

EPSRC e-Infrastructure Strategy 2018

Context

A programme has begun within UKRI to develop a long-term (to 2030) research & innovation infrastructure roadmap. This will be completed by April 2019. e-Infrastructure is one of the six themes within the roadmap.

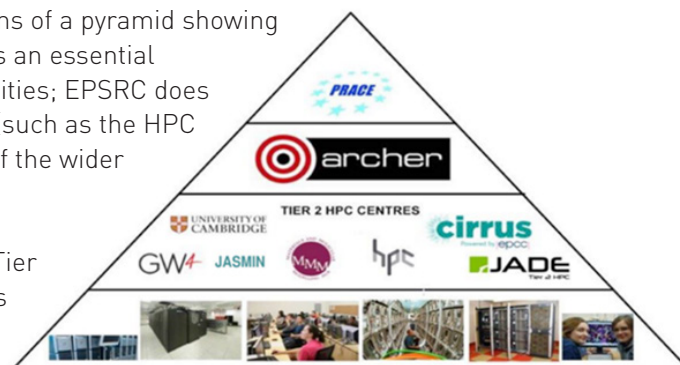
In this context, it is essential that EPSRC has a clear e-infrastructure strategy of its own, so that the requirements of the EPS community can be well-represented in the UKRI roadmap and strategy.

The strategy presented here includes the more detailed and specific Software Infrastructure strategy that EPSRC has developed.

Scope of strategy/definition of e-infrastructure

The traditional way of looking at e-infrastructure is in terms of a pyramid showing a hierarchy of hardware. As shown in the diagram, there is an essential underpinning layer of local computing provision in universities; EPSRC does not fund this infrastructure, but works with those that do (such as the HPC Special Interest Group¹) to ensure a good understanding of the wider landscape.

EPSRC does fund the next two layers of the pyramid: the Tier 2 HPC Centres, and the national HPC Service. It also leads on the UK's membership of PRACE, which gives UK researchers access to European Tier 0 supercomputers.



However, this strategy is not just about the hardware: **computers** are only one aspect of e-infrastructure. Just as important is the **software** that researchers use in their computational experiments. Software is where much intellectual property, knowledge and understanding resides and this is why software has such longevity: people replace their hardware, but don't dispose of their codes.

Increasingly, research produces and uses large amounts of data. To ensure this data can be accessed, analysed and stored, the necessary **data infrastructure** needs to be in place.

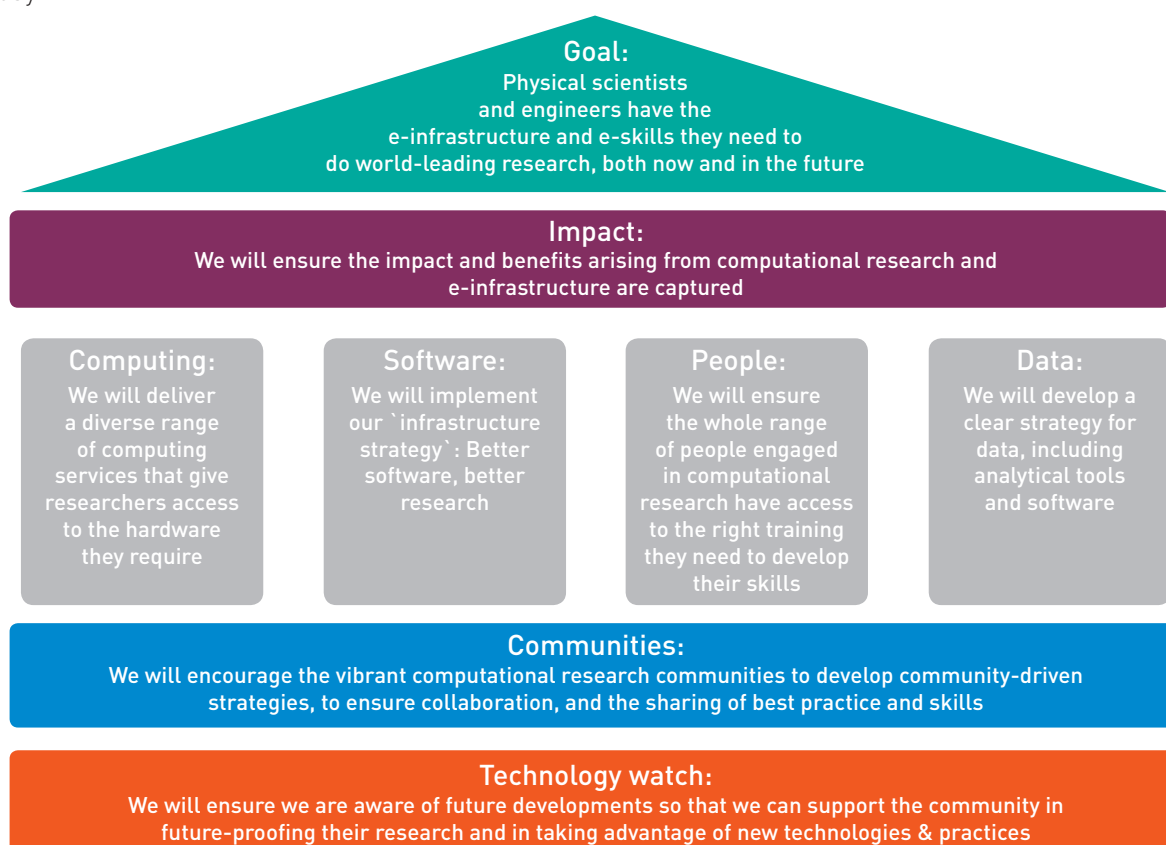
Finally, the support and training of **people** who use and run e-infrastructure services is a key part of the strategy.

¹ <http://hpc-sig.org.uk/>

Vision/Goal

Physical scientists and engineers have the e-infrastructure and e-skills they need to do world-leading research, both now and in the future.

- e-Infrastructure is important to all of the research and training funded by EPSRC across the remit;
- EPSRC has and will continue to take a leadership role in the development of e-infrastructure strategy;
- EPSRC will work proactively with all relevant stakeholders to catalyse activities;
- EPSRC will ensure its strategy includes ambitious and aspirational goals that address future needs, not just those of today.



Ambitions and actions

We will deliver a diverse range of computing services that give researchers access to the computing platforms they require

- by ensuring the services we support cover different scales of machines, and diverse architectures and service models, and includes access to international supercomputers
- by working with HPC and cloud service providers to develop an integrated approach to access for users

We will implement our 'Software Infrastructure' strategy: Better software, better research

- by ensuring the software codes used by the community continue to be developed and maintained in a coordinated way, using a range of funding mechanisms
- by promoting the sharing and exploitation of software to maximise the impact of computational research
- by ensuring that codes which are developed and used by communities for computational research are of a high quality, are accessible and are sustainable
- by continuing to support the development of policy and best practice in the development of reliable and reproducible research software

We will ensure the whole range people engaged in computational research have access to the support and training they need to develop their skills

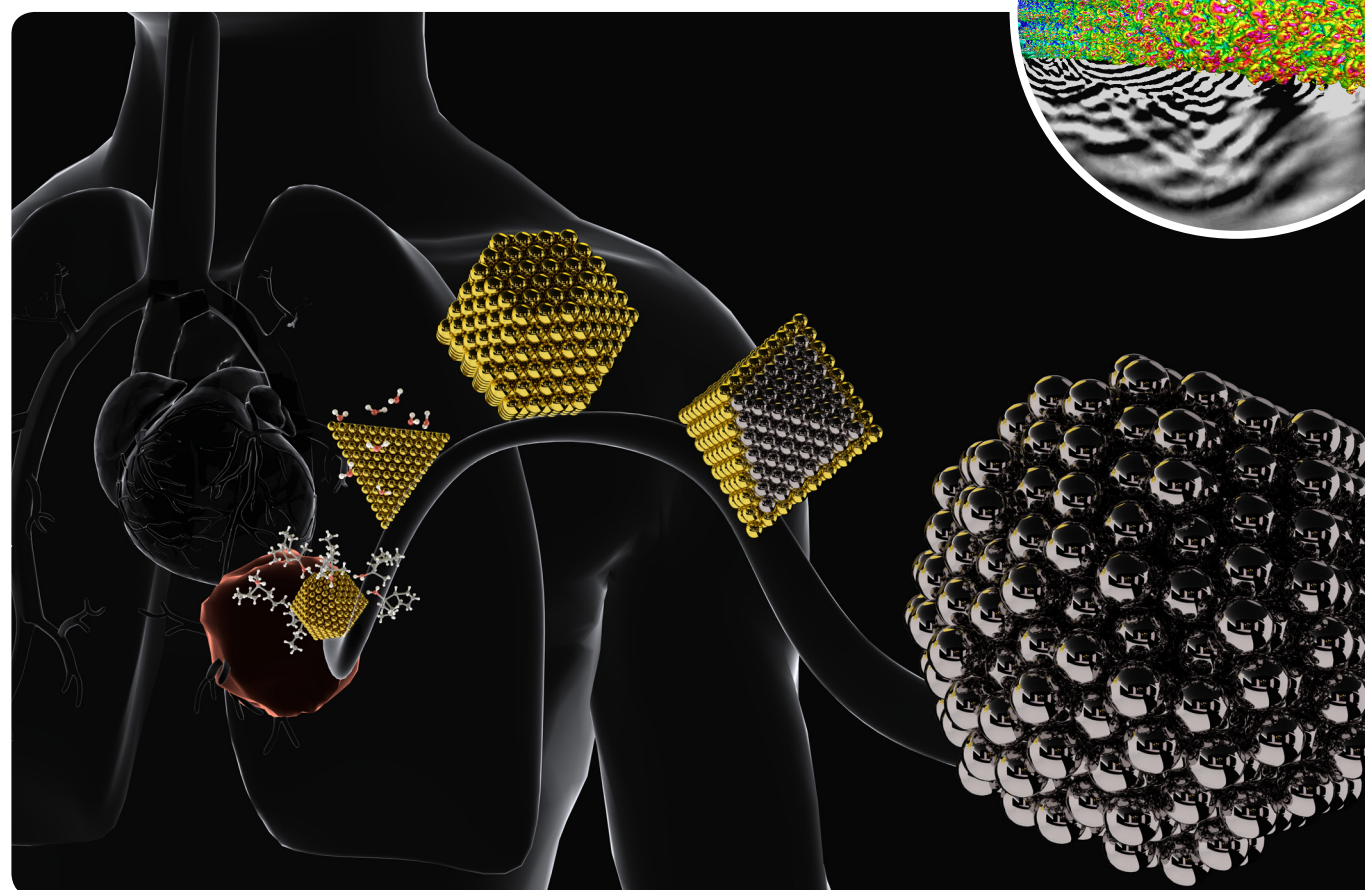
- by providing a national training programme for advanced HPC users, with a particular emphasis on PhD students and post-docs
- by working with the RSE network and Software Sustainability Institute to support a training programme for the wider computational research community, not just HPC users
- by ensuring EPSRC CDTs include appropriate e-research training for their students
- by continuing to support the RSE Fellows in their career paths, working with them to evaluate their impact

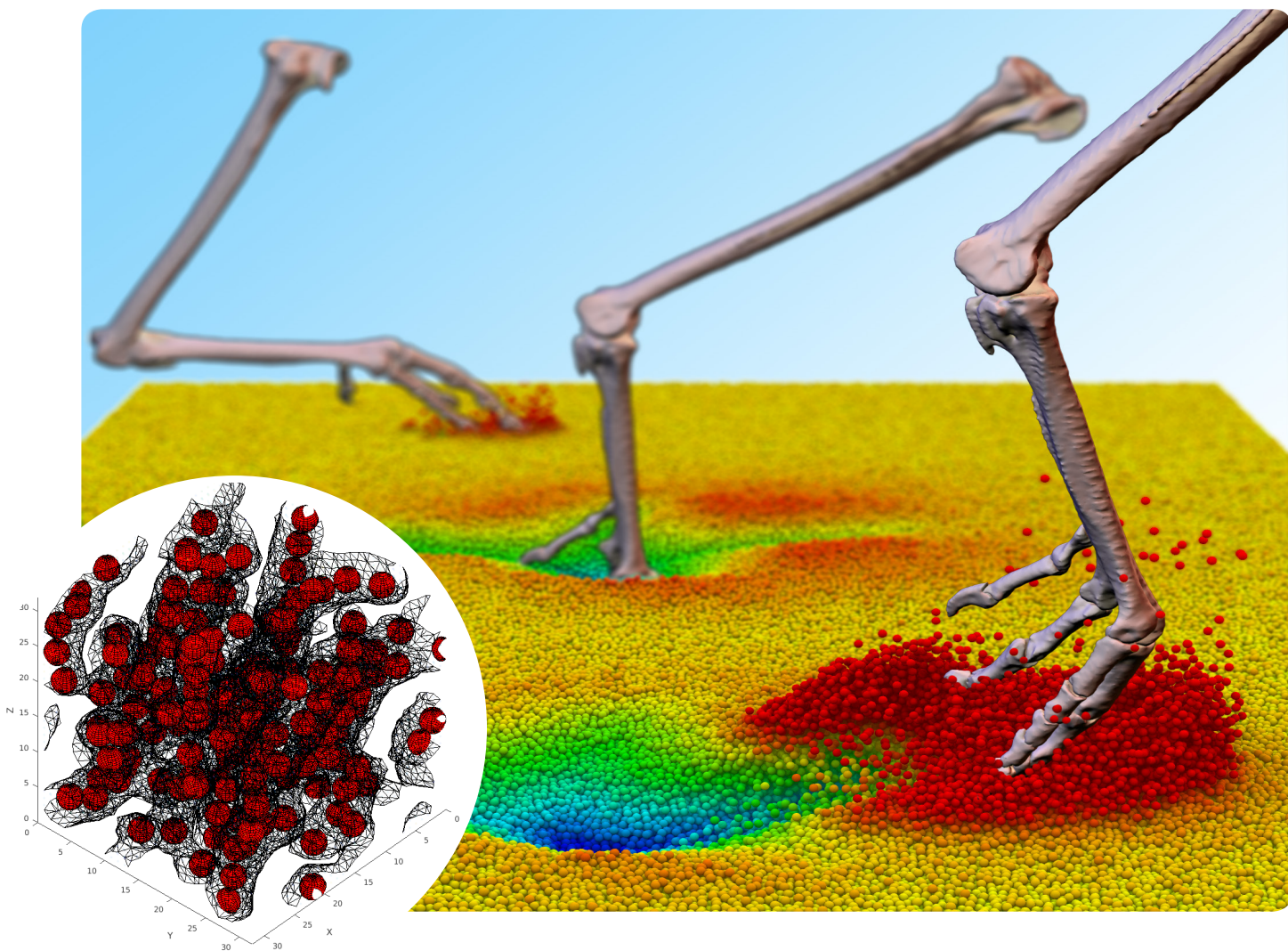
We will put in place appropriate data infrastructure, including analytical tools and software

- by developing a future plan for the Research Data Facility which sets out clearly its objectives and functions, and relates these to the wider UKRI data strategy
- by ensuring EPSRC's community is aligned to UKRI's emerging approaches for Open Data Access and Research Data Management

We will support vibrant sustainable computational research communities, and encourage them to develop community-led strategies

- by supporting community activities such as CCPs and HECs and other networks such as the RSE community, that encourage collaboration and wide membership, and the sharing of best practice, and skills and training
- by ensuring both existing well-established scientific communities and new emerging ones are identified and supported
- by supporting the UK community in international collaborations
- by ensuring key industrial stakeholders are involved in community networks





We will ensure we are aware of future developments so that we can support the community in taking advantage of new technologies & practices, and in future-proofing their research

- by commissioning technology foresighting and roadmapping activities, and requirements gathering
- by taking the lead on having regular interactions with vendors, seeking opportunities for the science community to get involved in collaboration and co-design
- by getting the research community early access to new technologies
- by raising awareness of the implications and opportunities of future developments such as cloud and exascale

We will ensure the impact and benefits arising from computational research and e-infrastructure are captured

- by engaging the academic and industrial community in capturing case studies and information on the benefits of their research and training, and the benefits arising from their community activities
- by commissioning impact reports
- by supporting and resourcing outreach, advocacy and public engagement activities to reach the younger generation

Engineering and Physical Sciences Research Council

Polaris House, North Star Avenue, Swindon SN2 1ET

[epsrc.ukri.org](https://www.epsrc.ukri.org)

EPSRC is part of UK Research and Innovation

Produced by UKRI's internal service provider