



# HPC for SMEs - Training Programme

## Region specific - Romania

Developed by SME HPC consortium within Erasmus+ strategic project

[smehpc.eu](http://smehpc.eu)

Short description: region-specific training programme was developed with the aim of enhancing innovativeness in less developed regions by co-designing the High-Performance Computing Training Programme.



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## Enabling SMEs to gain competitive advantage from the use of HPC (SME/HPC)

### HPC for SMEs – Training Programme Romania

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*Introductory note: The rationale of the changes for Romania region consists in the lack of experience and knowledge of Romanian SMEs in dealing with HPC. In this case, our proposal is to have a training programme introducing the concept of HPC and its benefits for business development, informing the SMEs on the EU and RO landscape and ecosystem, exposing them to concrete experiences, teaching them how to contact a provider and what to ask for and facilitating their networking with national providers.*

*Before the training, the data on the companies should be collected to assure best tailor-made content e.g. branch, existing knowledge, function of the person in the company.*

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**Programme description:** The aim of the HPC for SME Programme is to support SMEs to become familiar with high performance computing (HPC) technologies by:

- informing them on the possibilities of using HPC , thee benefits and expected business impact
- facilitating their access to knowledge on national and international landscapes for HPC
- introducing the basic concepts of HPC infrastructure and programming.

#### **Audience**

- managers
- technical personnel

#### **Objectives**

- To raise awareness on practical HPC benefits and potential for business
- To support SMEs to understand how they can use HPC tools
- To increase the access of SMEs to experts working with HPC

**Learning outcomes** - at the end of this programme the participant will:

- become familiar with supercomputers and HPC concepts
- have knowledge on what they can require from a group/organisation holding a HPC infrastructure
- be able to understand HPC usage opportunities for SME
- be able to identify SMEs opportunities for HPC usage
- be informed on the HPC landscape in Romania and internationally

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**List of topics**

- Introducing high performance computing. What is and how it can support SMEs to grow?
- National and international landscape of HPC
- HPC “Walkshop”
- SME/HPC provider relationship management

**Prerequisites:** none

**Programme Duration** – 16 hours

**Programme leader:** self-study with optional mentoring & supervision of experts from HPC centre

**Delivery method:** face-to-face and online

**Outcome:** HPC Training for SMEs



<b>I Basic</b>	<b>Introducing high performance computing. What is and how it can support SMEs to grow?</b>		<b>Duration:</b> 4h <b>Learning Method:</b> Lecture, panel discussions, working groups
	<p><b>Description</b> – participants will learn about HPC &amp; HPC processes, infrastructure and usage opportunities. The goal is to raise awareness of the SME on HPC and to inform them how HPC can help them to solve their needs and to support business development. They will see some examples of SMEs success stories, for better understanding of good practice of HPC usage.</p> <p><b>Objective</b></p> <ul style="list-style-type: none"> <li>- To train SME staff to understand what HPC is (who operates it, what, why, how)</li> <li>- To provide SME staff knowledge to identify HPC opportunities and usability</li> </ul> <p><b>Learning outcomes</b> – at the end of this topic participants will:</p> <ul style="list-style-type: none"> <li>- gain the understanding of HPC usability for SMEs</li> <li>- have access to good practices of HPC usage</li> <li>- gain the basic knowledge to identify HPC opportunities for solving business problems</li> </ul> <p><b>Resources:</b> PC with projector, theatre room, personal laptops/computer lab <b>Course material:</b> PPTs, videos, etc.</p>		
	<b>Topics</b>		
	Topic 1	<b>Introduction to High Performance Computing (HPC)</b>	
		What is High Performance Computing?	
		Why is HPC important?	
		In which domains can be HPC used? Use cases.	
	Break		
	Topic 2	<b>Benefits of HPC for business</b>	
		How can HPC integrated in the business activity?	
<ul style="list-style-type: none"> <li>- Are SMEs ready for HPC?</li> <li>- Prerequisites to integrate HPC</li> <li>- Concrete steps</li> </ul>			
What kind of problems/needs can be solved through HPC?			
What is the potential of HPC for business development?			
Break			
Topic 3	<b>Success stories (2-3 local success stories)</b>		



<b>II Basic</b>	<b>National and international landscapes</b>		<b>Duration:</b> 4 hours total <b>Learning Method:</b> Lecture, panel discussions, working groups
	<b>Description</b> – Participants will gain knowledge on the national and international HPC landscape. The topics selected will make it easier for SMEs to have an overview of the national and international landscapes for HPC, the focus being on the relevant actors, funding source, providers, infrastructure and networks.		
	<b>Objective</b>		
	<ul style="list-style-type: none"> <li>- To inform SMEs on the national and international landscapes for HPC</li> <li>- To understand how the ecosystem looks</li> </ul>		
	<b>Learning outcomes</b> – at the end of this topic participants will:		
	<ul style="list-style-type: none"> <li>- know the situation of HPC in Romania and Europe</li> <li>- have an overview on the HPC ecosystem</li> </ul>		
	<b>Resources:</b> PC with projector, theatre room, personal laptops/computer lab		
	<b>Course material:</b> PPTs, videos, etc.		
	<b>Topics</b>		
	Topic 1	<b>European landscape for HPC</b>	
	What is the position of HPC among the EU initiatives?		
	What are the metrics measuring HPC in Europe?		
	What are the main European actors and infrastructures?		
	Funding opportunities		
Break			
Topic 2	<b>Romanian landscape for HPC</b>		
	What is the position of HPC in the Romanian innovation system?		
	How Romania is performing at international level?		
	In which domains is HPC most used?		
	What are the main Romanian actors and infrastructures?		
	Funding opportunities		



III Basic	HPC “Walkshop”		<b>Duration:</b> 2h
	<b>Learning Method:</b> study visit, open debate		
	<b>Description</b> – This activity will consist in a study-visit to at least one HPC infrastructure.		
	<b>Objective</b>		
	<ul style="list-style-type: none"> <li>- To expose people to practical experience</li> <li>- To better understand what HPC infrastructure is and how it works</li> </ul>		
	<b>Learning outcomes</b> – at the end of this topic participants will:		
	<ul style="list-style-type: none"> <li>-have a deeper understanding on what HPC infrastructure is</li> <li>-gain new connections and insights on HPC</li> </ul>		
<b>Resources:</b> HPC infrastructure; transport options			
<b>Course material:</b> discours			
<b>Topics</b>			
Topic 1		<b>Visit to local HPC infrastructures</b>	
		Visit to a HPC infrastructures (mandatory)	
		Visit to a second HPC infrastructure (optional)	
Topic 2		<b>Reflections on potential to integrate HPC in SMEs</b>	
		Free discussions	
IV Basic	<b>SME/HPC provider relationship management</b>		<b>Duration:</b> 6 hours
	<b>Learning Method:</b> Lecture, panel discussions, working groups, networking		
	<b>Description</b> – this part of the training is dedicated to teach SMEs how to manage the relationship with the HPC providers, what they can request from a group which manage an HPC infrastructure.		
	<b>Objective</b>		
	<ul style="list-style-type: none"> <li>- To teach SMEs what they can request from an HPC infrastructure</li> <li>- To provide insights on how SME-HPC providers can cooperate</li> </ul>		
	<b>Learning outcomes</b> – at the end of this topic participants will:		
	<ul style="list-style-type: none"> <li>-learn how to manage the relationship with HPC providers</li> <li>-know what to request from HPC providers</li> </ul>		
<b>Resources:</b> PC with projector, theatre room, personal laptops/computer lab			
<b>Course material:</b> PPTs, videos, etc.			
<b>Topics</b>			
Topic 1		<b>Finding and approaching HPC providers</b>	
		How and Where HPC providers can be found?	
		How to approach an HPC provider?	
		Case studies. Presentations of local HPC providers offers	

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	Break	
	Topic 2	<b>What to request from an HPC provider?</b>
		What to expect from a HPC provider?
		Type of request
		Information to request
	Break	
	Topic 3	<b>Role play: SMEs requesting support to a regional provider to solve a specific problem</b>
	Topic 4	<b>Matchmaking between SMEs and regional providers</b>