Introduction

COMPAT
Computing Patterns for High Performance Multiscale Computing

ComPat is a science driven project. The urgent need to push the science forward, and stay world leading in simulation driven science and engineering is our major motivation.

- Identified three generic **multiscale computing patterns**: (*Extreme Scaling*, *Heterogeneous Multiscale Computing* and *Replica Computing*) as a generic layer between the applications and the (future/emerging) exascale computational environments.
- From the point of view of the applications, the patterns determine the ordering and composition of the single scale models that are coupled within a **multiscale application**.
- The main aim of patterns is to simplify the implementation of HPC multiscale applications and to variously enhance their efficient **development**, **deployment** and enhance the applications' stability and performance during execution in a **distributed HPC Execution Environment**.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 671564.

ComPat apps & tools

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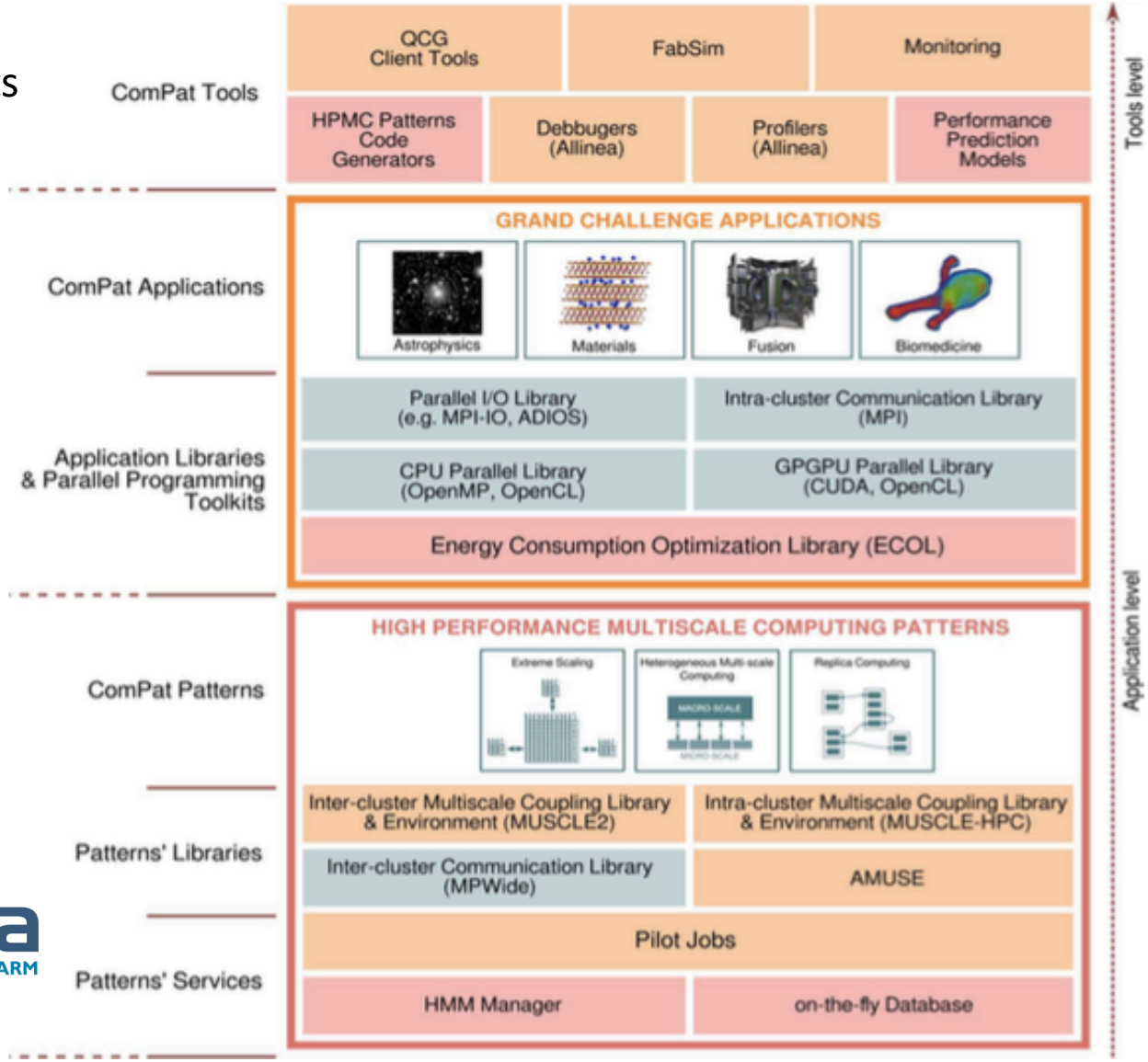
- HPMC Patterns enable toolkits to benefit from co-allocated HPC resources,
- develop startup wrapper scripts for multiscale apps,
- expose new capabilities (checkpointing, rescheduling, restarting) ,
- automatically prepare job descriptions and MML converters



MPWide
MUSCLE2 multiscale coupling library & environment
allinea Now part of ARM
AMUSE

ComPat environment

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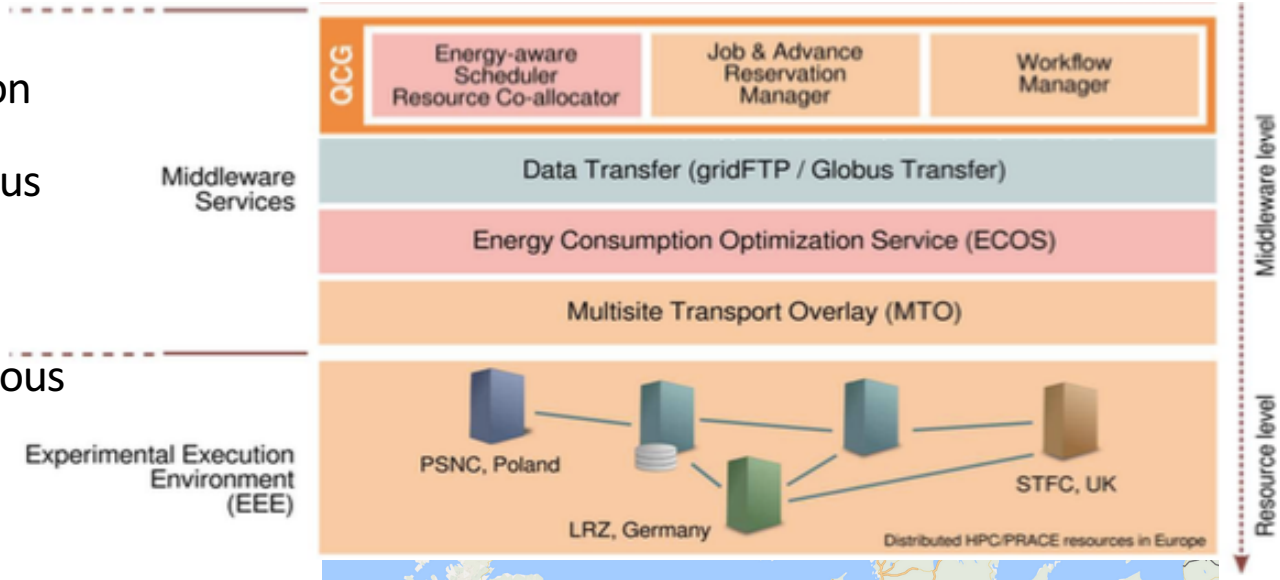
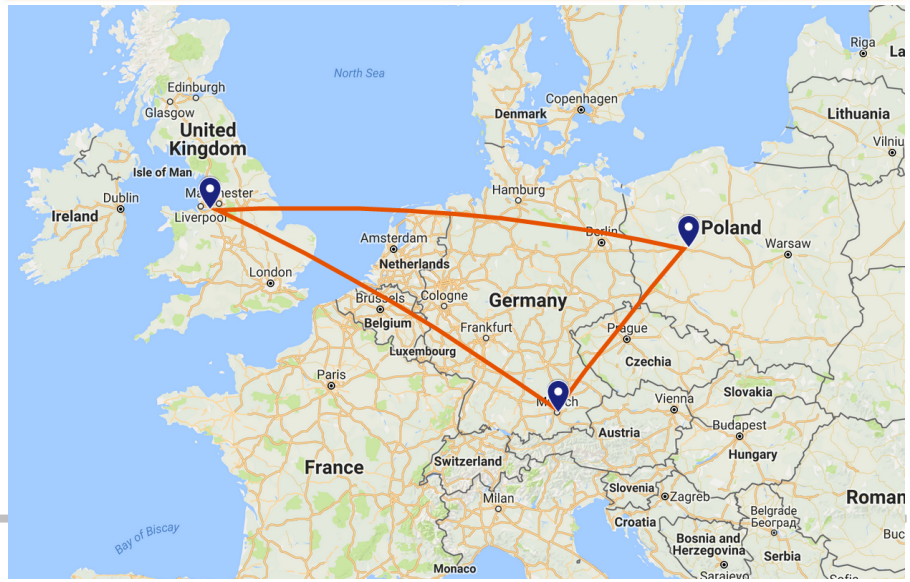
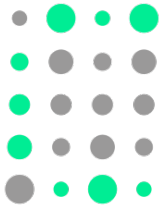
- Multi-domain logical integration of HPC resources by ensuring interoperability between various access services (both at middleware and LRMS levels),
- Quality of Service by providing means for co-allocation of various types of HPC resources
- Advanced workflows management, fault tolerance, load balancing
- Fully transparent integration with multiscale coupling libraries and tools
- Energy consumption optimization





QCG quality in cloud and grid



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Thank You!

More at http://www.compat-project.eu

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