

National e-Infrastructure Vision

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e-Infrastructure Current position?

- Computational Science ‘third leg’ of scientific enquiry, alongside experiment and theory;
- Expert users need access to competitive infrastructure to tackle increasingly complex problems: complex simulations and calculations, multi-scale modelling;
- Large experiments (e.g. CERN, telescopes, genomics) – need to analyse all the data
- Social, medical, health data – analytics plus secure access
- New fields now using computational techniques for the first time – large numbers of ‘non-experts’;

E-Infrastructure as a Research Tool (not a IT system / black box / Tin)

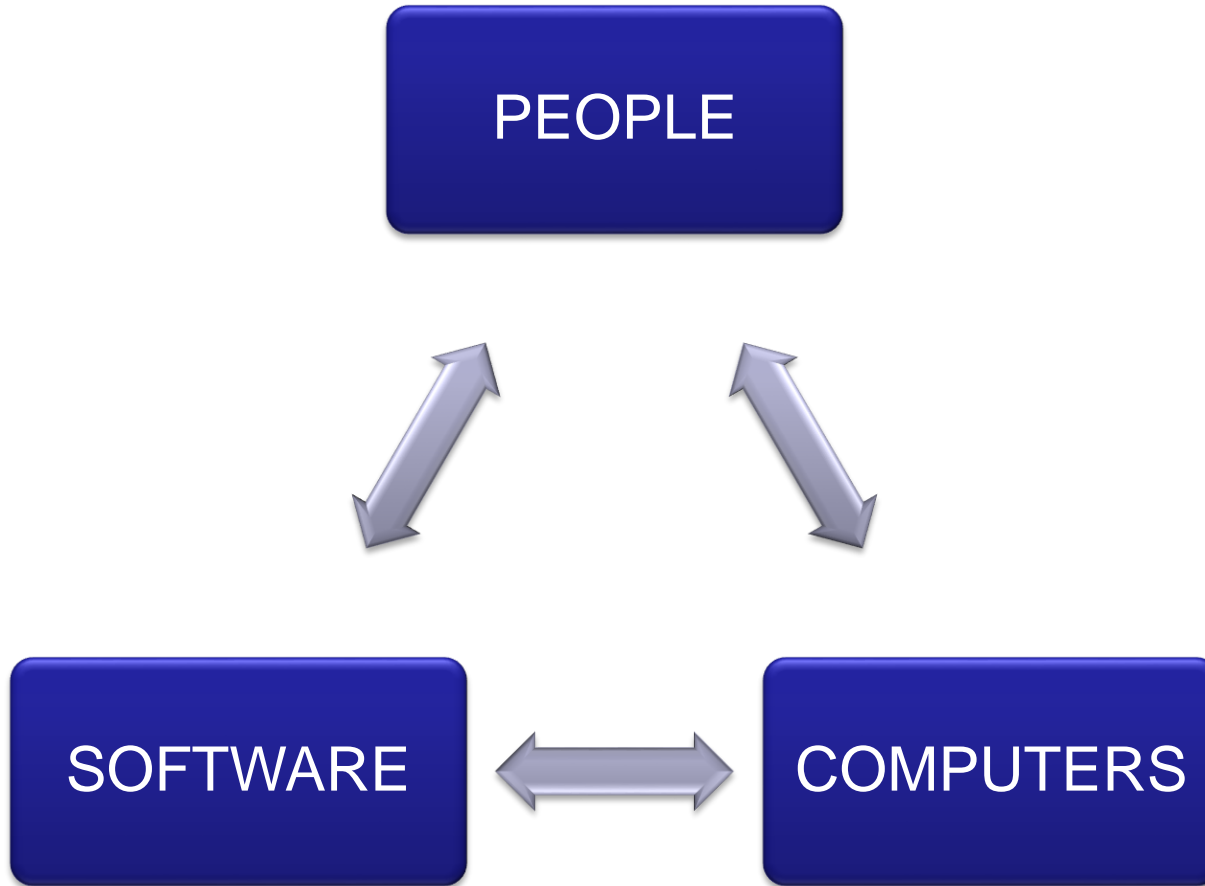
- E-Infrastructure is essential for carrying out research in a very wide range of areas
 - Optimisation, modelling, simulation, data analysis
 - Ubiquitous
 - Promoting its use to new research users – better, more cost-effective research
 - Underpins other research facilities (e.g. Diamond)
 - Underpins most industrial sectors
- E-Infrastructure needs regular updating and replacing as technology develops
 - Need long-term financial planning

Nel Components

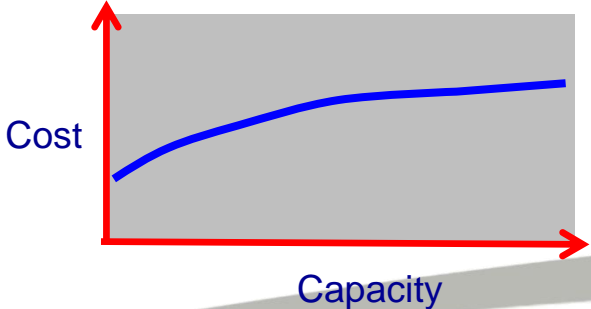
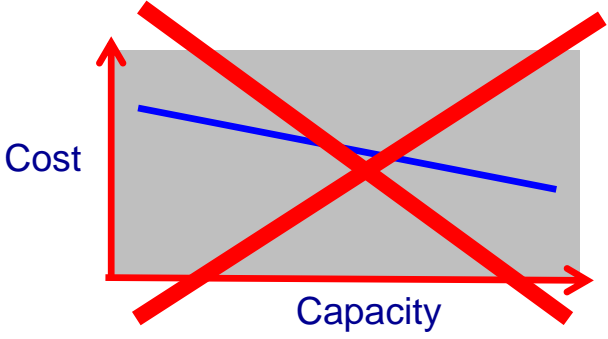
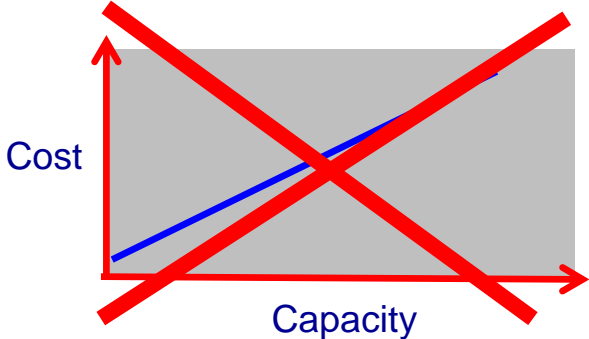
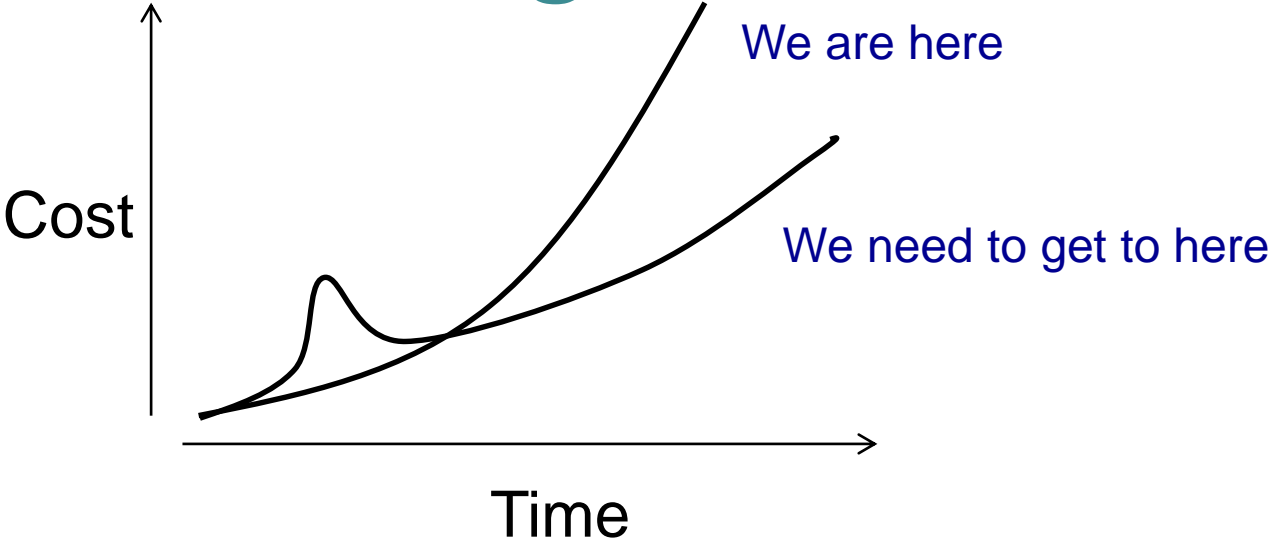
- Computers
- Data storage systems
 - Infrastructure and tools to manage large-scale research data
- Software
 - operating systems
 - applications codes
- Networks – Janet and university/institute networks
- Digital services, policies and processes:
 - Information assurance and governance
 - Security
 - Allocations, authentication and access
- Cloud
 - Commercial cloud services
 - Academic clouds
 - International: EU Open Science Cloud
- People – researchers, managers, developers
 - Skills and training

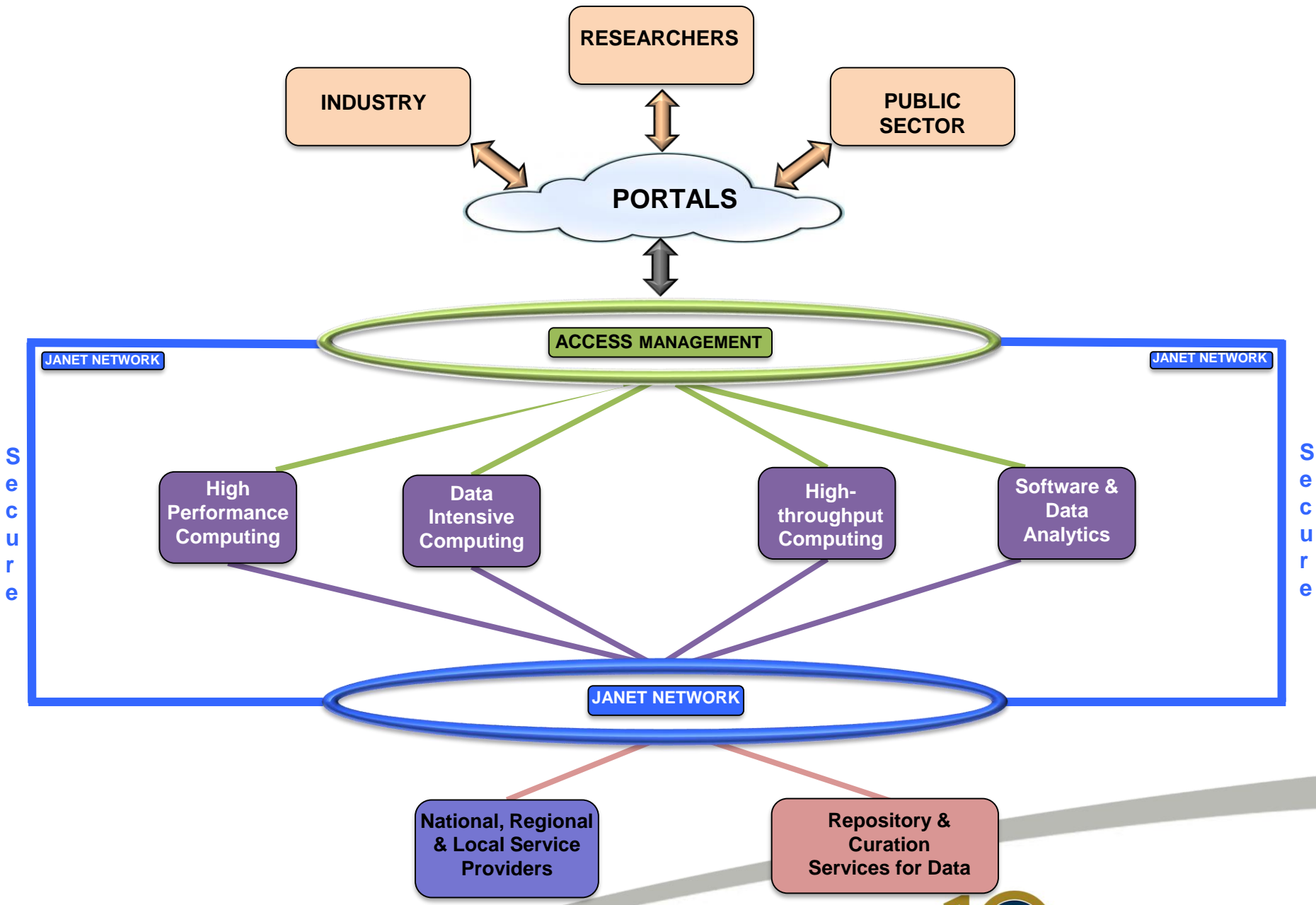
NOT JUST HARDWARE!

Not Just Computers



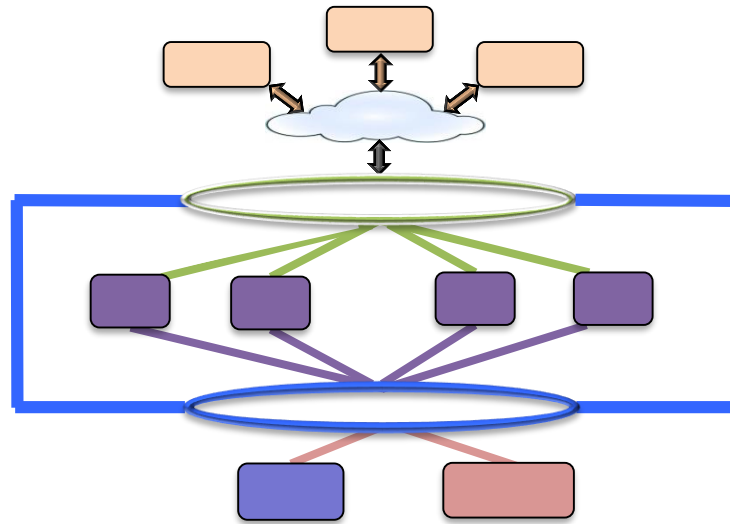
The Long term





Enablers & Services

- Industry Interactions
 - Suppliers
 - Users
 - Collaborators
- Cross RC collaboration



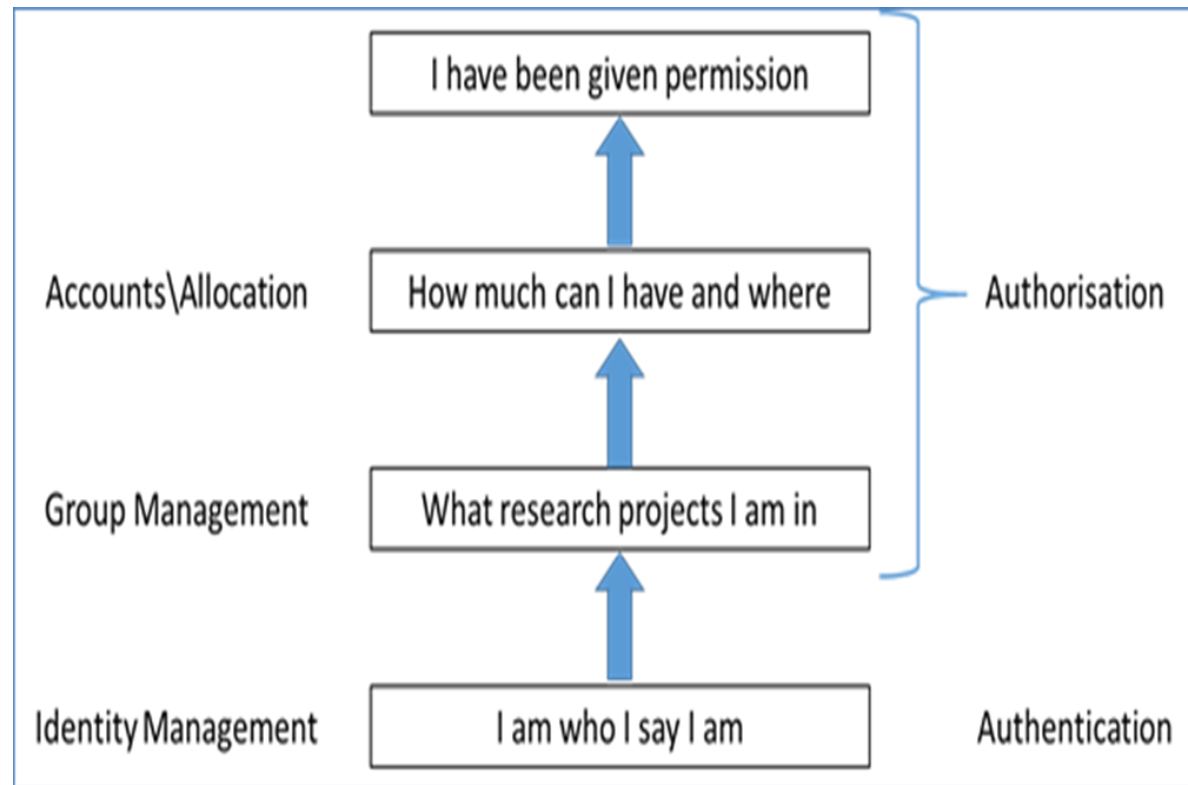
- Research Software Engineers
- Network
- Data Curation
- AAI
- Data Storage

RCUK Interactions with BEIS

- 2015 - Initial discussions with the RC and community leads
- Early 2016 – Initial discussions with BEIS through RCUK eIWG
- Mid 2016 – Completed a RC wide Business Case
- Late 2016 – Received feedback from BIES

Integrated AAAI

- Pilot projects for proof of concept: can we develop a common AAAI system so that users can have a single sign-on?
- Interoperability and integration of existing tools



Round 2 with BIES

- Took on board BEIS Feedback
- Created a shorter and aimed discussion at a higher level
- Removed the RC specifics and focused on the vision
- Document created and submitted
- BEIS invited critical funding Business Cases (on going)

STFC towards the Nel

- Recognises the need for an Nel
- Is in the strongest position of all the RC's
- Wants to lead the way, collaborating with the other RC's
- 'Towards a UK Nel' STFC call

Summary

- Cross Community and Council work is seen as very important
- We understand the constraints on funding and are trying to help where we can
- The Nel is a vision towards the future, but will not be easy or quick
- All the RC's are working hard on understanding the needs of the UK research base, and translating it to BEIS

E-Infrastructure Definition

- e-Infrastructure is defined as a combination of:
 - computer hardware
 - data storage hardware
 - software tools (operating systems, digital and software libraries, access management systems etc.)
 - application software codes
 - communications networks
 - The personnel associated in the delivery of the above items
- and the people and organisational structures needed to support the modern research and innovation landscape. e-Infrastructures function to transform research activities and data into the whole range of research and innovation outputs.

E-Infrastructure Definition Cont.

- Data collection aspects of research activities are **excluded**: the point of generation of data in the first instance (e.g. instruments, observation, experimental set-ups) is research-area-specific in its commissioning and funding, and therefore should be dealt with by the appropriate sector.
- Similarly data projects and databases themselves are also **excluded**. The management of data (access, curation and manipulation) is research-area-specific, and so data resources should be dealt with as assets in their own right by the appropriate sector. The tools used (storage hardware, networks for moving data, software for analysis) would be **included** as part of the e-infrastructure landscape.
- Desktop and departmental compute and storage for the basic needs of a modern researcher, in the form of laptops, work stations and related institutional support is **excluded**.

Towards the Nel Call

- “STFC recognises the importance of a RCUK wide National e-Infrastructure (Nel) and the positive effect that it would have on STFC and the wider UK research community. STFC is keen to take on a leading role in moving towards a Nel, where all areas of UK research can benefit from the combined knowledge and understanding from each other’s areas of expertise. As a direct result, STFC programmes directorate would like to strengthen our position in creating a more joined up computing infrastructure (both in terms of computing hardware as well as software and people).”
- “This computing capital call aims to develop STFC’s existing computing infrastructure within the context of moving towards a future Nel. It has become increasingly more important to share expertise and experience across both the RC community as well as through industrial partnerships. Our ambition is to create greater benefits to the Programmes Directorate (PD) science programme, the wider STFC science programme and external stakeholders through creating combined strength in large scale computing.”
- “Proposals should aim to: Contain a primary purpose statement on overcoming key challenges in the lead up to the implementation of a Nel;”