

Joint call High-Performance Computing 2022

Information Session

15.09.2022 | 11:00 – 12:00



Agenda

- **Introduction: Joint call High-Performance Computing 2022 – 10 min**
Speakers: Benjamin Questier (Luxinnovation)
Sakthivel Sundharam (FNR)
- **National HPC competence centre – 5 min**
Speaker: Ramona Caulea (Luxinnovation)
- **Presentation of the Joint call High-Performance Computing – 25 min**
Speakers: Christian Pauly (Ministry of Economy)
Sakthivel Sundharam (FNR)
- **Luxinnovation Support – 5min**
Speaker: Maximilian Przybyl (Luxinnovation)
- **Q&A - 15min**

Who is Who in the Joint Call HPC



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Économie

Granting authority for Companies (R&D aid schemes)



Fonds National de la
Recherche Luxembourg

Granting authority for Research Organisations (R&D grants)



LUXINNOVATION
#MakingInnovationHappen

Research Industry Collaboration Platform Manager



NATIONAL HPC
COMPETENCE
CENTRE

HPC Community Manager in Luxembourg

National HPC competence centre

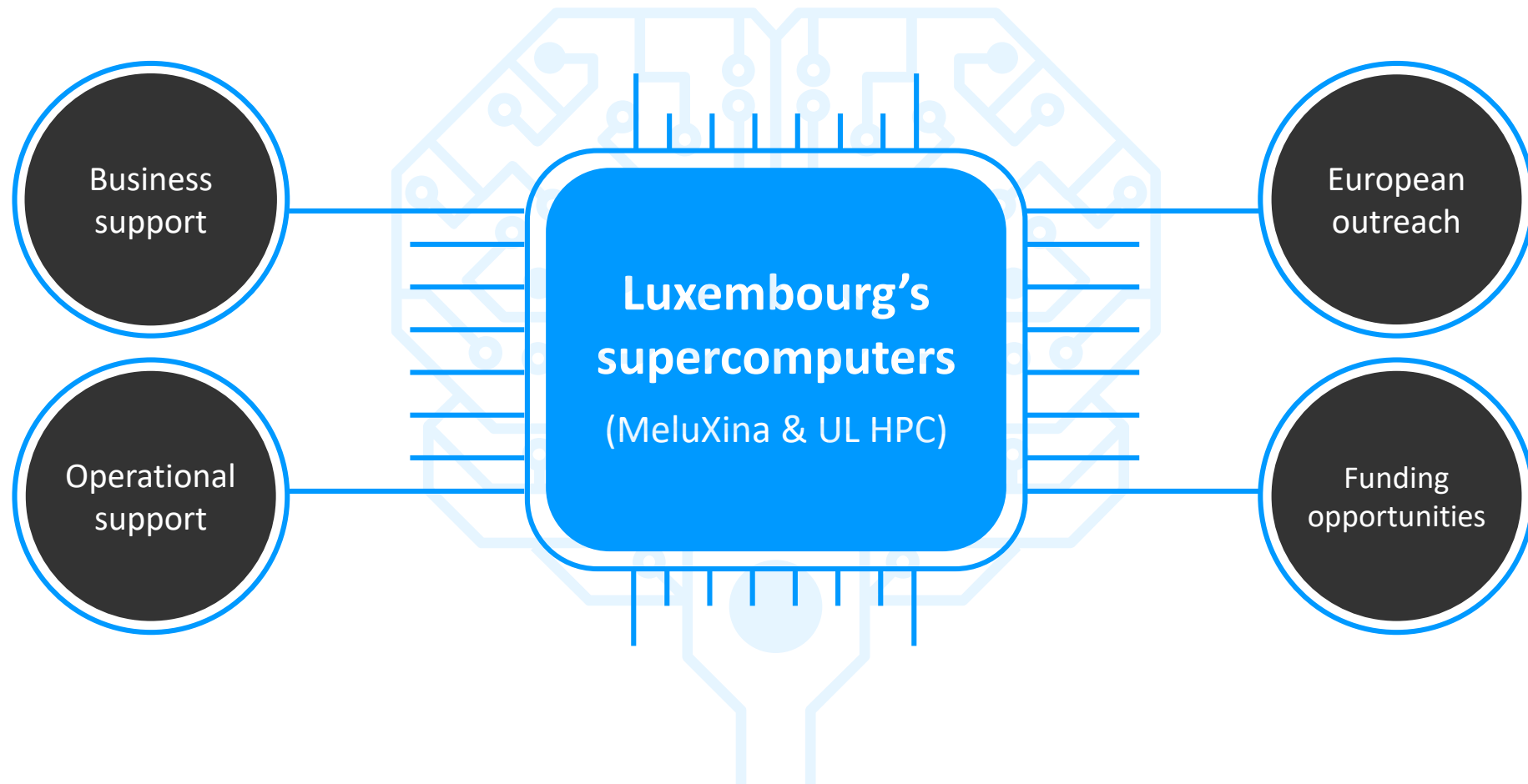
Luxembourg's contact point for
high performance computing
and **data analytics**



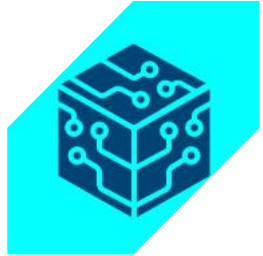
Set up a **network of national
competence centres in HPC**
across **Europe**



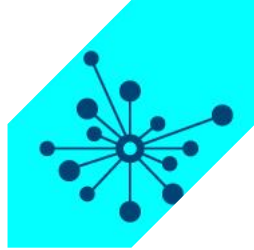
Foster HPC ecosystem in Luxembourg



What to do with HPC?



**SIMULATIONS &
MODELLING**



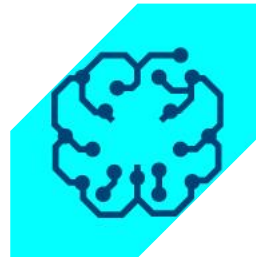
**BIG DATA ANALYTICS &
VISUALISATION**



**PREDICTIONS &
FORECASTING**

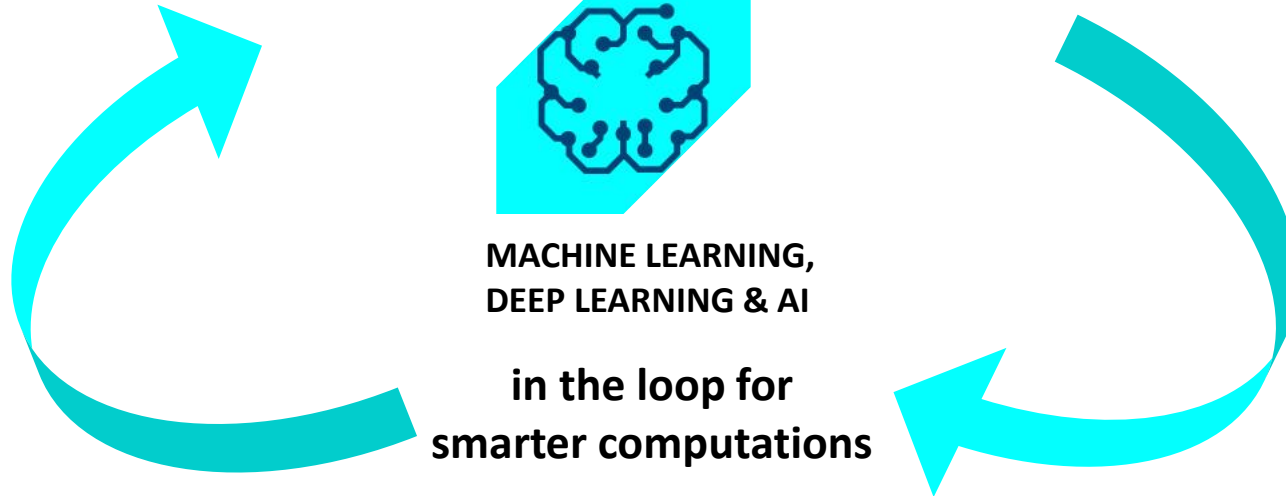


**VIRTUAL TESTING &
OPTIMISATION**

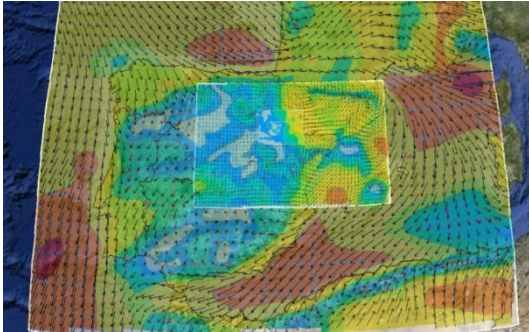


**MACHINE LEARNING,
DEEP LEARNING & AI**

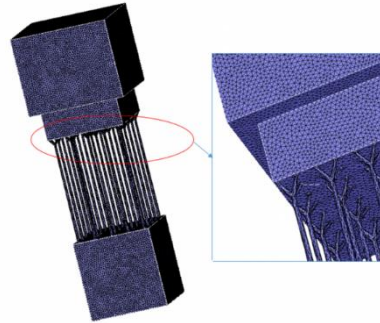
**in the loop for
smarter computations**



HPC use cases examples



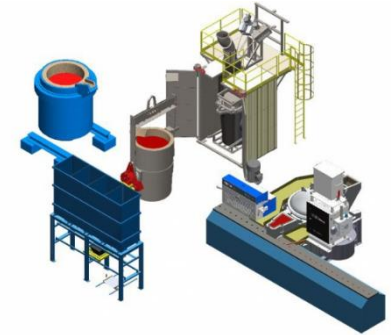
Best position for small wind turbines or solar panels



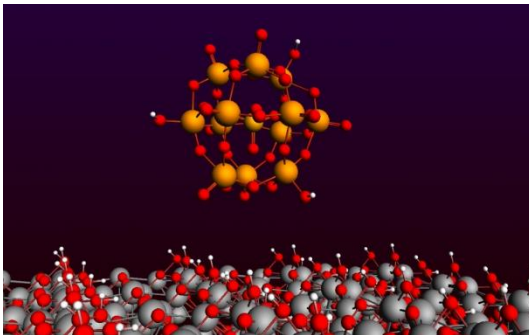
Simulation of additive manufacturing process



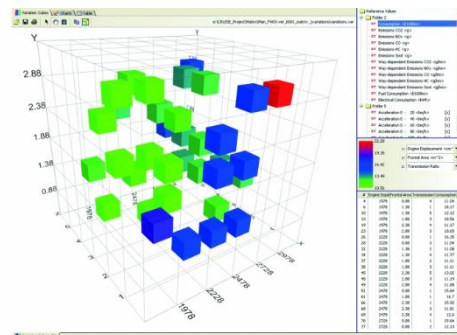
Optimise logistic choices



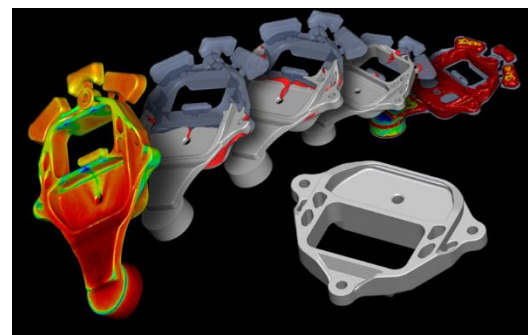
Reduce waste rate in production processes



Simulation of the thermodynamic properties of chemicals



Reduction of CO2 emissions in the design of vehicles



Simulation of metal casting for moulds design



Smart Retail Recommendation Engine (AI algorithm)

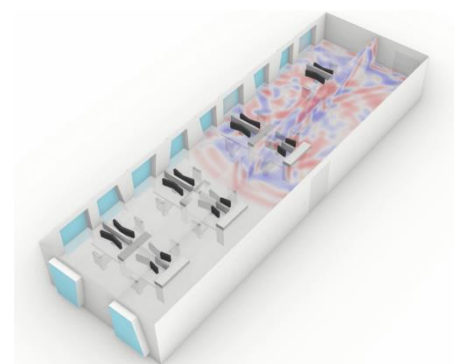
HPC use cases examples



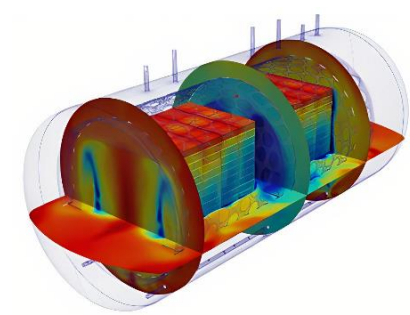
Predictive maintenance of machines and tools



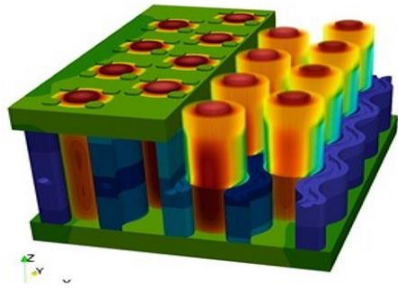
Geospatial intelligence based on AI algorithms



Architectural acoustic simulation



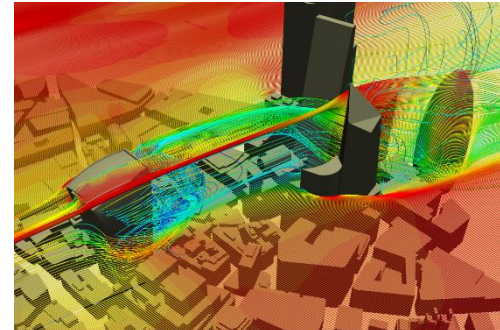
Simulate canned food dynamics



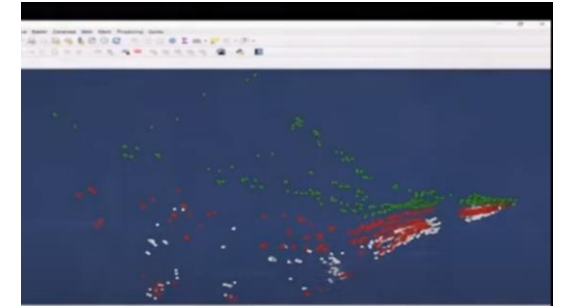
Improved battery materials using molecular modelling



Reservoir monitoring through satellite data (AI algorithm)



Simulation of Pedestrian Urban Microclimate & comfort



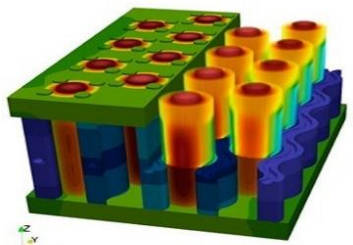
Navigation system for maritime litter hunting

Joint Call High Performance Computing

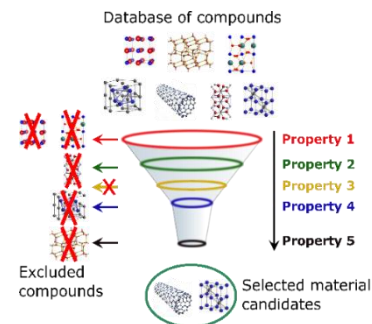
Scope:

Supporting consortia to take advantage of high-performance computing (HPC) capacities in their research field.

- **Integrating computer-aided engineering, design and analytics** as well as HPC into company's **internal innovation process**
- Implementation of **high quality** and **innovative** applied research projects based on HPC



Improved **battery materials** using **molecular modelling**



Workflow for **high-throughput computation**

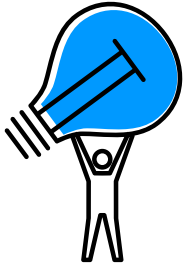
Context:

HPC is an **innovation accelerator** offering enormous potential

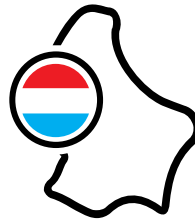
- Simulation and virtual prototyping
- Large and complex problems with many parameters
- Big data analytics and training of AI algorithms
- ...

Call Objectives – in a nutshell

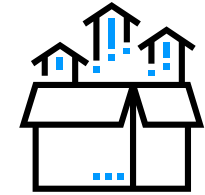
Facilitating **collaborative projects** between public research institutions and companies to jointly produce applied research results **based on HPC infrastructures** that are **valuable for both parties**



Address new or different research questions that lead to **innovation** and **sustainable value creation**



Increase the **attractiveness** of Luxembourg as an **innovation hub** based on **advanced technology research on HPC**



Increase the **company's expertise** in HPC applications (e.g. modelling and simulation, data analysis, virtual testing, machine learning, AI..)

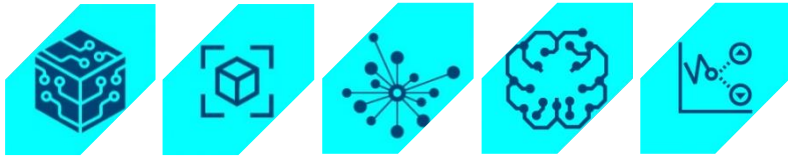
Industrial research only

Creation of a **sustainable knowledge gain**

Call Topics

Research projects must address innovative problems that **require large allocations of computing and data storage resources**.

HPC application fields



- Complex simulations with multiple parameters
- Virtual testing and optimization
- Big Data analytics and visualization
- AI and Machine Learning algorithms
- Predictions and forecasting of complex models

Thematic areas



- Manufacturing
- Advanced engineering
- Materials
- Energy and environmental technologies
- Telecommunications

Target companies



- Substantial expertise in computer-aided R&D
- little or no expertise in HPC

Eligibility Criteria

Companies

Only **private enterprises registered in Luxembourg** are **eligible** for direct funding by the Ministry of the Economy.

The company:

- Must demonstrate its **viability and financial soundness** regarding its contribution to the project
- Shall demonstrate the **positive impact of the expected project outcome** on its growth and future assets

Ineligible companies

Undertakings in difficulty

For all companies (excluding SME < 3 year of existence), if more than half of subscribed share capital (share premium included) has disappeared as a result of accumulated losses.

Example of an **undertaking in difficulty**:

Own funds of €50k
Share capital of €200k

Eligibility Criteria

Public Research Organisations

Research organisations must be eligible under article 3-(2) of the FNR statute (Loi modifiée du 31 mai 1999 portant création d'un fonds national de la recherche dans le secteur public) and be registered at the FNR.

- Public institutions performing research in Luxembourg
- Non-profit associations, societal impact companies ([SIS](#)), and foundations engaged in research in Luxembourg and accredited by the Ministry of Higher Education and Research

The PI must be employed by one of the public research institutions in Luxembourg with a work contract covering the full duration of the project

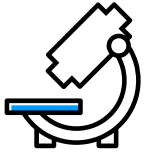
If an established co-ownership agreement between the public institution and the industrial partner exists, there should be a commercialization agreement put in place

In general, FNR BRIDGES General guidelines to be followed – [Link](#) (section 2)

Other public research inst.



Funding Conditions



R&D grants for public research organisations



Max 400k EUR per project
(collaboration with
companies)

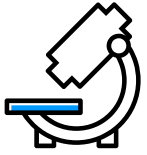


Aid rates up to 100%

Project eligible costs –
[FNR financial regulations](#)

24 months to 36 months

Funding Conditions



R&D grants for public research organisations



Max 400k EUR per project
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Aid rates up to 100%

Project eligible costs –
[FNR financial regulations](#)

24 months to 36 months



R&D aid schemes for companies



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Économie



35% upfront
payment (call
specific)



Max 700k EUR per project
(collaboration with
research institute)



Aid rates up to 80%
of eligible costs

Aid intensities

Industrial research

- *Acquisition of new knowledge*
- *No direct commercial application*

Size of the company

Large	Medium	Small
≤ 65%	≤ 75%	≤ 80%

Submission and Evaluation Process – Call Timeline

15.09.22

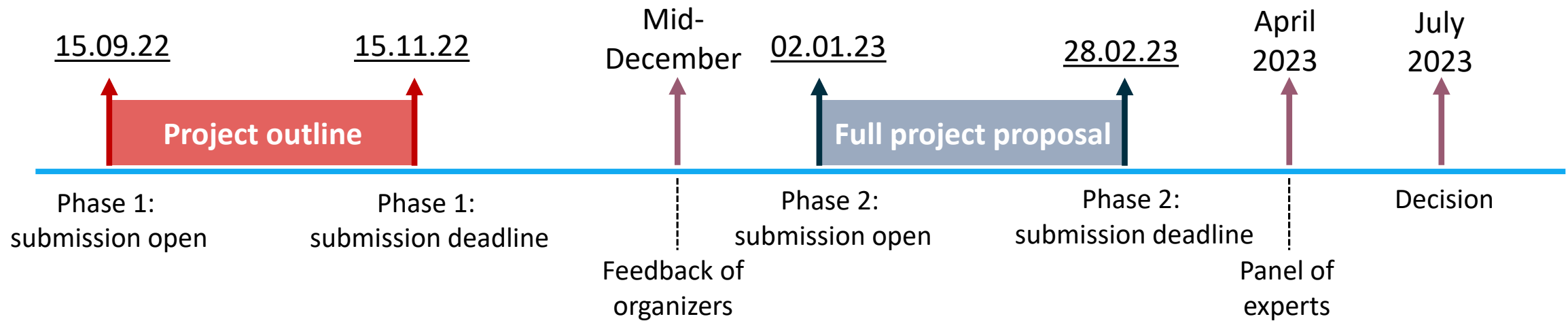
15.11.22

02.01.23

28.02.23

PHASE-1 Project Outline (PO)		PHASE-2 Full Project Proposal (FPP)	
Submission	Evaluation	Submission	Evaluation
(1) PO submission on the research-industry collaboration platform	(1) PO review by granting authorities	(1) Coaching by LXI for companies	(1) Review by Independent expert panel (IEP)
	(2) Eligibility and financial viability check by LXI	(2) FPP submission on - MyGuichet (companies) - FNR grant system platform (research organisations)	(2) Recommendation on projects for award decision
	(3) GO/NO GO decision, including potential recommendations, towards PHASE-2		(3) State aid Commission for company projects (4) FNR/MECO Joint Funding decision

Submission and Evaluation Process – Call Timeline



Submission and Evaluation Process:

Qualification for PHASE-1

Pre-selection criteria

All

- If the project is in line with the call topic
- If the benefits of using HPC are consistent with the call objectives and topic
- Completeness of compulsory information

Companies

- State aid eligibility
- Co-funding capacity

Ensure that the **project costs** are **adapted** to your **co-funding capacity**



Compulsory documents (annexes on platform)

All

- Project description, HPC related informations and cost estimation (on platform)
- CVs of main investigators

Companies

- Organigram - full visibility on the shareholder structure (up to the ultimate beneficial owner)
- 2020/2021 accounts of the applicant(s) and the linked entities
- Cash-flow forecast

(check full list in the call text)

Submission and Evaluation Process:

Evaluation in PHASE-2



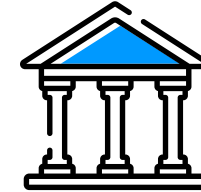
Full project proposal
(FPP) submitted to
MECO and FNR



Review of all FPP by
an independent
expert panel (IEP)



Recommendation
on projects to be
awarded



State aid commission
consultation

Evaluation criteria
of the joint call for
projects (next slide)

Evaluation & Submission process:

IEP Evaluation in PHASE-2

Check full list of
evaluation criteria in
the call text!

Relevance

- project idea clarity and pertinence of the objectives
- level of innovation and soundness of research approach
- Scientific and technical maturity

Implementation: quality and efficiency of the project plan

- coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources
- competences, experience and complementarity
- level of ambition of the collaboration and commitment of the participants
- management structures and procedures, quality of the risk management plan and soundness of the risk mitigation plan

Impact

- added value of the applied research
- Strengthening of the competitiveness and growth of the company involved
- Contribution of the project to the advancement of knowledge in the field of HPC

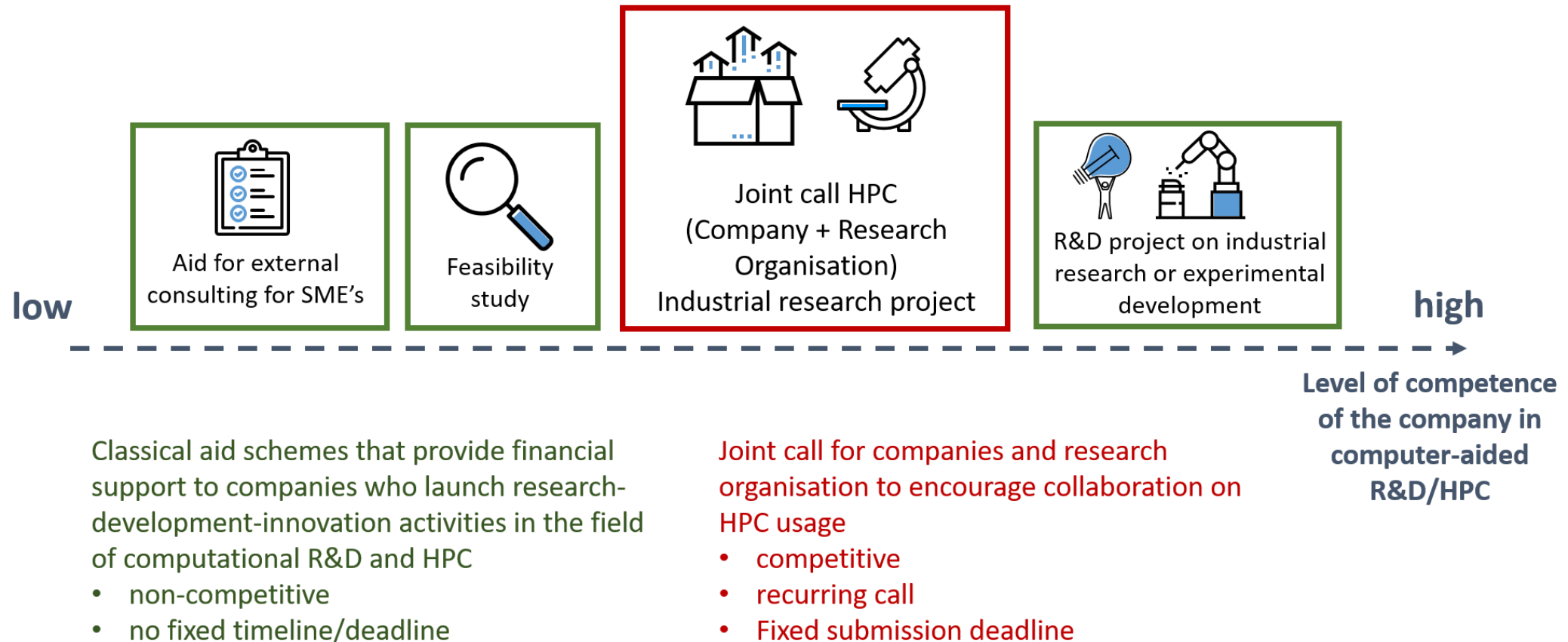
Joint Call HPC Initiative

Various aid schemes to foster computational R&D and HPC usage



Joint Call HPC Initiative

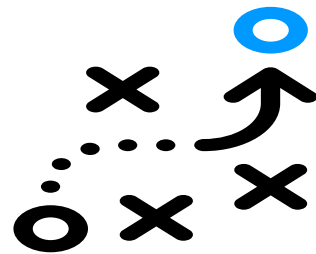
Various aid schemes to foster computational R&D and HPC usage



Luxinnovation support

Phase-1

- Awareness raising on eligibility and financial viability checks
 - Q&A sessions
 - Completeness check



Phase-2

- Stress test (company / project)
 - innovative nature
 - business model / exploitation plan
 - financial capacity of the company
 - (eligibility criteria)
- Accompanying project measures
 - intellectual property
 - project scope and structure
 - competences and relationship building
 - project financing (subsidies, loans, etc.)

Luxinnovation support – save the dates



Q&A session 1: Main eligibility criteria and the eligible project costs for the Joint Call HPC

- Shareholder structure and accounts – how to consolidate data?
- Project costs – how to estimate?
- Q&A



Q&A session 2: Cofunding capacity for projects within the Joint Call HPC

- Cofunding capacity – how to assess own capacity with regards to total project costs?
- Cash-flow forecast – what to prepare?
- Q&A



Q&A session 3: Completeness check before the submission for the first phase of the Joint Call HPC

- Required attachments
- Q&A



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Research Industry Collaboration

Aims at increasing collaboration among research organizations, the business sector and society as a whole with the aim of meeting Luxembourg's major societal challenges and strengthening national competitiveness.

[Discover more](#)

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alexander.link@luxinnovation.lu

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Stay signed in ☐

Login

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No account yet?

Create your account to benefit from all the functionalities of the platform and be able to interact with the listed organisations.

Sign up

Step: 1

Create your account on

<https://research-industry-collaboration.lu/>

Step: 2

Select the Joint call HPC

Joint call High Performance Computing

The Ministry of the Economy, the National Research Fund (“granting authorities”) and Luxinnovation have joined forces to offer companies and research institutions a new funding opportunity that supports consortia to take advantage of high-performance computing (HPC) capacities in their research field.



Starting date
15 September 2022



Application deadline before
15 November 2022

**Step: 3**

View all the ideas
being explored

To have access to all the ideas
already proposed, you need to log
in.

[Browse ideas >](#)

Browse existing
project ideas



Do you have a project
idea you would like to
explore?

Tell us about it! We will help you to
get in touch with the right partners
for the realisation of your idea.

[Share an idea >](#)

Find partner for
your project idea



Do you have a concrete
project you would like
to start?

Do you have a project idea and
have already identified project
partners? Apply right now.

[Apply >](#)

Create your
application for
phase-1

Q&A

Thank you!



Create your projects on the [research-industry collaboration platform](#)

Questions on joint call to be addressed at contact@research-industry-collaboration.lu

Questions related to research organisations:
<https://www.fnr.lu/funding-instruments/joint-call-HPC/>



www.luxinnovation.lu



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