



The POP Centre of Excellence in High Performance Computing

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EU H2020 Centre of Excellence (CoE)



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Performance Optimisation and Productivity

A Centre of Excellence in HPC

- Promotes best practices in parallel programming
 - Improving Parallel Software can add a lot of value: Reduced expenditure, faster results, novel solutions
 - **The POP Methodology** - a systematic approach to performance optimization building a quantitative picture of application behavior
- Free services for all EU/UK academic and industrial codes and users
 - Suggestions on improving code performance, described in a *Performance Assessment*
 - Practical help with code refactoring through a *Proof of Concept*



- A Team with
 - Excellence in performance tools and tuning
 - Excellence in programming models and practices
 - R & D background in real academic and industrial use cases

For further information, visit:



<https://www.pop-coe.eu>



pop@bsc.es



[@POP_HPC](https://twitter.com/POP_HPC)



youtube.com/POPHPC



POP Performance Monitoring Tools



Developing open-source tools

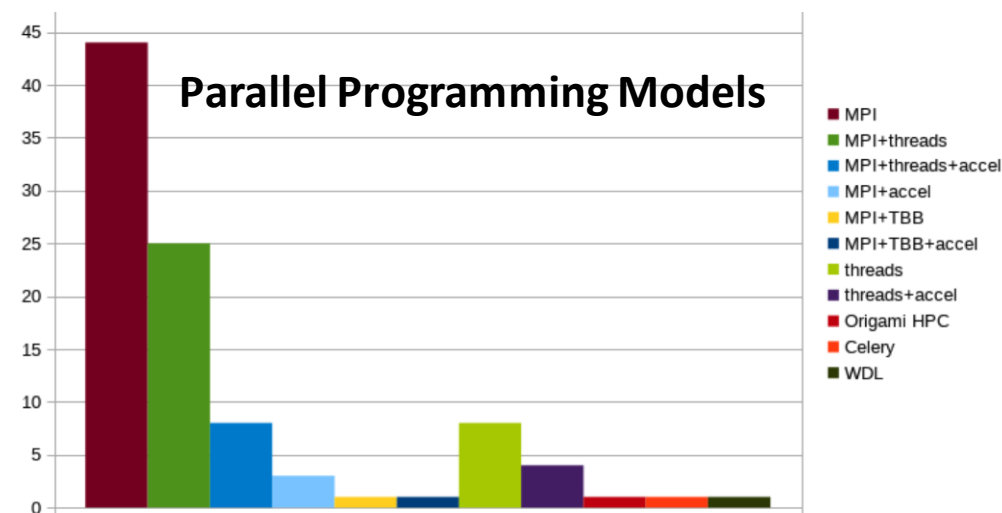
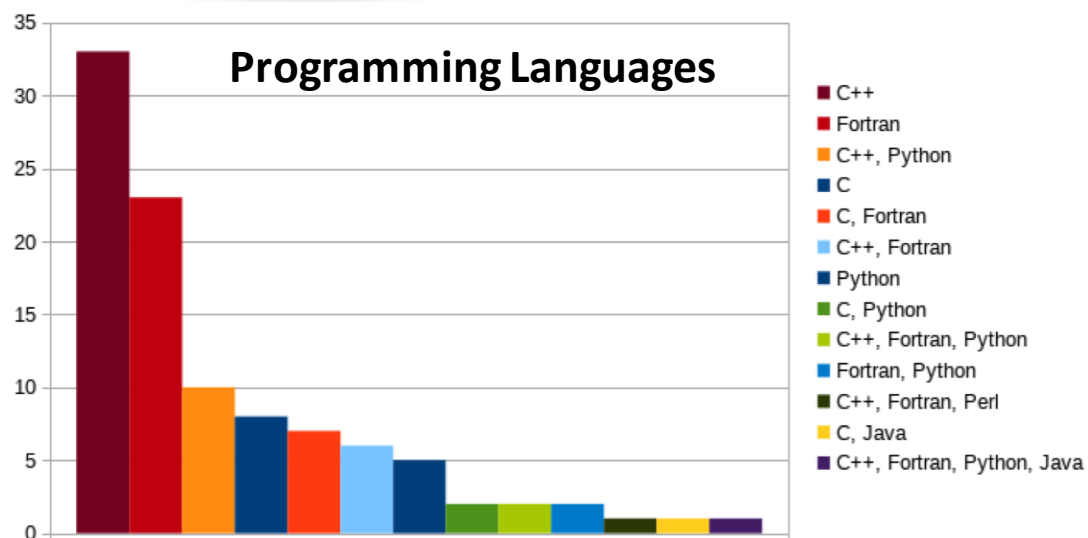
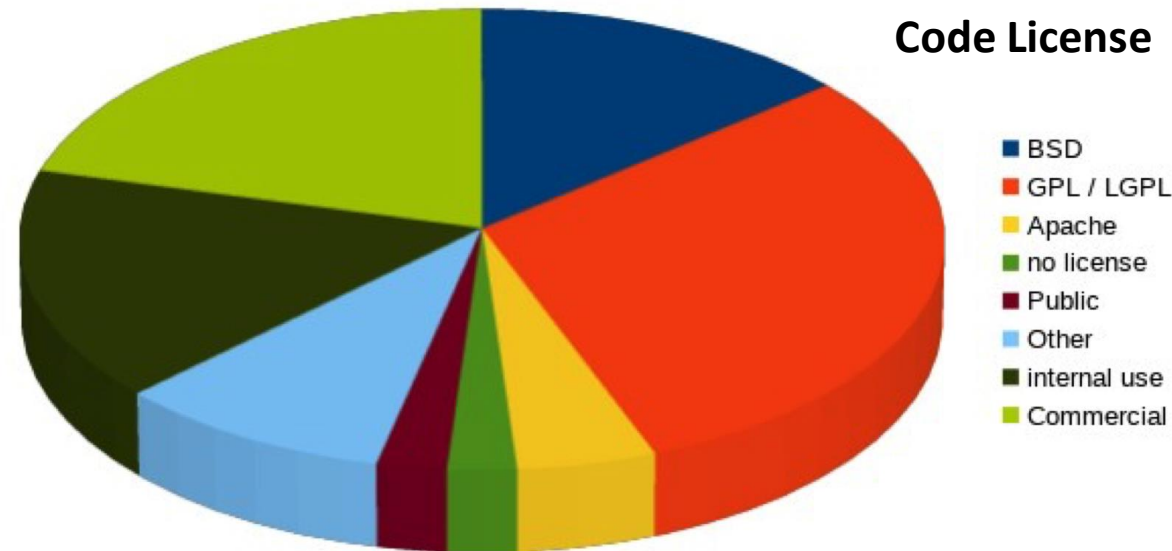
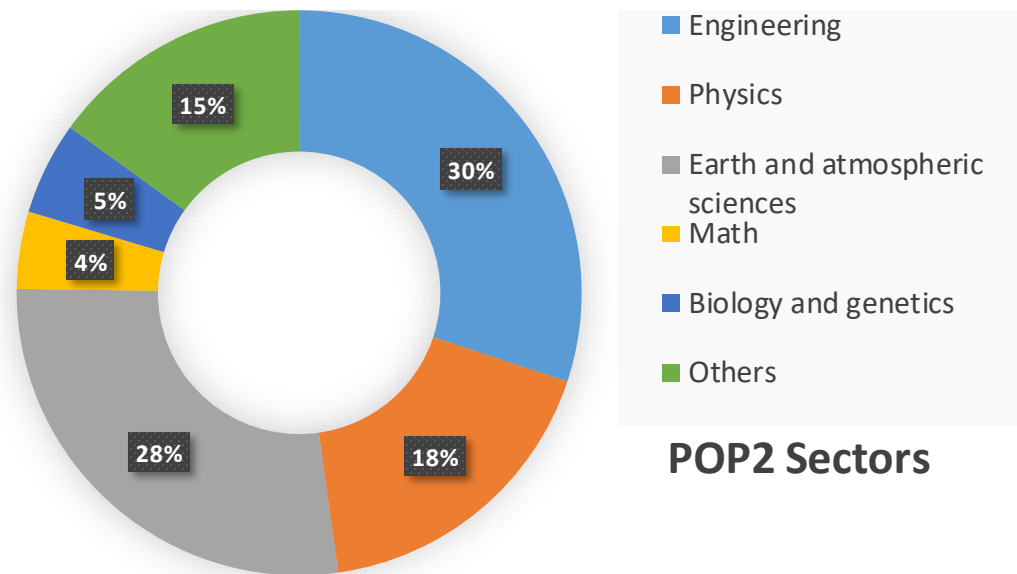
- **Extrae (tracing), Paraver (visualisation) & Dimemas**
 - <https://tools.bsc.es>
- **Score-P (profiling and tracing), Scalasca (Post Processing) & Cube (visualisation)**
 - <https://www.scalasca.org>
- MAQAO: synthetic reports and hints with a focus on core performance
 - <http://www.maqao.org>
- PyPOP: automated generation of POP metrics from Extrae traces
 - <https://github.com/numericalalgorithmsgroup/pypop>

For more help on how to use these tools and calculate the POP metrics

- See the POP website learning material & online training
 - <https://pop-coe.eu/further-information/learning-material>
 - <https://pop-coe.eu/further-information/online-training>



POP2 Services & HPC Codes



Source: POP2 D5.1 First Report on Analysis



Some Success Stories



- More than 350 services since 2015 across all domains
 - e.g. engineering, earth & atmospheric sciences, physics, biology and genetics

• See [⇒ https://pop-coe.eu/blog/tags/success-stories](https://pop-coe.eu/blog/tags/success-stories)



- Performance Improvements for SCM's ADF Modeling Suite



- **3x Speed Improvement** for zCFD Computational Fluid Dynamics Solver



- **25% Faster time-to-solution** for Urban Microclimate Simulations



- **2x performance improvement** for SCM ADF code



- Proof of Concept for BPMF leads to around **40% runtime reduction**



- POP audit helps developers **double their code performance**



- **10-fold scalability improvement** from POP services



- POP performance study improves performance **up to a factor 6**



- POP Proof-of-Concept study leads to **nearly 50% higher performance**



- POP Proof-of-Concept study leads to **10X performance improvement** for customer



POP invests in training HPC experts



Tutorials & workshops

- At key HPC conferences, for customers & in cooperation with other HPC initiatives
- Teaching methods:
 - from lecturing & demonstrating to bring-your-own-code activities
 - From half- or one-day conference tutorials to tuning workshops lasting up to a week

POP Online training course

- A series of self-study modules
 - For those with limited experience in performance analysis of HPC applications
- Freely Available at <https://pop-coe.eu/further-information/online-training>



Performance Optimisation and Productivity



**HPC
Best Practices
for Research
and Education**

**Collaboration with POP
to achieve academic
excellence**

- Performance optimisation for parallel research software, allowing better usage of universities' resources and creating capacity for solving more complex problems
- Learning materials and training workshops suitable for MSc level, Ph.D students and



POP achieved 10-fold scalability improvement

Available POP Online Training Modules



- [An Introduction to the POP Centre of Excellence](#)
- [Understanding Application Performance with the POP Metrics](#)



- Installing POP Tools: Extrae, Paraver
- Using POP Tools: Extrae and Paraver



- [Installing POP Tools: Score-P, Scalasca, Cube](#)
- [Using POP Tools: Score-P and Scalasca](#)
- [Using POP Tools: Cube](#)
- Computing the POP Metrics with Score-P, Scalasca, Cube



- [Computing the POP Metrics with PyPOP](#)

Target Customers

Success Stories

Customer Code List

Performance Reports

Further Information

Learning Material

Online Training

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Write your e-mail ...



Online Content



POP Website

www.pop-coe.eu

- All the information you need to access POP services
 - <https://pop-coe.eu/services>
- Blogs
- More Learning Materials
- Newsletter
 - subscribe and see past issues

YouTube Channel

<https://www.youtube.com/pophpc>

- Past Webinars
- POPCasts

The collage includes:

- A screenshot of the POP website's 'Request Service Form' page, showing fields for contact details, code, and further information.
- A screenshot of a performance analysis tool displaying a complex network graph with red and green nodes and edges.
- A screenshot of the POP HPC YouTube channel page, showing three videos: 'POPCast #1: The POP Centre of Excellence' (11:34), 'POPCast #2: The User Perspective' (9:24), and 'POPCast #3: The Role of the POP Application Analyst' (8:52).
- A screenshot of a blog post titled 'POP HPC' with various tags and a list of links.



WHPC: Women in HPC



- Membership
 - Individual
 - Chapters & affiliates
- Workshops at ISC & SC
- See <https://womeninhpc.org/>



ABOUT

COMMUNITY

WHPC

MEMBERSHIP

EVENTS

BLOG

sc's mission

whpc's vision is to provide equality for women working in high performance computing

MISSION

To promote, build and leverage a diverse and inclusive HPC workforce by enabling and energising those in the HPC community to increase the participation of women and highlight their contribution to the success of supercomputing. To ensure that women are treated fairly and have equal opportunities to succeed in their chosen HPC career. To ensure everyone understands the benefits of promoting and achieving inclusivity.

whpc's mission





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Contact:

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 [@POP_HPC](#)

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