



**National Federated
Compute Services
NetworkPlus**

**Spring Conference
26-27 February 2026**

Enhancing HPC Adoption Through User-Centred Design

Dr Tariq Umar



**Imperial College
London**



The challenge is not access to compute — it is access with trust, usability, and real-world workflows





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Goal: Inform an inclusive, trusted, user-centred HPC roadmap

- **Identify barriers to HPC adoption**
- **Understand trust and governance needs**
- **Capture cross-sector user requirements**
- **Provide NFCS recommendations**



Engagement So Far

Evidence base

Questionnaire
Facilitated discussions
Transcripts and thematic analysis

Cross-sector survey: 67 responses
Health research workshop (Wellcome):
20 participants

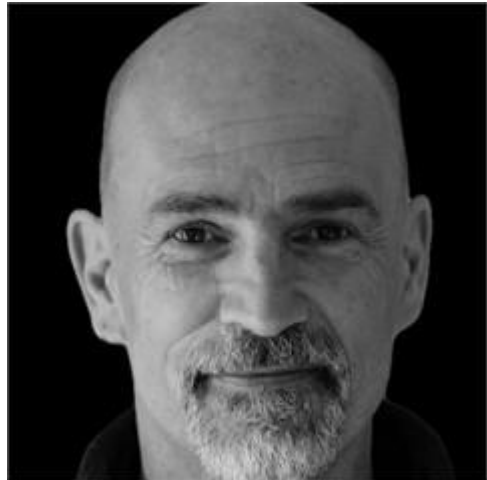
Built environment workshop
(Birmingham): multi-stakeholder ~ 20
participants



Project team

Dr Tariq Umar

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Prof Jim Smith

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[JamesSmith](https://people.uwe.ac.uk/Person/JamesSmith)



Dr Kwok Chun

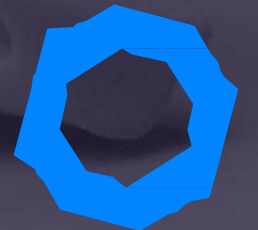
[https://people.uwe.ac.uk/Person/](https://people.uwe.ac.uk/Person/KwokChun)

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HPC Familiarity

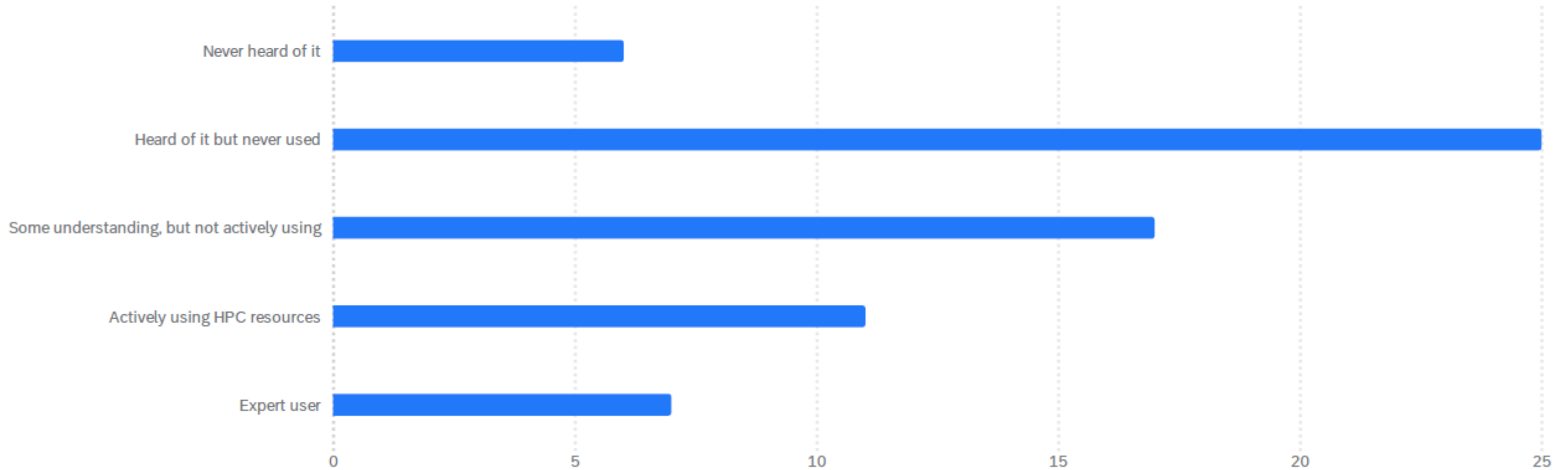
HPC awareness varies widely

- 9% never heard of HPC
- 38% heard but never used
- 26% some understanding
- 28% active/expert users
- Majority are **non-users or early-stage users**



HPC Familiarity

How familiar are you with High-Performance Computing (HPC)? 66 ⓘ



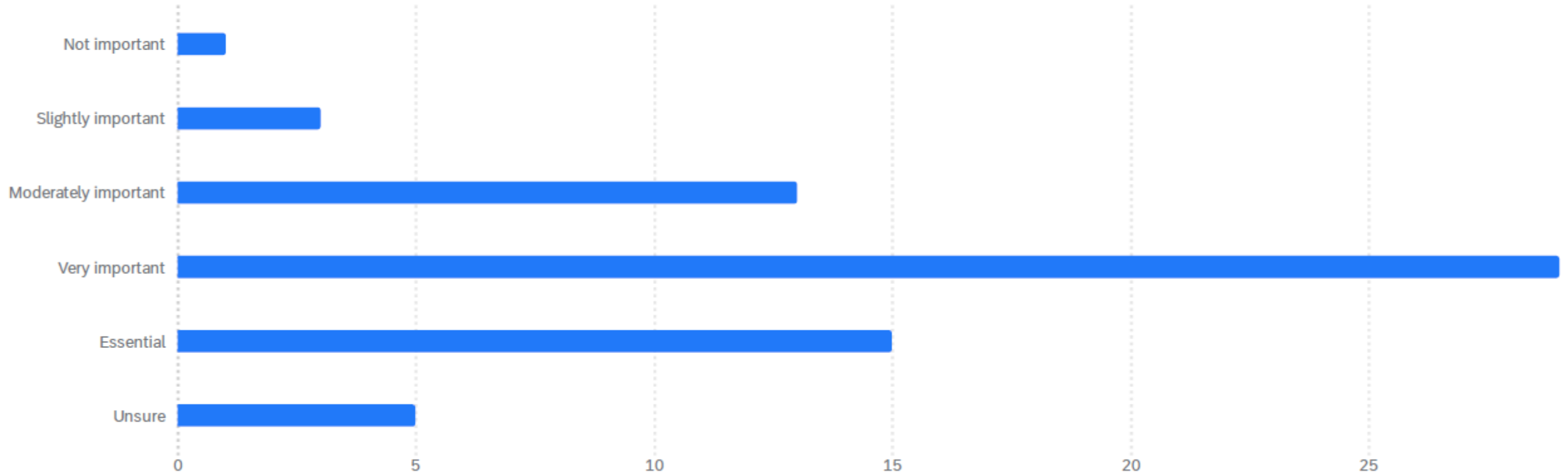
Importance of HPC

- **67% rate HPC very important or essential**
- **Mean importance: 4.05 / 5**
- **Strong latent demand despite low use**



Importance of HPC

Rate the importance of HPC in your future work/projects 66 ⓘ

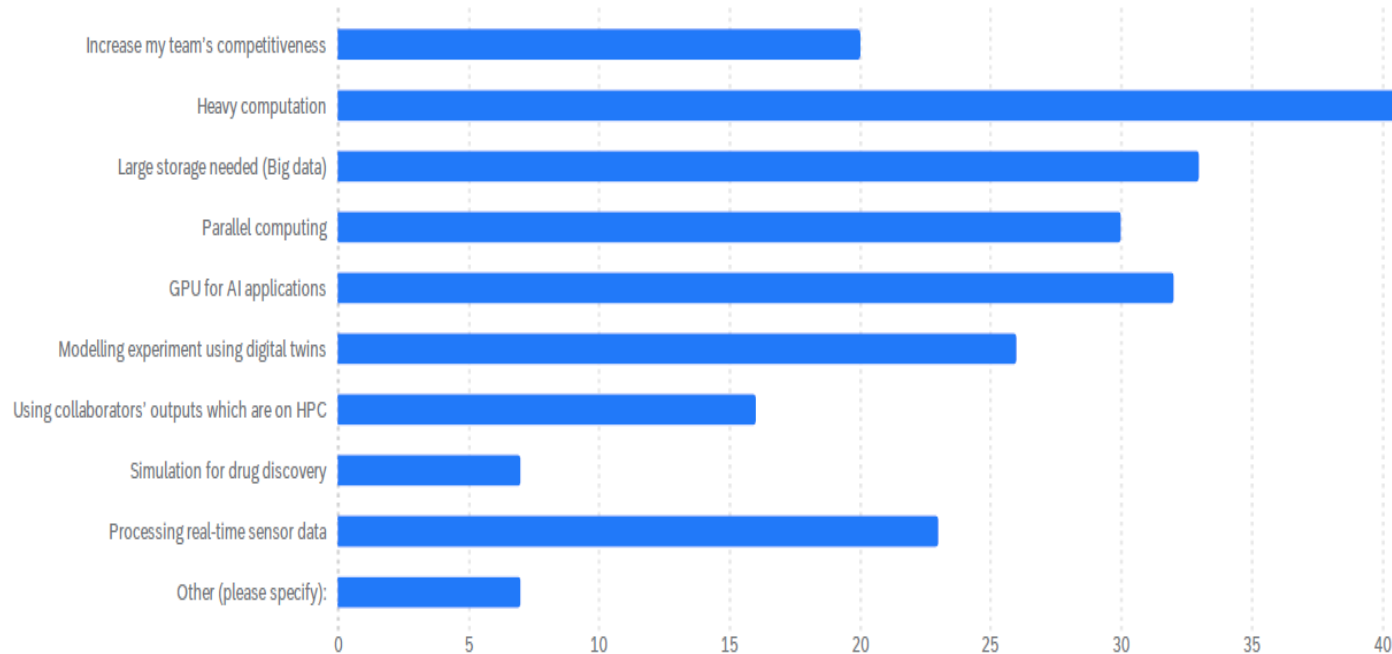




Why Users Need HPC

Top drivers:
Heavy computation (65%)
Big data storage (51%)
Parallel computing (46%)
GPU/AI (49%)
Digital twins & simulation

4. Why do you need to have HPC? Tick all those apply. 65 ⓘ





Key Barriers

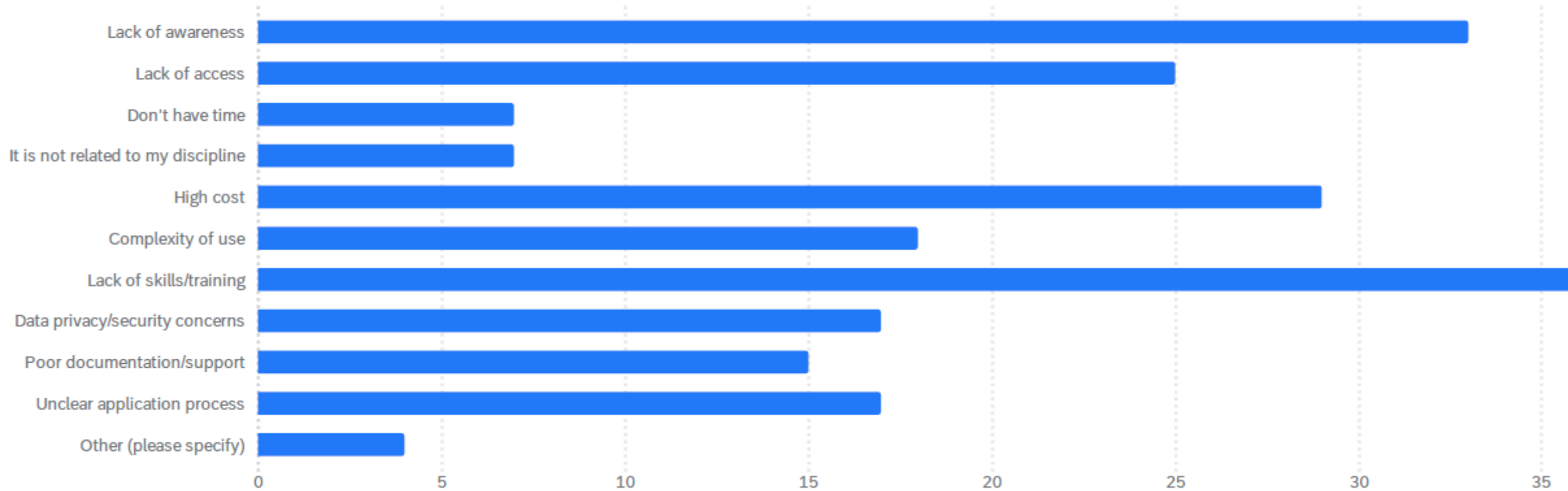
Common barriers reported:

- Access complexity
- Skills gaps
- Cost and resource allocation
- Software/workflow mismatch
- Governance and data concerns



Key Barriers

What are the main barriers preventing you or your organisation from using H... 63 ⓘ



Health Workshop Insights

HPC with sensitive data introduces added complexity

Key themes:

- TRE approval and compliance burden
- Long onboarding timelines
- Privacy and model disclosure risks
- Need for privacy-preserving AI
- Federation with guardrails



Health Workshop Insights

Wellcome Trust, London 17 Dec 2025

C. Future Vision and Roadmap

1. 1. What does your “ideal” federated HPC system for NHS health research look like?
- B** 2. How can we ensure equitable HPC access for smaller NHS trusts, community health researchers, and underrepresented research areas?
 - 1.
 - 2.
 - 3.
3. How confident would you feel making the argument that an AI/ML model trained on HPC within a TREs on HPC does not create new privacy risks for patient data?



Built Environment Workshop

Insights

Commercial sensitivity and IP dominate HPC adoption

Key themes:

- Data sovereignty and client control
- IP protection and collaboration agreements
- Software licensing constraints
- Interoperability with BIM/digital twins
- Reluctance to share infrastructure data

Built Environment Workshop Insights

Conference Aston, Birmingham 30 Jan 2026

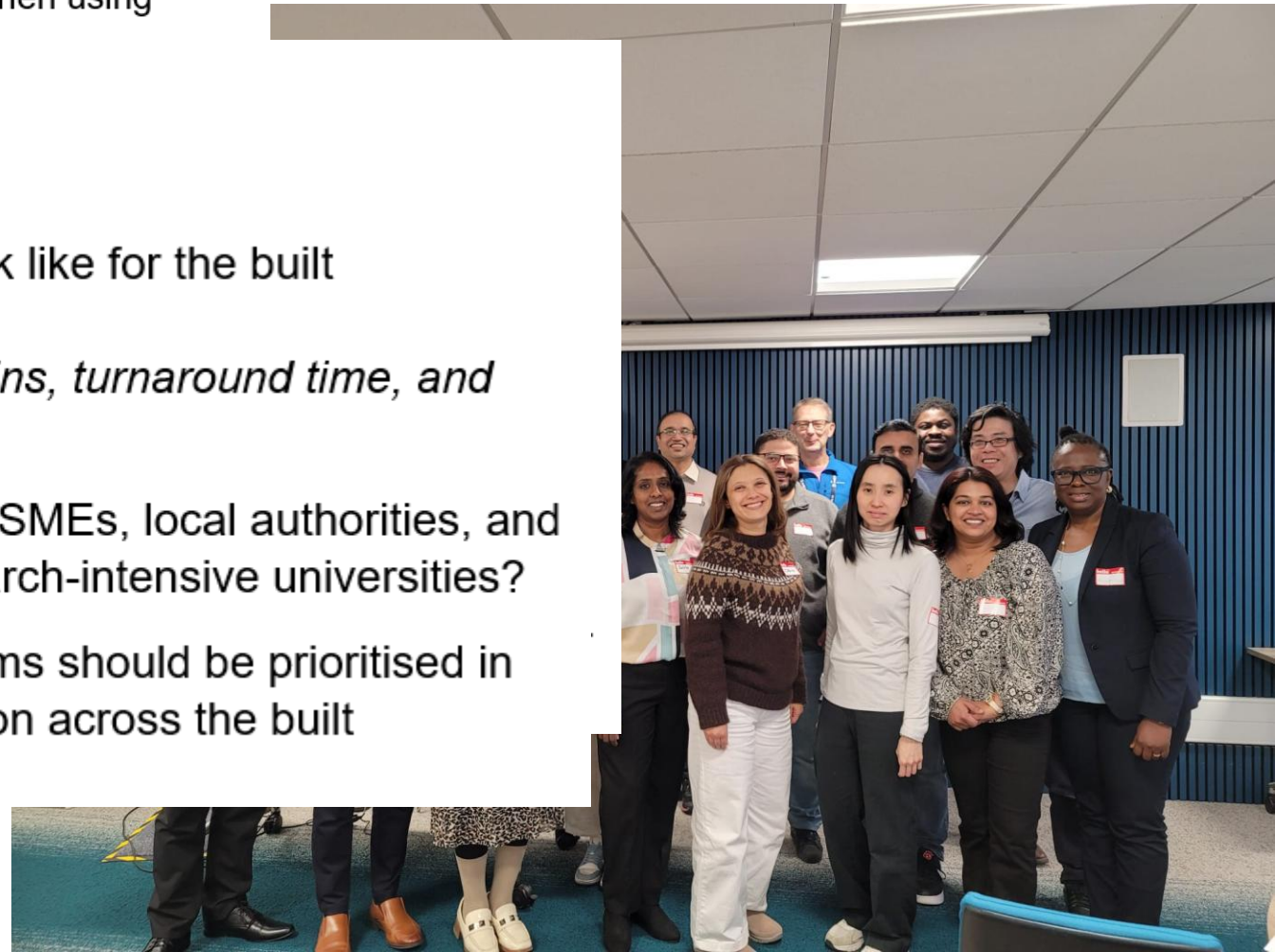
A. Barriers to HPC Adoption in the Built Environment

1. What are the main barriers professionals and researchers face when using HPC for built environment applications?

B. Trust, Data, and Governance

C. Future Vision and Roadmap

1. What does your “ideal” federated HPC system look like for the built environment sector?
(Think usability, interoperability with BIM/digital twins, turnaround time, and cost transparency.)
2. How can equitable access to HPC be ensured for SMEs, local authorities, and smaller consultancies, not just large firms or research-intensive universities?
3. What training, onboarding, and support mechanisms should be prioritised in the national HPC roadmap to enable wider adoption across the built environment sector?



Nex Workshop

Environmental Sciences – Imperial College 4th March 2026

