SLING – National Competence Centre
EuroCC 2 | 2023 – 2025

Three Years of HPC Training in Slovenia:

Lessons from Slovenia's National Competence Centre

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Based on the paper submitted to MIPRO 2026 International Convention

115	3,234	55+	20+
training activities	participant visits	collaborations	countries reached

Why Does HPC Training Matter?

High-performance computing (HPC) – the use of powerful supercomputers to solve complex scientific and engineering problems – is becoming an essential skill for researchers, engineers, and data scientists across almost every discipline. Yet access to HPC training has historically been limited and uneven across Europe.

The European High-Performance Computing Joint Undertaking (EuroHPC JU) addressed this challenge through the EuroCC project, establishing National Competence Centres (NCCs) in participating countries to strengthen HPC uptake, training, and support services. The initiative began with EuroCC (2020–2022), which focused on establishing the NCC network and building national capacities. This was followed by EuroCC 2 (2023–2026), implemented under the European Union's Digital Europe Programme, which aimed to consolidate and expand these activities while addressing differences in HPC maturity across Europe through closer collaboration, knowledge sharing, and the development of sustainable operational frameworks.

EuroHPC Joint Undertaking
REPUBLIC OF SLOVENIA MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION

This project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 101101903. The JU receives support from the Digital Europe Programme and Germany, Bulgaria, Austria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, France, Netherlands, Belgium, Luxembourg, Slovakia, Norway, Türkiye, Republic of North Macedonia, Iceland, Montenegro, Serbia.

This article summarises three years of hands-on experience (2023–2025) in delivering HPC training across Slovenia and beyond, highlighting key outcomes and lessons learned from NCC SLING's activities within the EuroCC 2 project. The findings are based on results presented at MIPRO 2026 confernce.

What Did We Actually Do?

A Growing Programme

Over the three-year period, the training programme grew significantly. In 2023, we organised 23 activities (19 training courses and 4 seminars). By 2024, that number had more than doubled to 50 activities before stabilising at 42 in 2025. Altogether, 115 training events were delivered during the project period.

Training activities closely followed the academic calendar, with spring (April–May) and autumn (September–November) representing the busiest periods. Participation typically slowed during August due to national holidays.

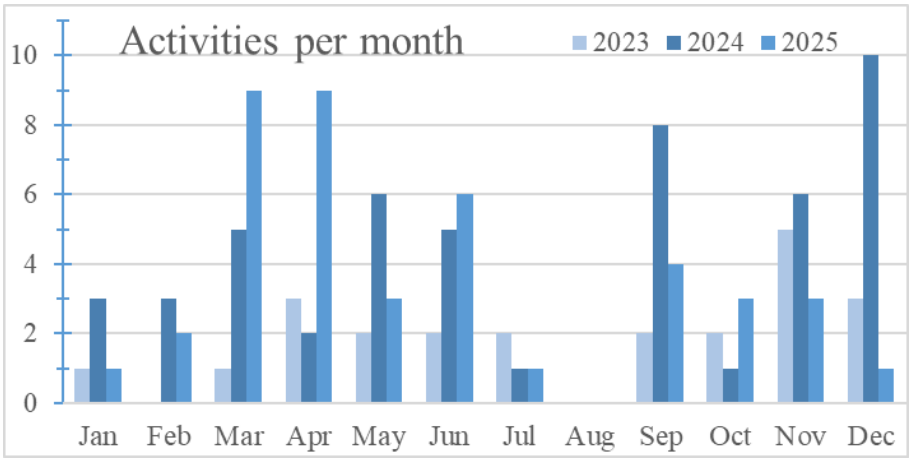

Figure 1: Number of training activities at NCC SLING, 2023–2025

Three Levels for Three Audiences

All training activities were organised into three levels, ensuring relevant learning opportunities for everyone, from curious undergraduates to experienced researchers::

- **Basic – Linux, parallel architectures, job scheduling; ideal for beginners.**
- **Advanced – MPI, OpenMP, and performance optimisation; for participants ready to deepen their knowledge..**
- **Expert – cutting-edge, specialised topics co-developed with international partners.**

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Across all three years, approximately half of all workshops were delivered at the Basic level, 40% at the Advanced level, and 7% at the Expert level. This balance was deliberately maintained to support a diverse learner community.

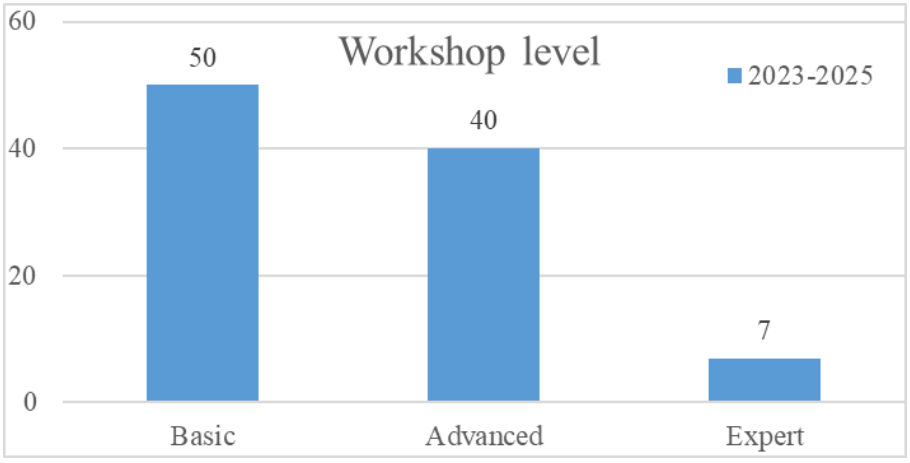

Figure 2: Distribution of training levels at NCC SLING, 2023–2025

Who Participated?

Rapid Growth in Numbers

Participation increased dramatically over the three years, rising from 286 attendee visits in 2023 to 1,255 in 2024 and 1,693 in 2025.This growth reflects both expanding outreach and growing demand for HPC skills.

Key participation facts

- 78% of participants attended one event; 22% returned for additional training..
- Some learners attended up to 10 events, forming a committed core community.
- Repeat participation is a strong indicator of the programme's relevance.

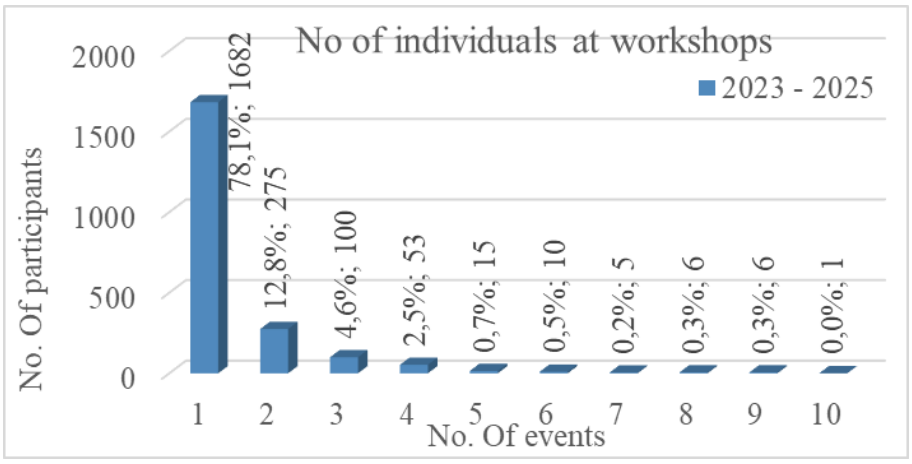

Figure 3: Repeat participation at NCC SLING training events, 2023–2025

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Who Were They?

Academia accounted for the majority of participants (75%), including students, researchers, and academic staff. Industry represented 11% of participants, growing from almost zero in 2023 to nearly 12% by 2025, driven by the introduction of more application-oriented content. The public sector contributed a stable 10%.

In terms of educational background, most participants were MSc (36%) or PhD (31%) students, with a meaningful 22% at BSc level and 8% from high schools.

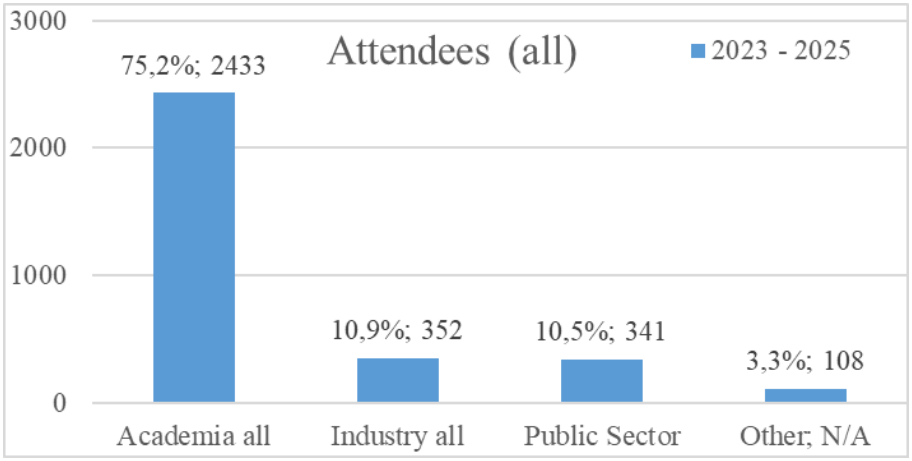

Figure 4: Sector background of participants at NCC SLING, 2023–2025

Gender Distribution

Male participants consistently accounted for approximately 74% of attendees, while female participants represented around 22% throughout the three-year period. This reflects systemic imbalances in engineering and computing education more broadly, and underlines the need for targeted outreach and inclusion strategies in the years ahead.

From Local to European

While NCC SLING's primary mission is to serve Slovenian learners, the programme's international footprint grew dramatically. Slovenian participants represented 93% of attendees in 2023, 77% in 2024, and 45% in 2025. In absolute numbers, domestic participation remained strong (722 Slovenians in 2025 alone), complemented by participants from over 20 European countries.

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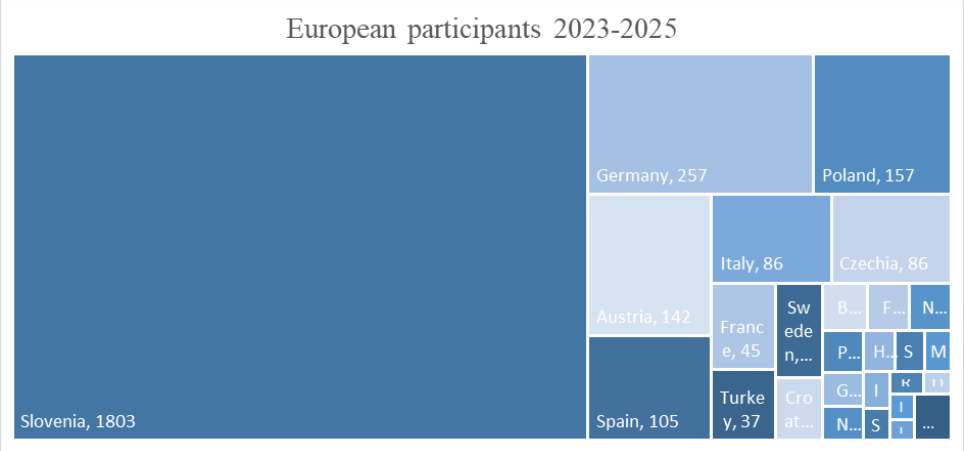

Figure 5: Geographic origin of participants at NCC SLING, 2023–2025

The Power of Collaboration

Nothing accelerated the programme more than partnerships. Collaborations grew from just 2 in 2023 to 33 in 2024 and 53 in 2025. The majority were with other EuroCC National Competence Centres, enabling joint course delivery, guest lectures, and shared resources. By 2025, more than half of NCC SLING's training activities involved at least one external collaborator.

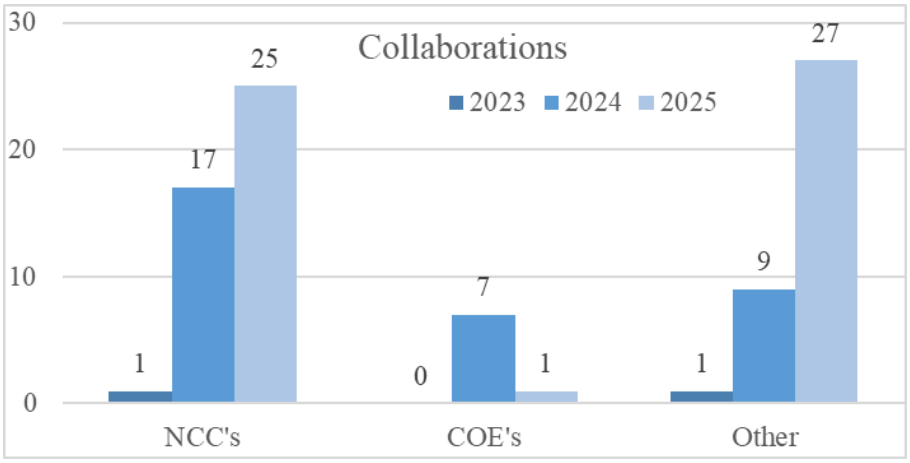

Figure 6: Collaborations at NCC SLING, 2023–2025

Five Lessons for HPC Education

- Structure your programme**. A clear Basic–Advanced–Expert progression helps learners identify the right entry point and reduces dropout.**
- **Repeat participation is a key success metric. When participants return, it indicates that the training is delivering real value.**
- Use real-world examples. **Courses linked to practical engineering and research challenges consistently attract larger audiences and receive stronger feedback.**

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- Collaborate as broadly as possible**. Partner NCCs, Centres of Excellence, and universities bring expertise and diversity that no single centre can provide alone..**
- **Inclusiveness needs active effort. Growth in participant numbers alone will not address gender gaps. Design targeted introductory sessions and highlight role models.**

Looking Ahead

The EuroCC 2 project demonstrated that a national HPC competence centre can build a scalable, internationally engaged, and educationally effective training programme – even starting from a small base.

Future priorities include deeper integration of HPC topics into formal engineering and scientific curricula, expanded industry-focused training, and more systematic evaluation of long-term learning outcomes and skills development.

Further information

Full paper: P. Tomšič, I. Vasileska – MIPRO 2026 International Convention, Opatija

NCC SLING / SLING: www.sling.si

EuroHPC Joint Undertaking: www.eurohpc-ju.europa.eu

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