

Lies We HPC People Tell Ourselves

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@hpcnotes

Notes

A talk by me, not a talk by or about my day job/employer

Comments may not reflect the views of any current or past employers

Inspired by nearly 30 years of HPC as a user, software developer, benchmarking and technology evaluation, buyer, service manager, consultant, technology strategy, etc.,
... across government, industry, academia,
... UK and around the world.

We have a great sense of self-deprecating humour as a HPC community ...

... at least I hope so, or else this talk will be difficult!

Why do we do HPC?

There used to be 2 kinds of talk at a HPC conference:

- 01 “It’s all about the science” – here’s a few slides of sciencey stuff then I’m going to talk hardware feeds and speeds or my pet software project for an hour.
- 02 Talk about my science in depth for 55 minutes and then a brief mention that we used some computery stuff in the last slide.

Increasingly see 3rd option:

- 03 Refer to government policy or claim national need, then assert why that means more funding for what I wanted to do anyway (buy system, do technology research, or whatever)

In a time of unprecedented opportunity for attention on HPC, are we performing optimally in explaining and advocating the value of HPC?



Measuring HPC?

What are the widely used metrics for the **impact** of HPC, not just the scale of it?

Where you sit on Top500	What you say	What you mean
#1 (maybe #2 or #3)	Top500 ranking doesn't matter	Everyone knows I'm at the top of the list anyway, so I am free to say whatever I want
Top 20	It isn't perfect but Top500 is a useful indication of competitiveness	This is our moment in the community spotlight, there is no way we are passing on this!
Rest of list or too small to make list	Top500 ranking doesn't matter	There's no PR for us in a low ranking, so let's take the moral high ground. <i>See "it's all about the science".</i>
Big enough but still not listed		We have revenue generating work that can't wait for Top500 runs

Same applies to GPU counts, MW, £M, etc

All roads lead to ... ?

What they say

Translation ??

We need funding for operations
not just capital

- But I want *extra* funding for electricity, not a rebalance within existing funding for actual **hardware**

People are the most important
asset in HPC

- I'm sure this is the right thing to say, but I still want money for **hardware**

The national economy will benefit if
we drive HPC usage in industry

- I want the government to buy me another **supercomputer** and also fund my business development team

Our nation needs this supercomputer
to compete with other nations

- Our centre needs a bigger **supercomputer** to stay ahead of the competing centre in our own country

We need to invigorate
the HPC supplier ecosystem

- I want more money to spend on fun **hardware** at my HPC centre

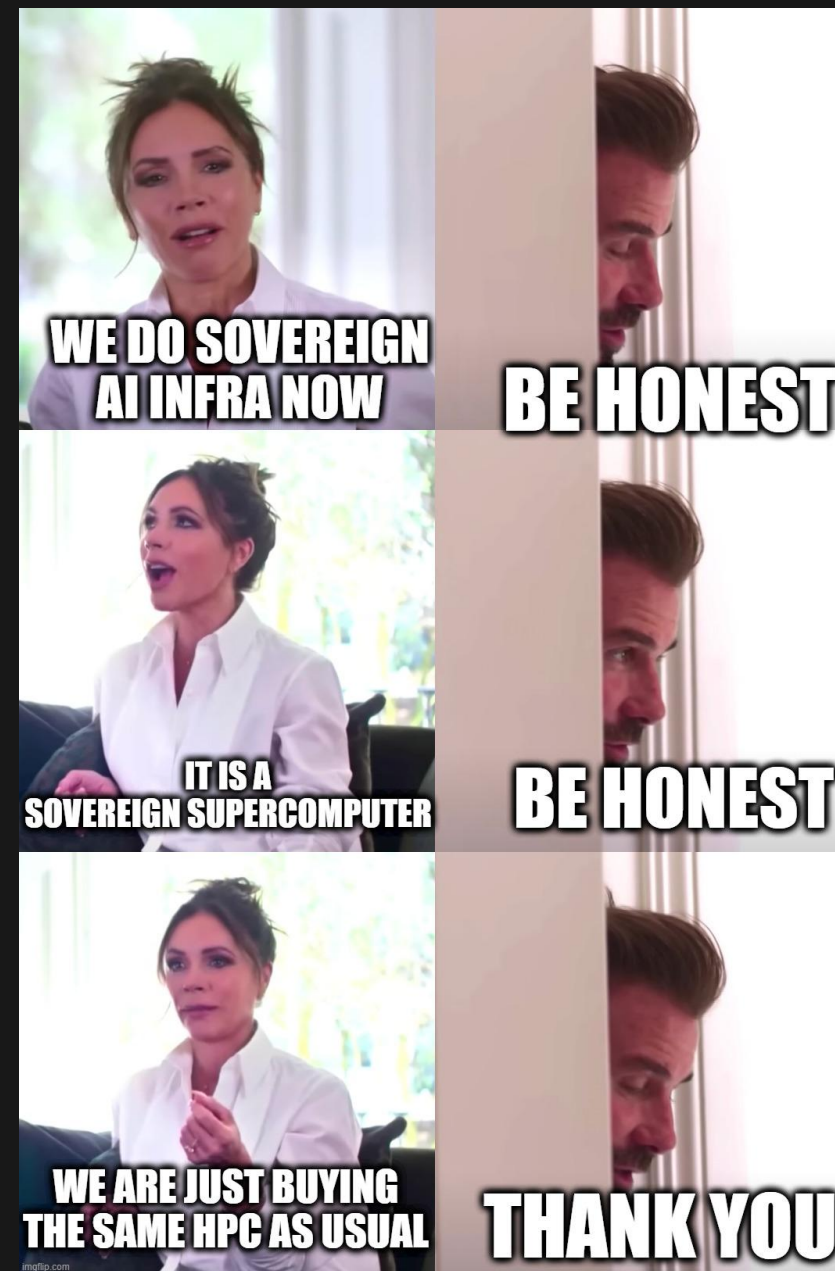
Software licences are too expensive

- I want to spend all my funding on **hardware**

Adapting to change and trends ...

Open	Sovereign	Sustainable
Standards-led	Develop own LLMs	Agentic workflows
Cloud technologies (<i>private cloud obviously!</i>)	Big Data	Grand challenge computing

What is actually different from what was previously done or built? Are we clear on why and how?



People are changing

What they say

We have a much richer user base now than traditionally – data analytics, interactive, python, ...

Translation ??

I prefer the old days when we had users we knew and they were all doing big Fortran+MPI jobs

What they say

There is a shortage of HPC talent

Translation ??

I have no interest in paying the market rate for existing HPC talent or contractors and so I want the government to develop more cheap recruits for me

And then hyperscale + LLMs happened ...

**Challenge our community faces is
how to sustain transition of wisdom
whilst nurturing challenge and innovation**

Conclusions?

- Get better at telling stories about why HPC matters.
Use metrics that show impact not just scale.
- Be clear what is actually different as we use resonant labels
(sovereign, open, sustainable, ...)
- Intentional action about people and full talent journey
- HPC has always adapted to (thrived on) change in the past

THE END OF HPC AS WE KNOW IT



IT'S ALL GOING TO COLLAPSE



← Less of this,
More of this? →



A vibrant time for supercomputing