EPEEC
PRODUCTIVITY AT EXASCALE

European joint Effort toward a Highly Productive Programming Environment for Heterogeneous Exascale Computing · October 2018 – September 2021
Grant Agreement ID: 801051 – Start Date: 1 October 2018 – End Date: 30 September 2021 – Overall Budget: € 3.990.700 – Coordinator: Barcelona Supercomputing Center (BSC)

Productivity at Exascale

EPEEC's main goal is to develop and deploy a production-ready parallel programming environment that turns upcoming overwhelmingly-heterogeneous exascale supercomputers into manageable platforms for domain application developers.

Objectives

High Coding Productivity

A set of tools that can exploit the full power of the emerging hardware by turning them into manageable platforms for domain application developers

High Performance

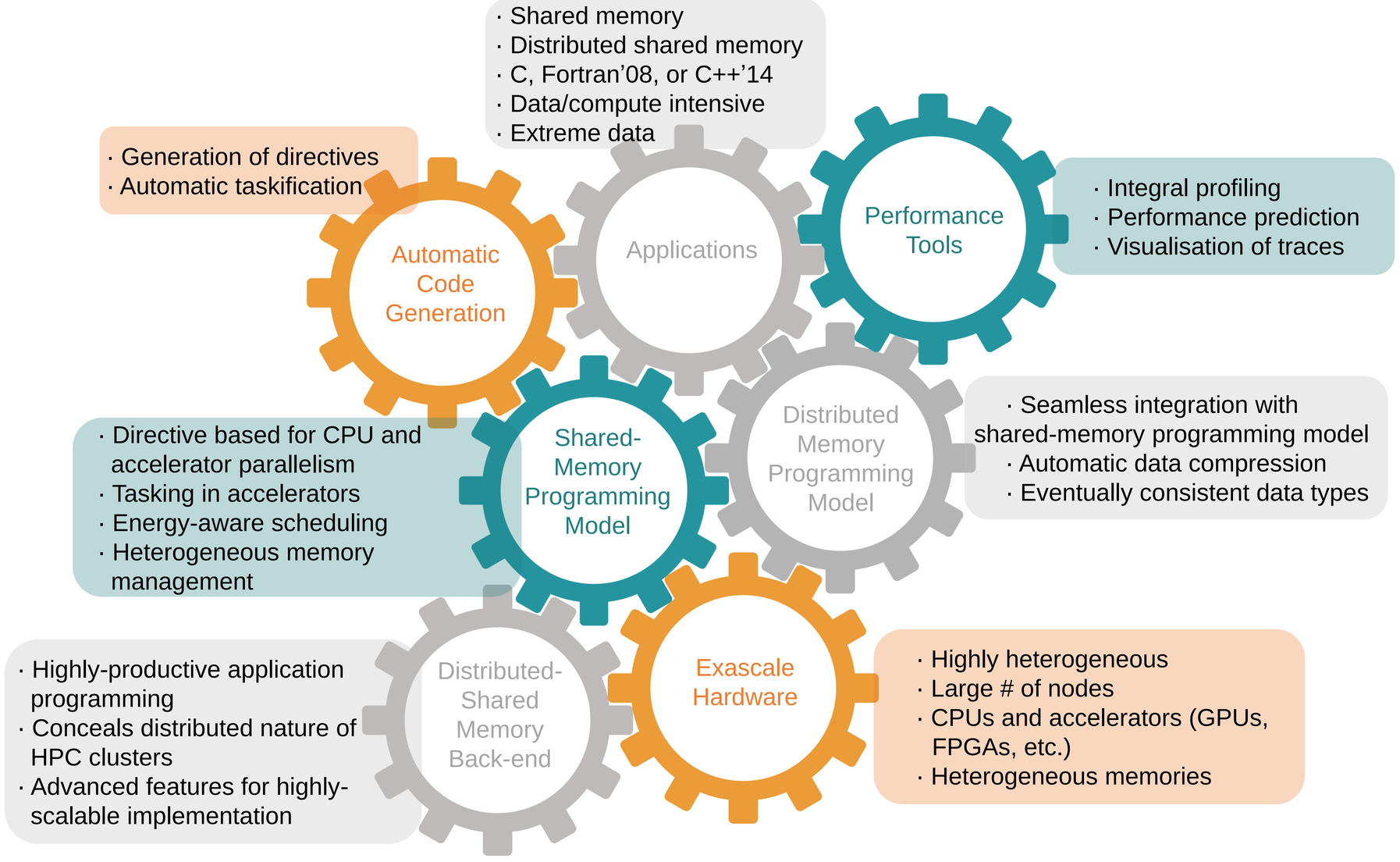
A programming environment with all relevant functionality at TRL8 for current pre-exascale systems and TRL4 for exascale platforms

Energy Awareness

Efficient and energy-aware management of hardware heterogeneity, both in terms of processing elements and memory subsystems further favouring coding productivity

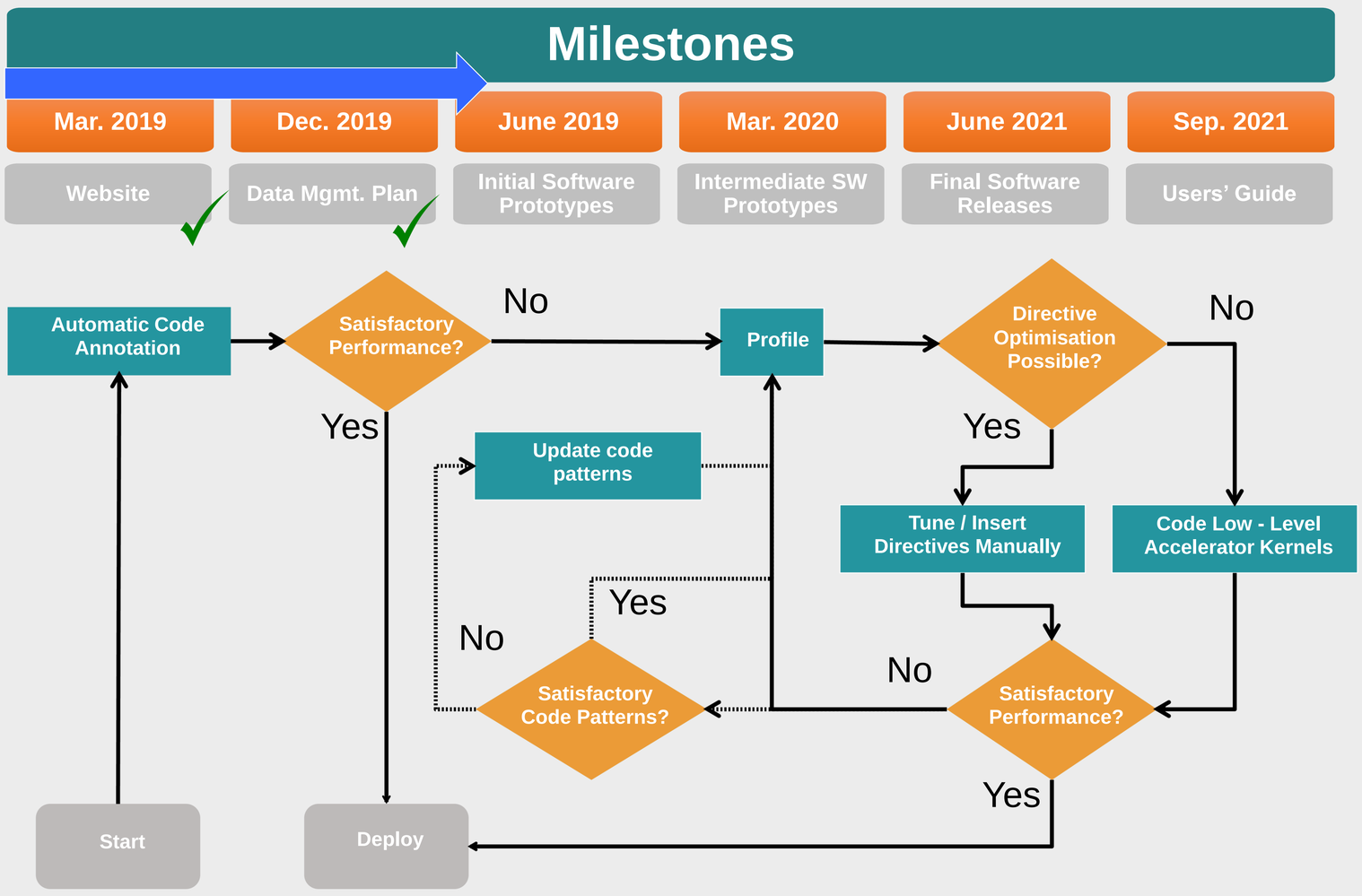
WPs

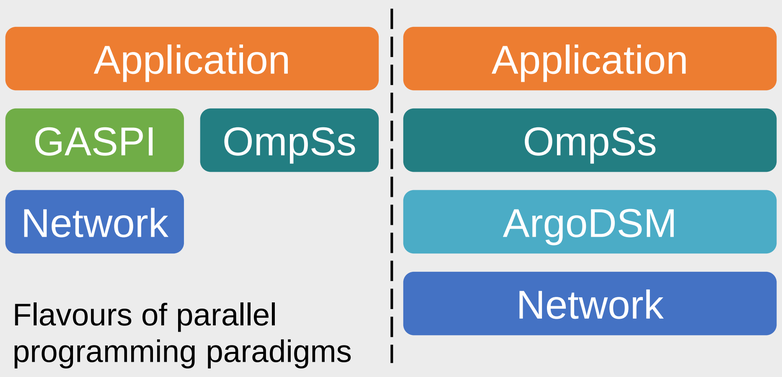
WP1	Coordination & Management
WP2	Dissemination & Exploitation
WP3	Resource Heterogeneity Mgmt.
WP4	Scalable Distributed Support
WP5	Application Co-design



Abstract overview of the components involved in the project

Timeline of milestones and status





Flavours of parallel programming paradigms

Application developers will be able to leverage two flavours of parallel programming paradigm, given their personal preference and expertise: **shared memory or distributed-shared memory**, and code in their preferred programming language.

Programming Environment Components

- **Parallelware** - Appentra http://www.appentra.com/parallelware
- **OmpSs** - BSC http://pm.bsc.es/ompss
- **GASPI** - Fraunhofer http://www.gpi-site.com
- **ArgoDSM** - Uppsala, Eta Scale http://argodsm.com
- **Extrae** - Paraver, Paramedir, BSC http://tools.bsc.es

Applications

- **AVBP** - Cerfacs http://www.cerfacs.fr/avbp7x
- **DIOGENeS** - Inria http://diogenes.inria.fr
- **OSIRIS** - INESC-ID http://epp.ist.utl.pt/wp/osiris
- **Quantum** - ESPRESSO, Cineca http://www.quantum-espresso.org
- **SMURFF** - IMEC http://github.com/ExaScience/smurff

Partners

Barcelona Supercomputing Center – Centro Nacional de Supercomputación
Fraunhofer IIS
inesc id lisboa
Inria – inventors for the digital world
appentra – make code parallel
CINECA
EtaScale
CERFACS
UPPSALA UNIVERSITET
imec

The EPEEC project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement Nº 801051

www.epeec-project.eu
Contact: Antonio J. Peña, Technical Manager · antonio.pena@bsc.es