CompBioMed

17th June 2021

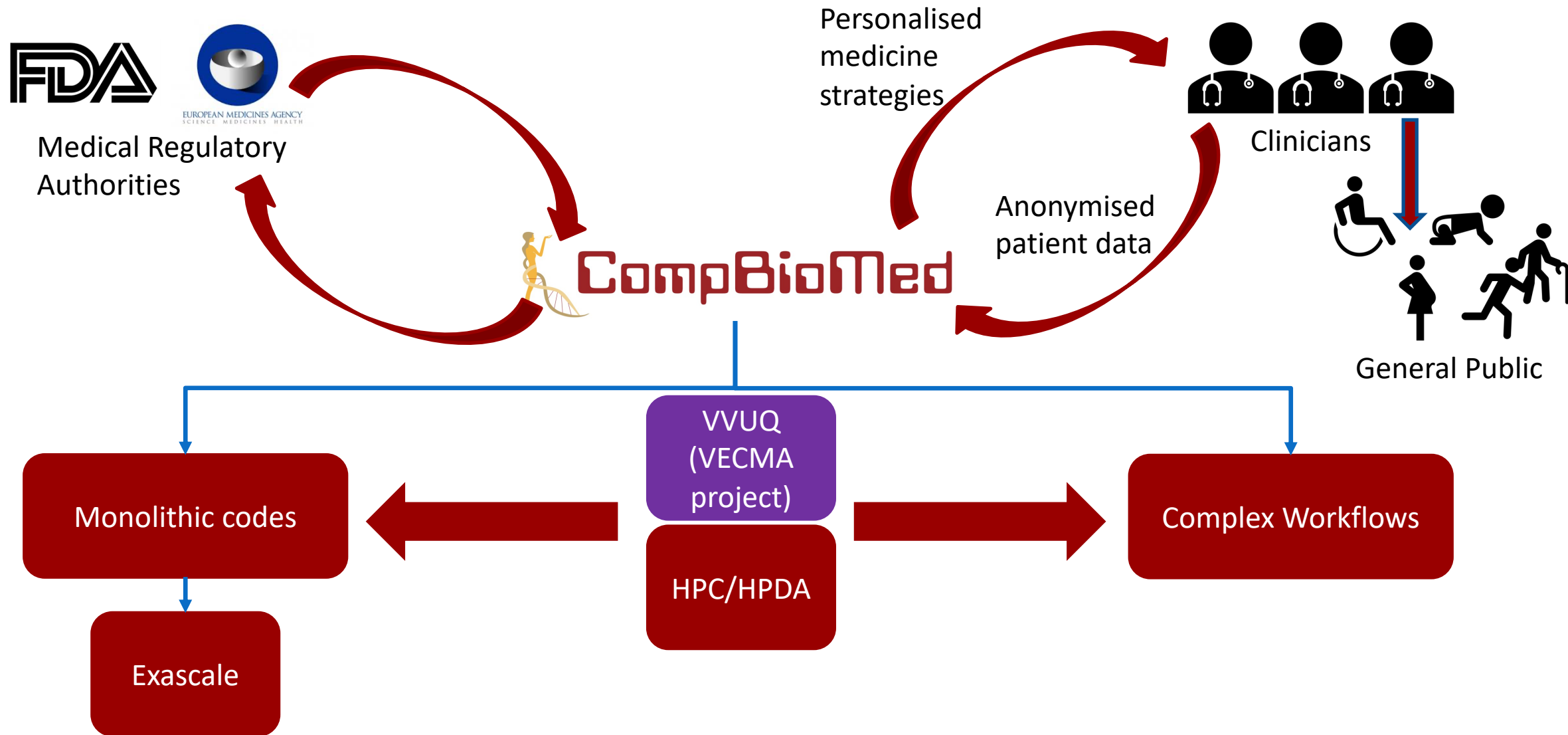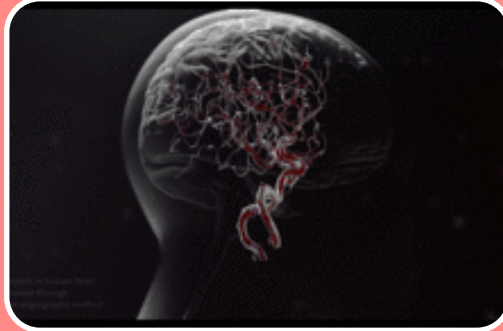http://www.compbiomed.eu/

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Motivation and objectives

User communities
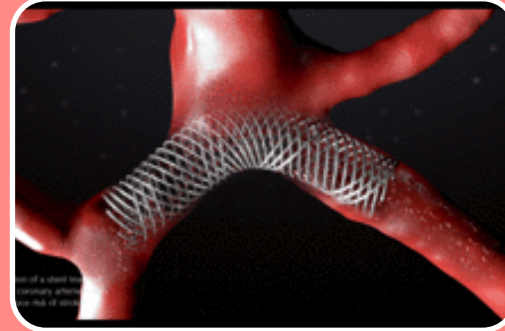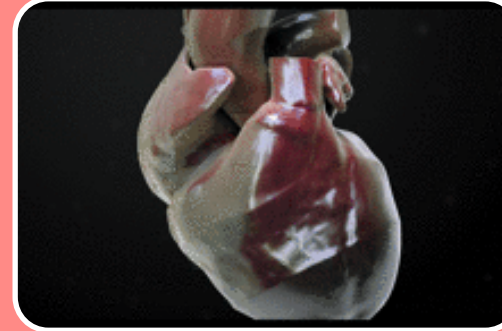

Academic Users

- Conferences, Journals, Training, Software Hub
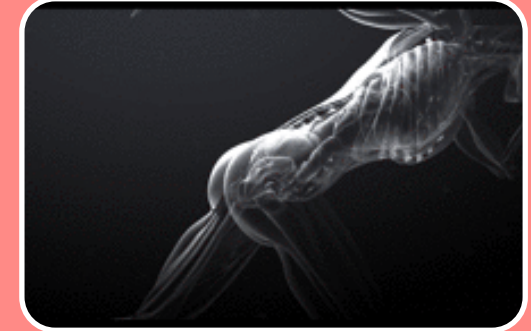- Promoting use and uptake of results

Industrial Users

- Training (specifically webinars), IAB, access to HPC
- Awareness through to uptake

Clinical Users

- Training (medical school courses), conferences, personal collaborations, HPC
- Awareness through to uptake

General Public

- Virtual Human film, social media, television
- Awareness only

Building the computational biomedicine community

How CompBioMed is preparing users for HPC:

- **Scaling as a Service**
  - Providing support to current HPC users for scaling and porting of applications

- **Training**
  - Existing training program ongoing: Medics, Bioscience students and Advanced users
  - Scaling of training to expand user engagement to include EU13 and HPC-poor countries: new initiative for July 2021

- **Dissemination**
  - Engagement with the public and users in building a Virtual Human, through webinars, public talks, scientific engagement projects (Evidence Week 2021), written work showcasing the Virtual Human and a public event at Science Museum that builds on the success of our first Virtual Humans film
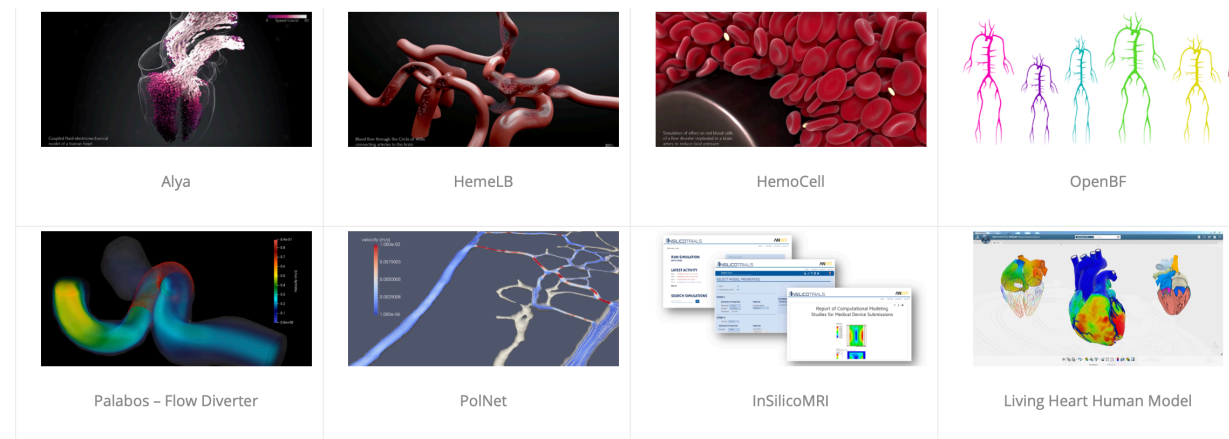
Access and availability of CompBioMed codes

CompBioMed Software Hub

All about the software for the computational biomedicine research community

The CompBioMed Software Hub addresses the needs of the computational biomedicine research community, which can use the Hub to access the resources developed, aggregated and coordinated by CompBioMed.

CompBioMed Software: Cardiovascular

Alya   HemeLB   HemoCell   OpenBF

Palabos – Flow Diverter   PolNet   InSilicoMRI   Living Heart Human Model

CompBioMed Software: Molecular Medicine

Offered By

Barcelona Supercomputing Center / Centro Nacional de Supercomputación

Use scenario
Non-clinical research; Clinical research; Clinical decision support; Design & optimisation for medical devices; In silico clinical trial.

HPC motivation
Solve unreducible model; Multiscale model; Strongly coupled multiphyisics model.

Relevant links

- Alya official website
- Alya documentation
- HPC Multi-scale computational modelling using Alya Red
- CompBioMed Webinar: HPC simulations of cardiac electrophysiology using patient specific models of the heart (using CHASTE and Alya)
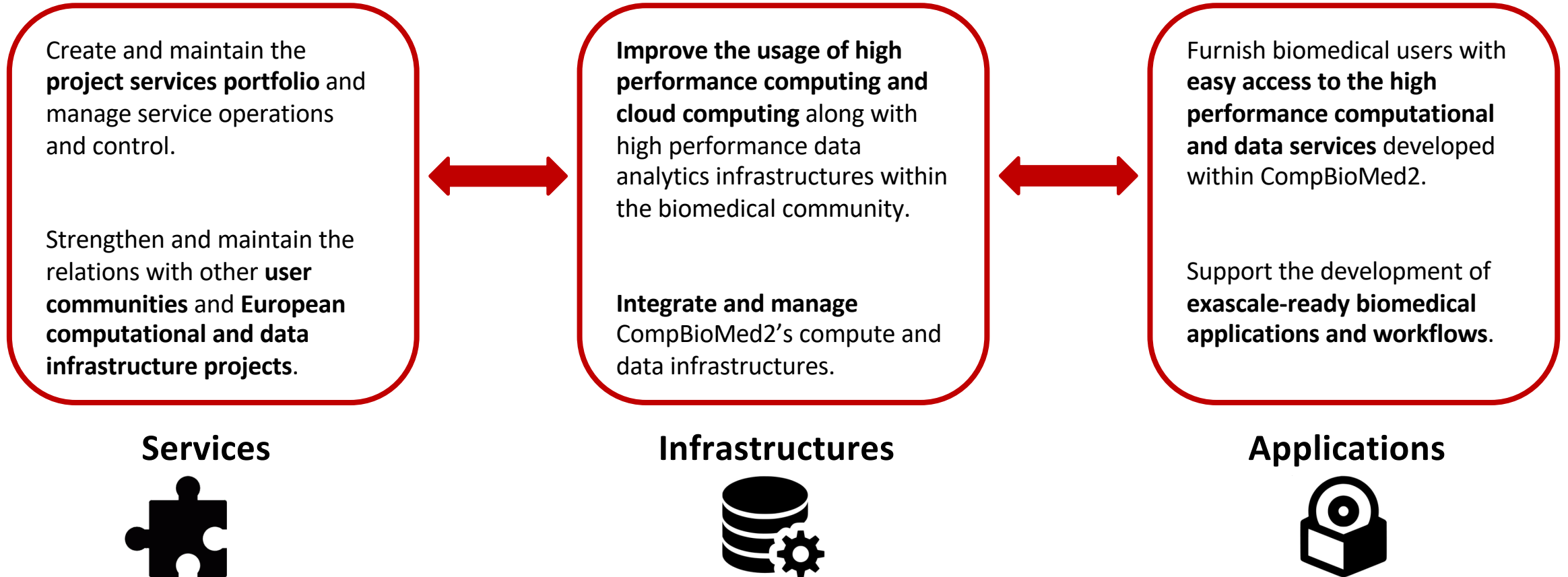- Alya Red: A Computational heart
- CompBioMed Virtual Humans Film

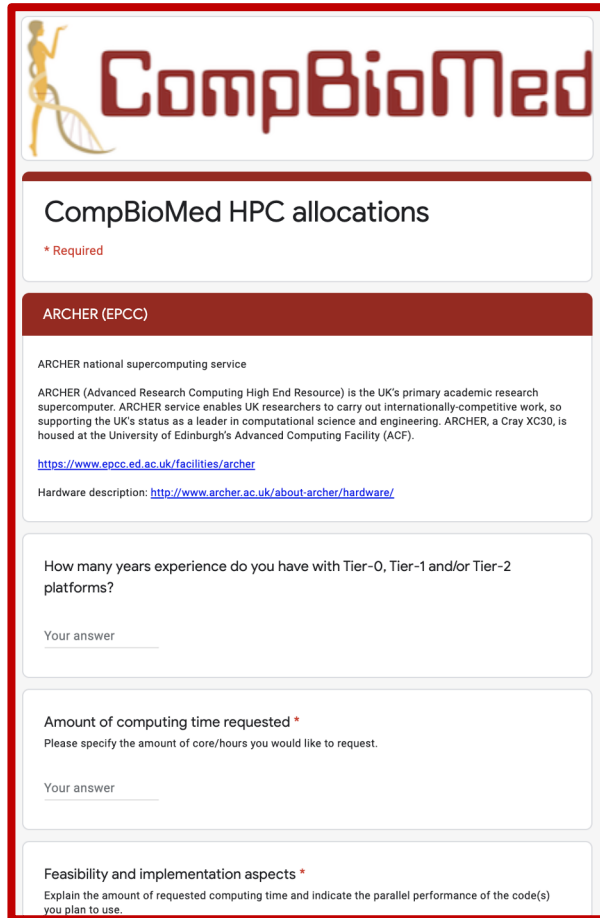Proactive support for end users

Open source codes

Software Hub – details the codes and where to download them

Developers details outlined in the application page

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Compute and Data Services

Create and maintain the **project services portfolio** and manage service operations and control.

Strengthen and maintain the relations with other **user communities** and **European computational and data infrastructure projects**.

Improve the usage of high performance computing and cloud computing along with high performance data analytics infrastructures within the biomedical community.

Integrate and manage CompBioMed2's compute and data infrastructures.

Furnish biomedical users with **easy access to the high performance computational and data services** developed within CompBioMed2.

Support the development of **exascale-ready biomedical applications and workflows**.

Services

Infrastructures

Applications

CompBioMed - Infrastructure

- **CompBioMed HPC allocation programme (partners systems)**
  - Fast and flexible access (GPU, CPU) + support
  - About 7,000,000 core/hours already used

  - ARCHER2 "6-week free-period", CompBioMed2 users consumed ~7,800,000 core hours

- **Access to Tier-0 systems**
  - PRACE allocations (HRLS, CSCS, JSC, CINECA, BSC)
  - US HPC systems (Summit ORNL, Frontera TACC)
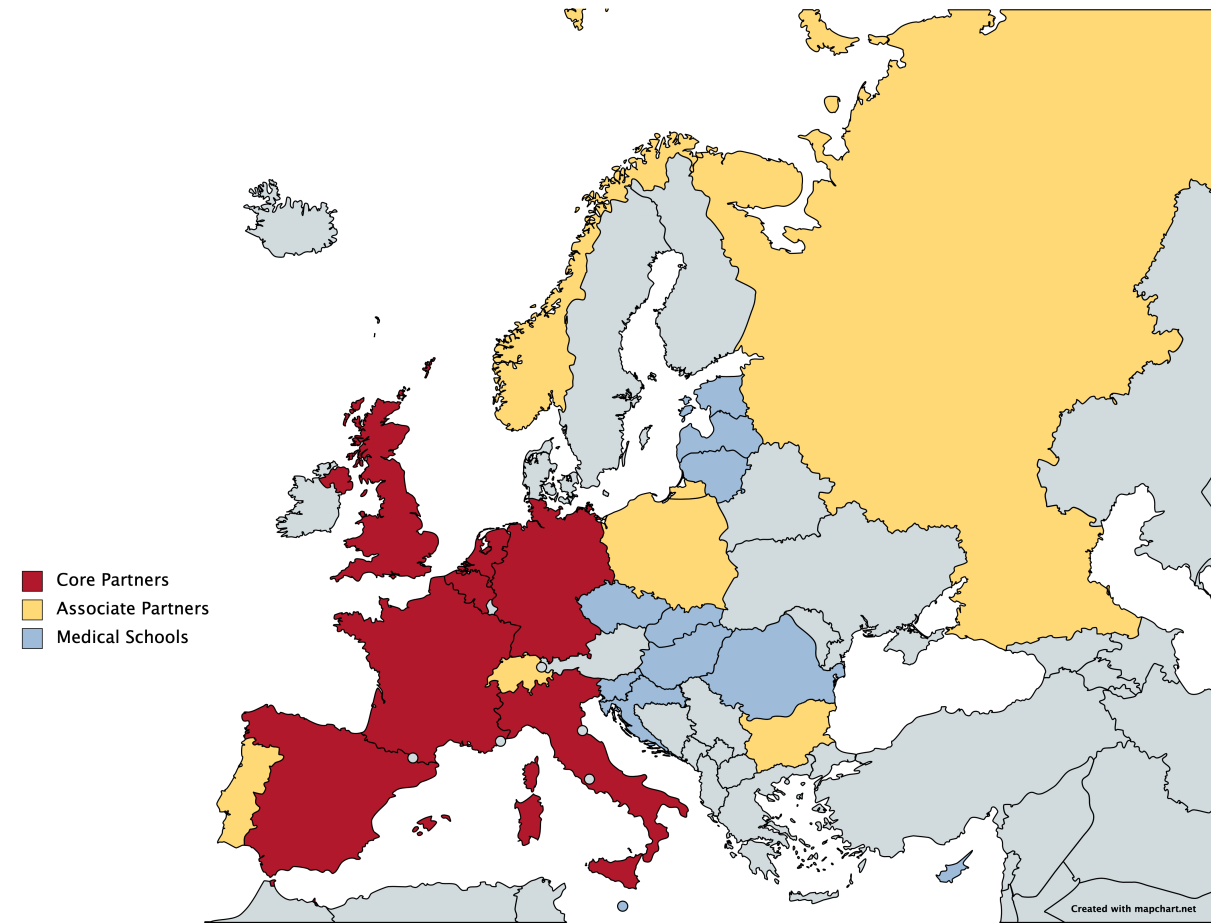
CompBioMed Partners

Core Partners are located throughout Europe (Red countries)

Associate Partners are located in these countries as well as many others (Yellow countries)

We are working to expand our Associate Partners and collaborators within the EU13(Medium blue countries) and HPC-under-represented countries.

Core Partners
Associate Partners
Medical Schools

Created with mapchart.net

CompBioMed Visitor Programme

Online Form: https://www.compbiomed.eu/innovation/visitor-programme/

Duration: 1 week to 3 months

Travel Costs: up to €5000

The proposal should include:
- A full description of the work (length as outlined above)
- An estimate of the anticipated HPC requirements and how they would be used
- Justification of the chosen host institute
- A proposal of the costs involved

Following the application, the proposal will be reviewed by the selection committee, subject to the following criteria
- Alignment of the proposal with the strategic goals of CompBioMed
- Quality of the project proposal
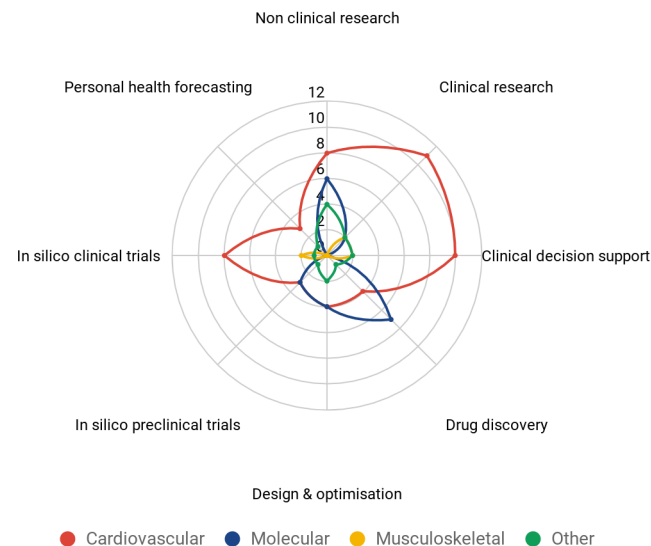- Potential impact of the project

Engagement, training and sustainability (WP6)

CompBioMed (phase 1)

Total number of user: all solutions
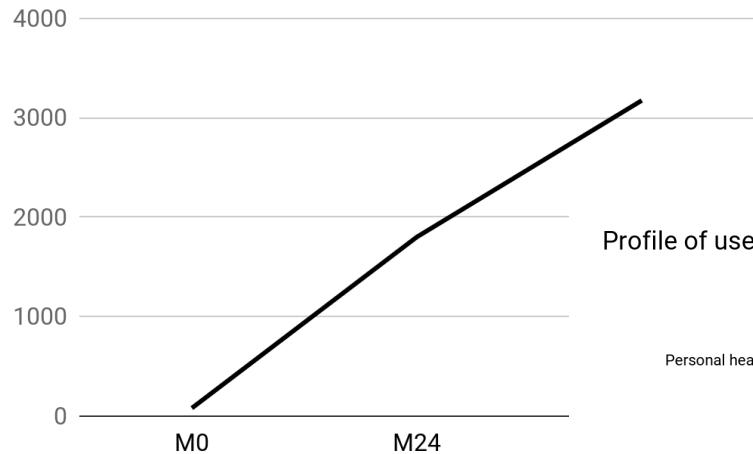
Profile of users: across domains

Legend:
- Cardiovascular
- Molecular
- Musculoskeletal
- Other

CompBioMed (phase 2)

- Advanced HPC training
  - 180 attendees (M24 KPI target -50)
- Medical students training
  - Embedded in 2 Medical Schools (target 4 at M46)
- HPC underrepresented EU countries
- Coaching users' communities on potential of HPC and exascale
- Total attendees/members so far: 750+
- D6.1 Establishment of the community engagement, and technical report

Engagement portal – Scalability Support

In Silico World Community of Practice

Community of Practice: a safe pre-competitive space where experts from academia, industry, and regulatory agencies can request and exchange advices, join teams and collaboratively work on shared goals

- 400 members
- 14 private channels
- 10 public channels

- 10 volunteer admins
- 13000+ messages sent
- Review paper on In Silico Trials

Expertise
The community is invitation only: in this way we ensure only interested experts have access

Safe space
A pre-competitive space where experts from academia, industry, and regulatory agencies can ask for and exchange advices
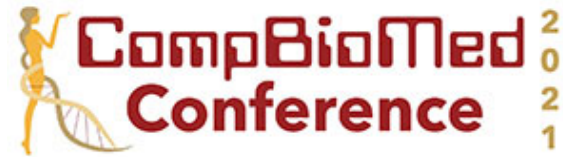
Collaboration
Join teams and collaboratively work on shared goals, projects, concerns, problems or topics

Conference and Workshop Planning

**AHM** – CompBioMed All-Hands Meetimng – External meeting 23rd June 2021

Conference – CBMC21, Online Conference, 15-17 September 2021

Biomedical Applications	Methodology	Technology and Outreach
State of the art in Personalised Medicine (PerMedCoE)	Multiscale Modelling & Patterns of Compute	Imaging & Visualisation
Molecular Medicine & Drug Discovery	Building the Virtual Human	In Silico Trials: Challenges and Opportunities
Organ Modelling and Simulation	On the path to the Exascale	From desktop to HPC and beyond in the clinic
Covid & Immunology	Validation, Verification and Uncertainty Quantification	Innovation in Modern Biotechnology
HPC in Healthcare: Genomics & Oncology	The role of Quantum Computing in biomedicine	Public Awareness, Training and Education including Public Policy
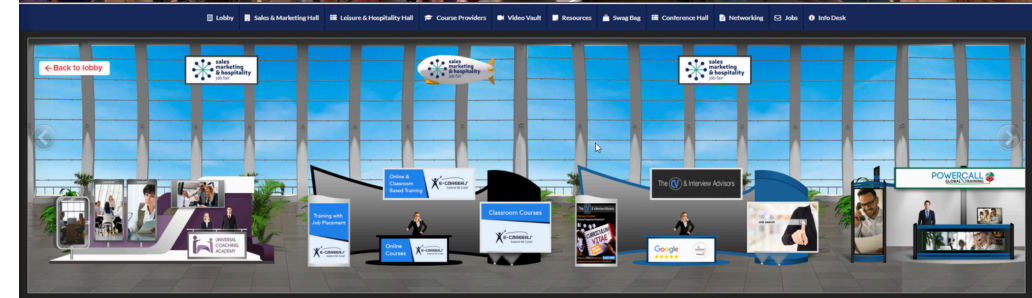
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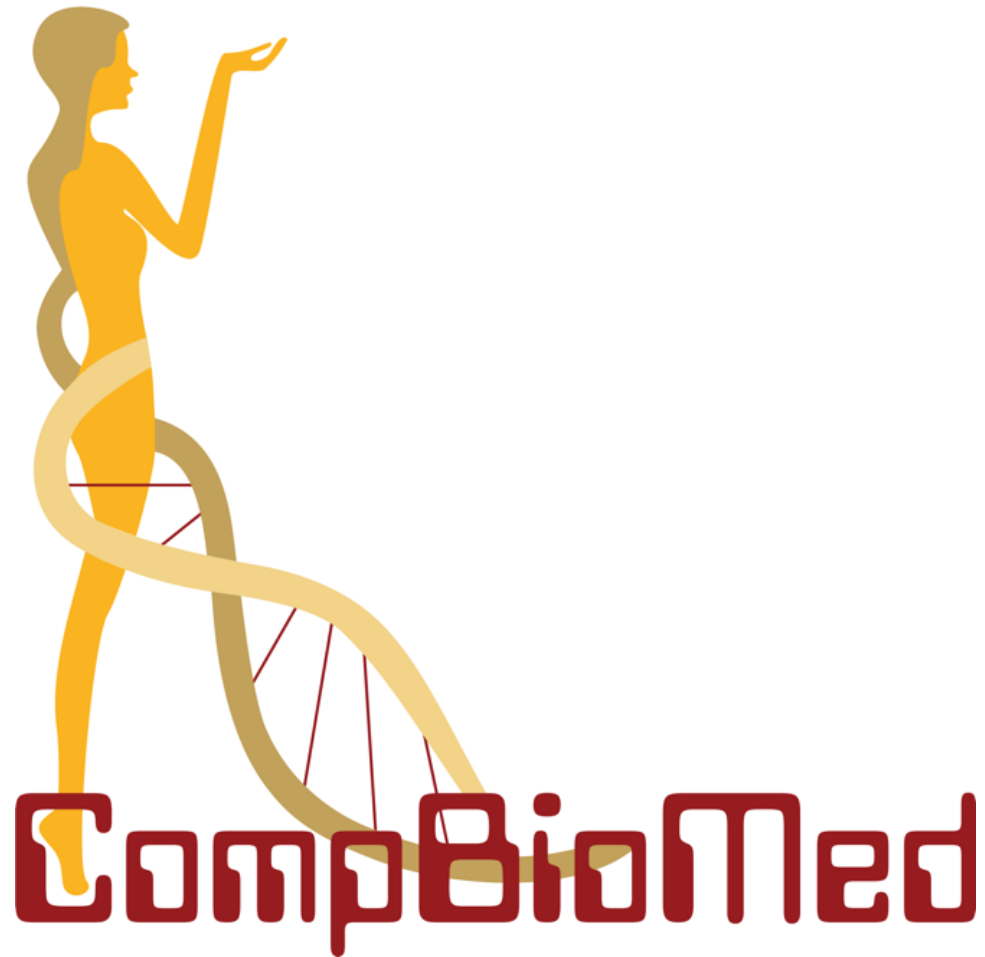
Website: **www.compbiomed.eu**

YouTube: **Computational Biomedicine**

Twitter: **@bio_comp**