gain detailed solutions that reveal an unprecedented level of details and generate scientific insight
  2. **Smaller scale, strong scaling production runs:** used in optimization and uncertainty quantification ensembles.
  3. **Large scale, strong scaling applications:** facilitate even larger parts of an Exascale system efficiently to shorten turnaround times in development

Project Partners

Industrial Impact

- Interest Groups consist of selected representatives of external companies
- Regular interaction with these entities and meetings (at least three F2F workshops per group)
- Feedback process & early adopter role
- Sharing of news from the CoE

Services

- Based on four service perspectives:
  - *Solution Evolution* (Perspective of the Application End-user)
  - *Code/Application Evolution* (Perspective of the Application Developer)
  - *System Evolution* (Perspective of the Vendor)
  - *Community Evolution* (Perspective of the Engineering Community)
- Training courses:
  - Regarded as 1-on-n consulting within the “Service-Perspectives” approach of EXCELLERAT
  - Dedicated Task “Training and Education”
  - Objectives:
    - update the training overview developed with the support of the EuroCC National Competence Centres
    - promote their integration with complementary interdisciplinary aspects
    - Maintain an updated map of the existing initiatives in training and education and of the emerging needs
    - Expand collaboration with the NCCs and other EuroHPC initiatives like EuMaster4HPC

The service portal and the service provision funnel

https://services.excellerat.eu/

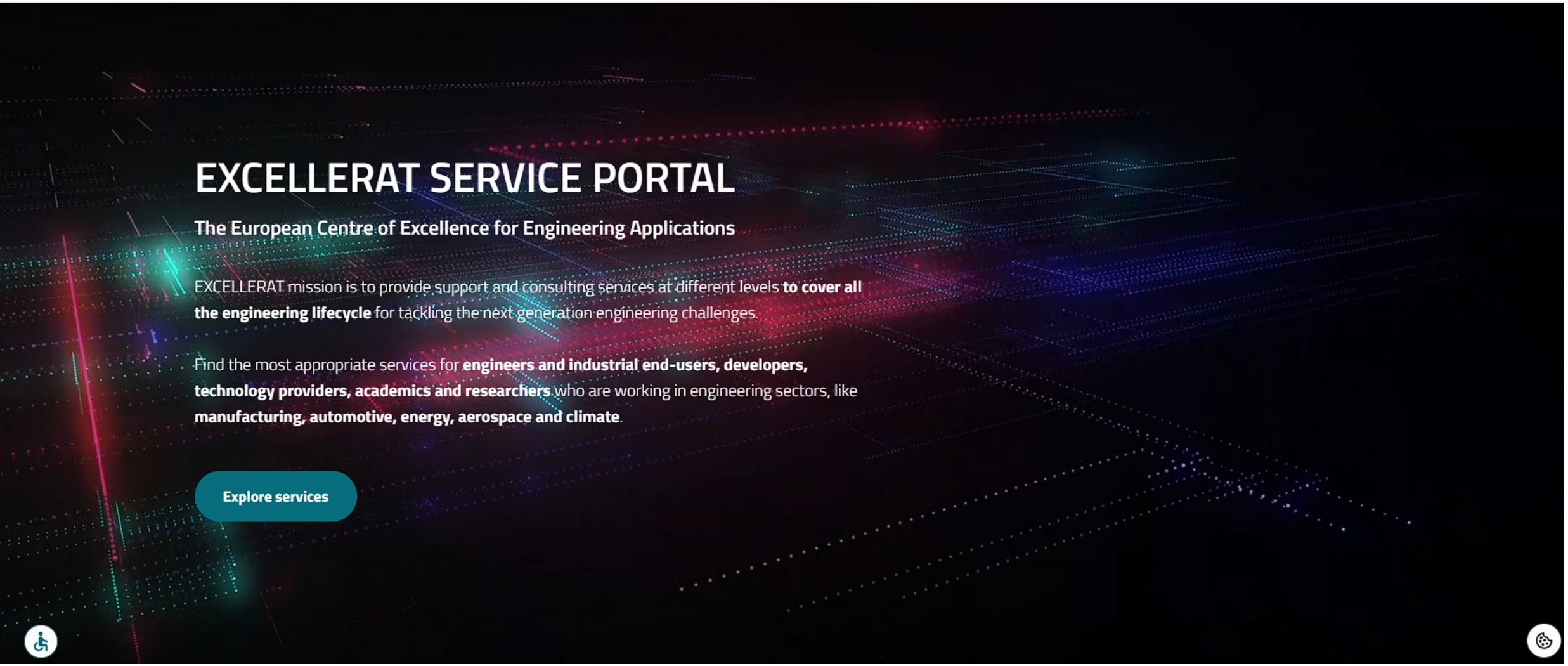
See the presentation @

https://www.youtube.com/watch?v=wPWP69niXnA

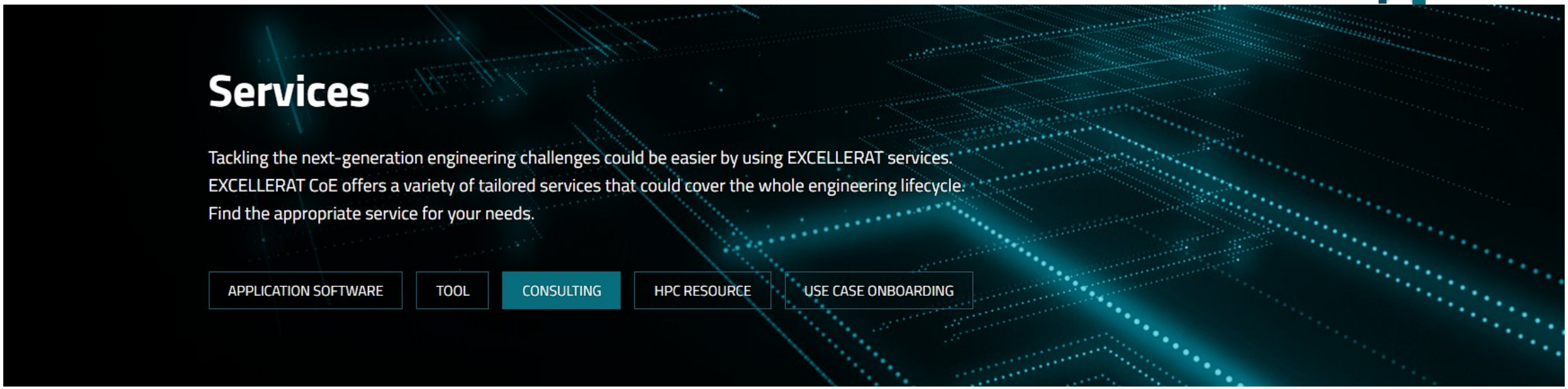
EXCELLERAT SERVICE PORTAL

EXCELLERAT CoE supports industrial end users, ISVs, technology providers, HPC providers, academics, code developers and engineering experts to successfully tackle the ever-rising complexity of scientific and development endeavours.

Landing page



Service listing



Co-Design Service for Engineering Applications

All sectors

Co-design, Optimization

Consulting and Support to prepare your applications for the Exascale eraPreparing engineering applications for future exascale systems requires the effort and time of experts. One aspect of this preparation...

Learn more

Data analytics in engineering

All sectors

Data Analytics, Vizualization

EXCELLERAT CoE provides expertise and consulting in data analytics tailored to the field of engineering.

Learn more

Data management for large scale simulation result and input data

All sectors

Data Management, Data Analytics, Simulation

EXCELLERAT CoE provides expertise and consulting for the management and storage of large scale data sets originating from large-scale engineering simulation workflows.

Learn more

Service description

Services / Consulting

Co-Design Service for Engineering Applications

Consulting and Support to prepare your applications for the Exascale era

Preparing engineering applications for future exascale systems requires the effort and time of experts. One aspect of this preparation is to work closely with vendors to adapt your applications to their cutting-edge hardware as it becomes available, and EXCELLERAT offers such a service: the Co-Design Service.

Consulting and Support to prepare your applications for the Exascale era

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Thanks to close relations with vendors, EXCELLERAT HPC partners have access to the more cutting-edge hardware for testing and, via the EXCELLERAT Co-Design Service, clients can investigate how their source code will need to adapt.

In most cases, the new hardware is not open to general access. As such, clients will provide the source code of a mini-app, containing their target application's key kernels, and EXCELLERAT HPC experts will report what work is required to adapt this source code. In some cases, this work will then be undertaken on behalf of the client.

Training as a Service

EXCELLERAT P2

Training & Events

EXCELLERAT TRAININGS | EVENTS | PAST TRAINING & EVENTS | EXTERNAL TRAININGS

25.11.2024 ◆ Bologna, Italy

Programming CFD in OpenFOAM

18.11.2024 ◆ Toulouse, France

Numerical methods for Large Eddy Simulation using AVBP

04.11.2024 ◆ Online

Data analytics for engineering data using machine learning

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Thank you!

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EuroHPC Joint Undertaking

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MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION

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