HPC Industrial Engagement Initiatives: *Dreams, Myths, Realities*

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@hpcnotes

nag®
Experts in numerical algorithms and High Performance Computing services

Proven HPC software performance **results**

- Over the last 6 years
  NAG HPC services have **delivered**
- >80 software innovation projects
- ~30 applications improved
- ~80% achieved >2x performance

Proven HPC training **results**

- Over the last 6 years
  NAG HPC services have **trained**
- >2000 course attendees
- Fortran, C/C++, OpenMP, MPI, CUDA, …
- profiling, optimisation, scalability, …

Proven HPC consulting **results**

- Over the last 6 years
  NAG HPC services have **helped**
- users of petascale supercomputers
- evaluate/adopt GPUs, Xeon Phi, …
- advise on HPC strategy, procurements, …

NAG HPC Services & Solutions

Software innovation services

- Improve performance, scalability, capabilities, …
- Evaluate & adopt new technology: GPU, Xeon Phi, …

Training, advice and support

- For HPC users, programmers, managers, buyers, …

Strategy & planning

- Procurement, HPC service provision, etc.
- Application & technology roadmap planning

Results: business value & science impact

Faster, more capable R&D process

- More R&D output from a given compute resource
- Faster time to solution
- Step change in fidelity or capability of modelling

Focus on customers & business

- Rely on NAG for the underpinning HPC expertise

Plan and use HPC with confidence

- Rely on NAG for impartial advice and experience

Why engage with industrial users of HPC?

because HPC delivers
impact + value + ROI
to science and business

Lots of evidence, case studies, successes - e.g.:

http://www.hpcuserforum.com/ROI/

http://www.hector.ac.uk/casestudies/

http://www.compete.org/about-us/initiatives/hpc/success%20stories

Why engage with industrial users of HPC?

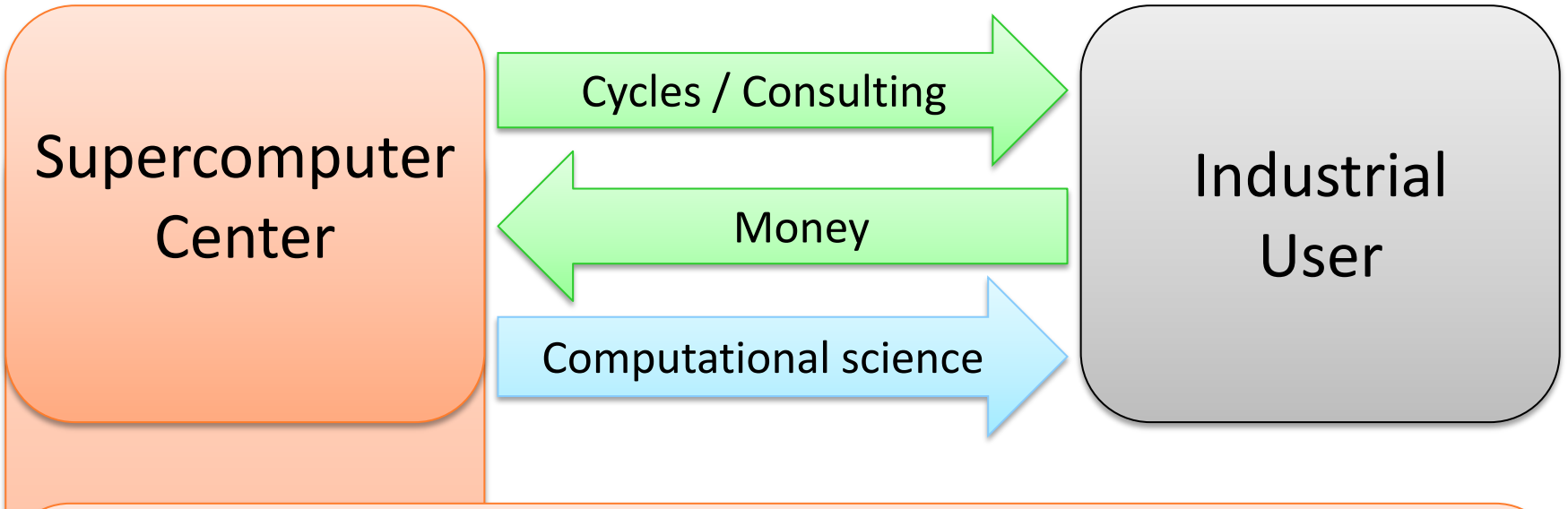
Political necessity

New source of income

HPC for industry is not new …

- HPC centres around the world have tried engaging with industry for years
- Success stories of real partnerships are still rare
- Not many HPC centres with significant & profitable industry income
- It is hard work and different to business-as-usual

Typical HPC industry engagement model??



- Has all the HPC expertise (and is the only source of HPC expertise)
- Does “outreach” rather than “business development” or “sales”
- Has “partners/collaborators” rather than “customers”

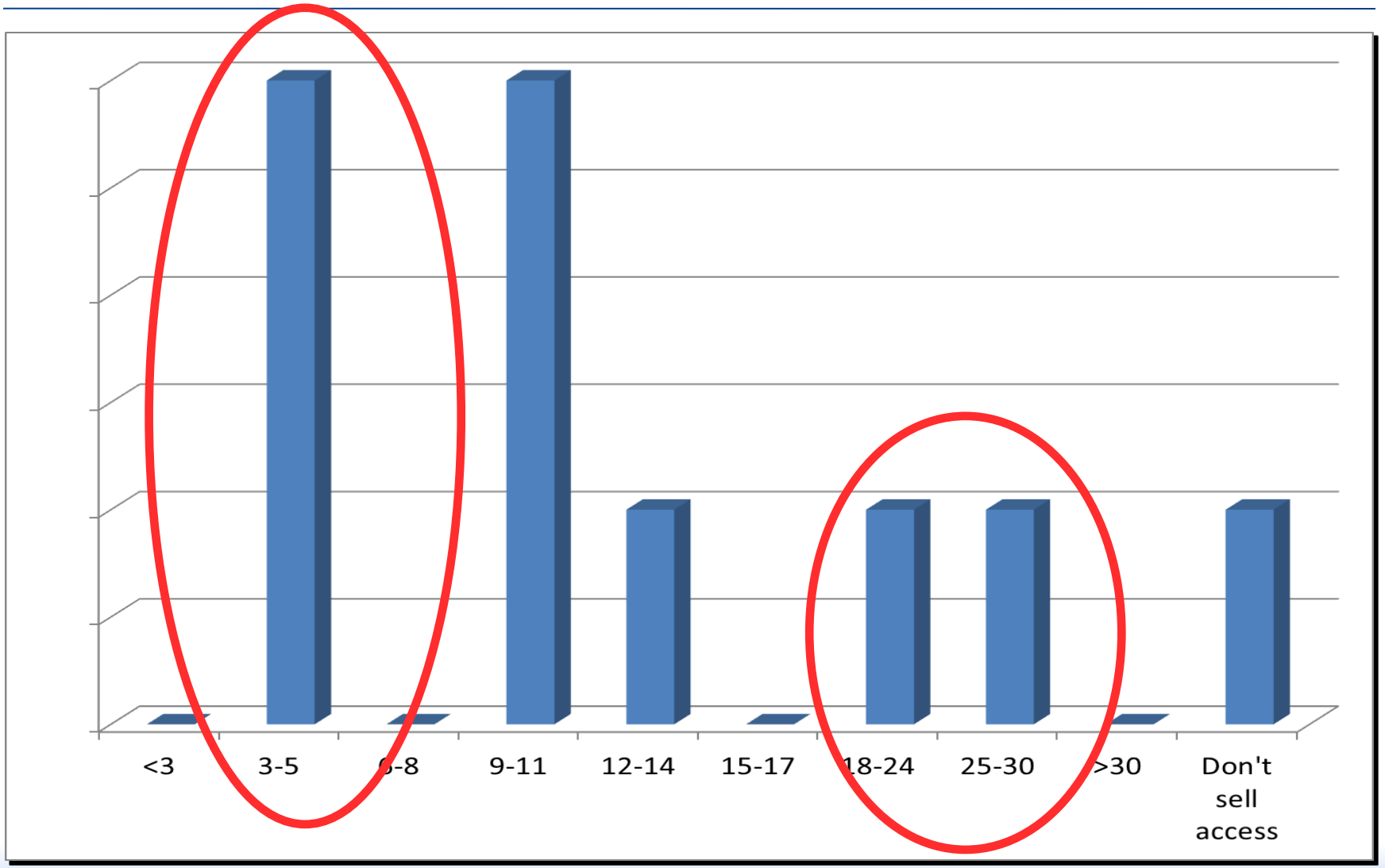
Many suppliers of HPC services

- Publicly funded
  - NCSA, OSC, DoE labs, EPCC, Hartree, etc.
- Specialist HPC companies
  - **NAG**, Red Oak Consulting, …
- Commercial
  - Cray, IBM, CSC, HP(EDS), AWS, …
- In-house

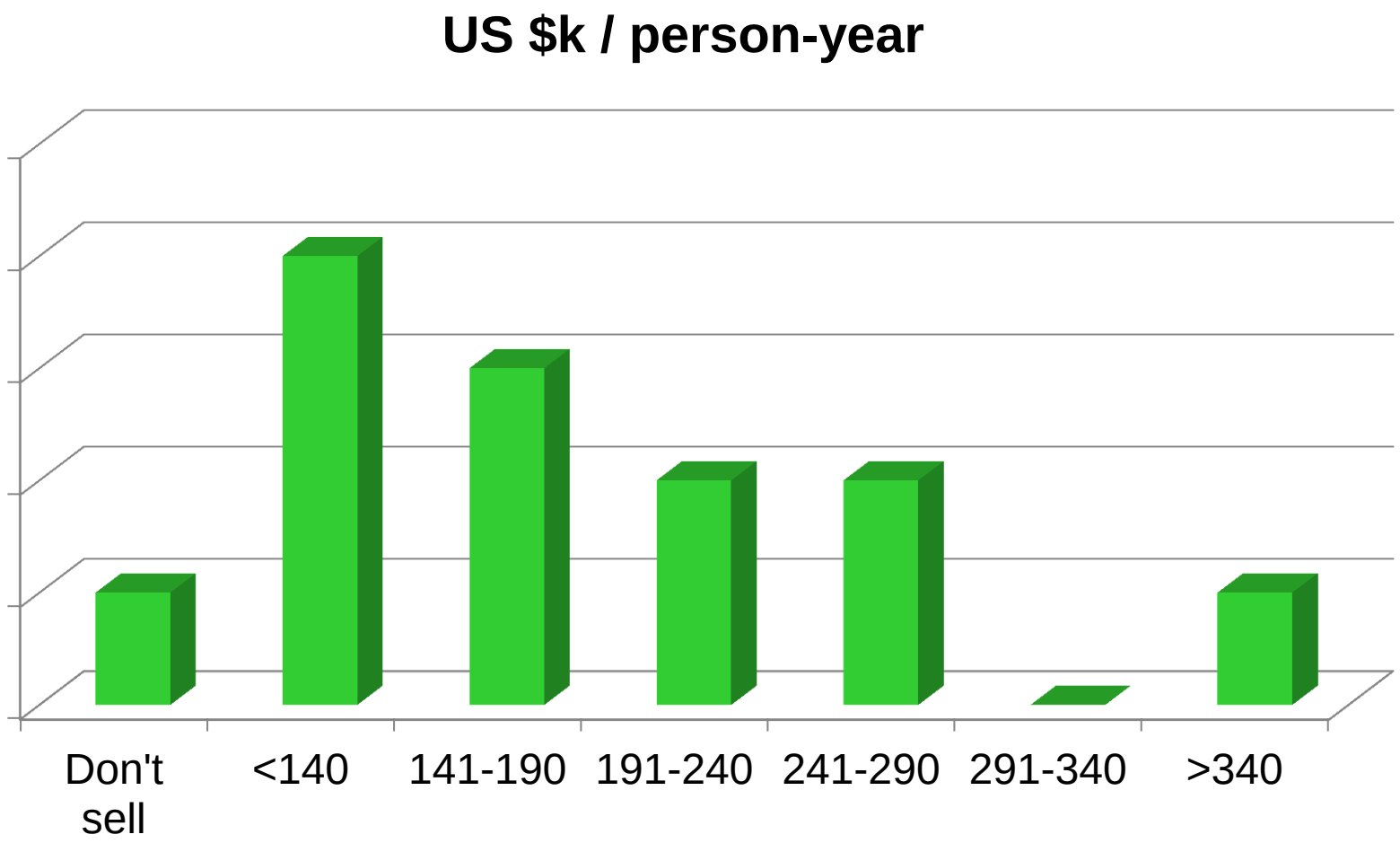
IISW Survey Data

- International Industrial Supercomputing Workshops (IISW)
  - HPC centers involved in industry engagement
  - IISW-4 at SurfSARA Amsterdam in 2013
- (Anonymous) survey of participants run each year

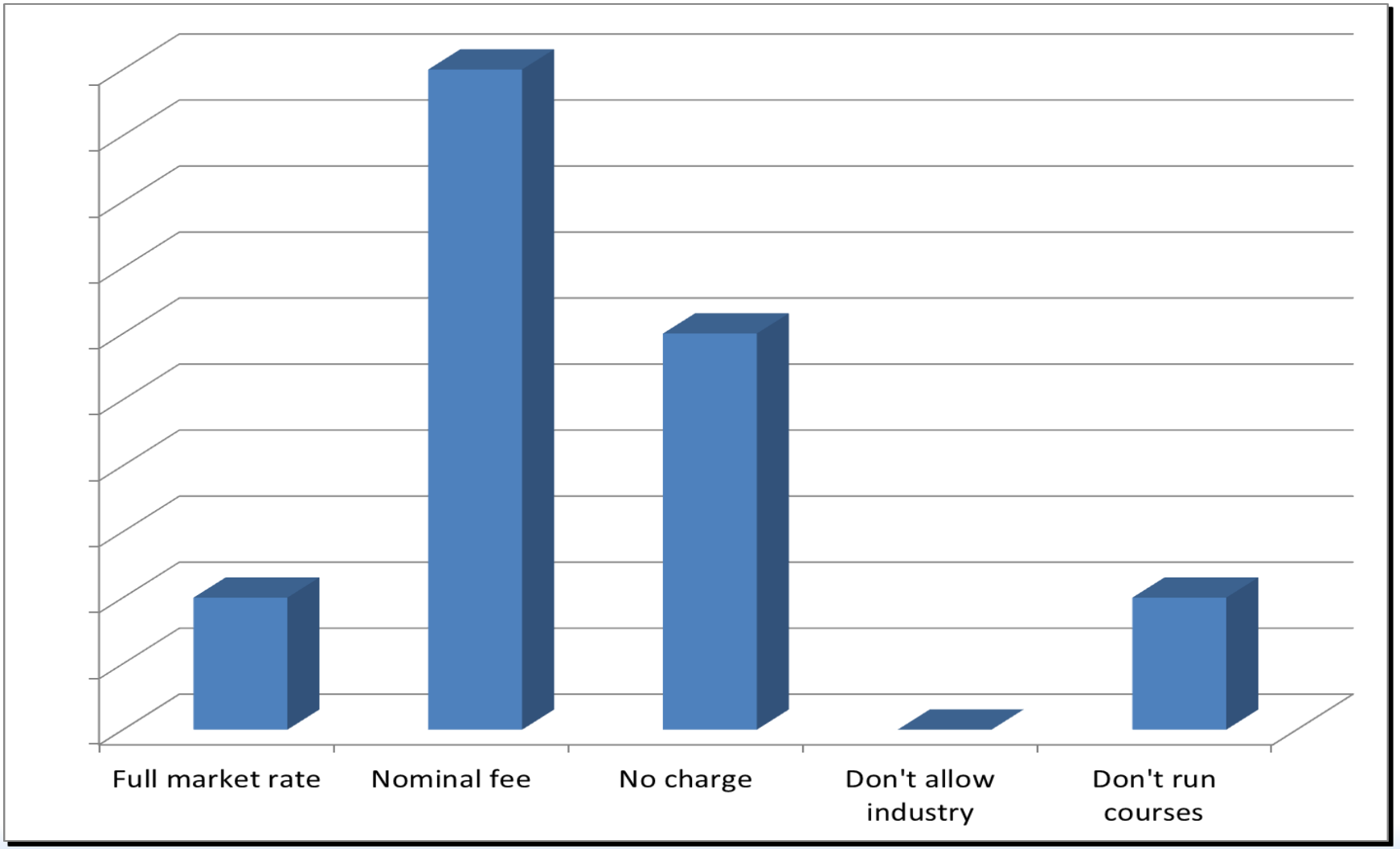
Charge for HPC system time (US c / core-hr)



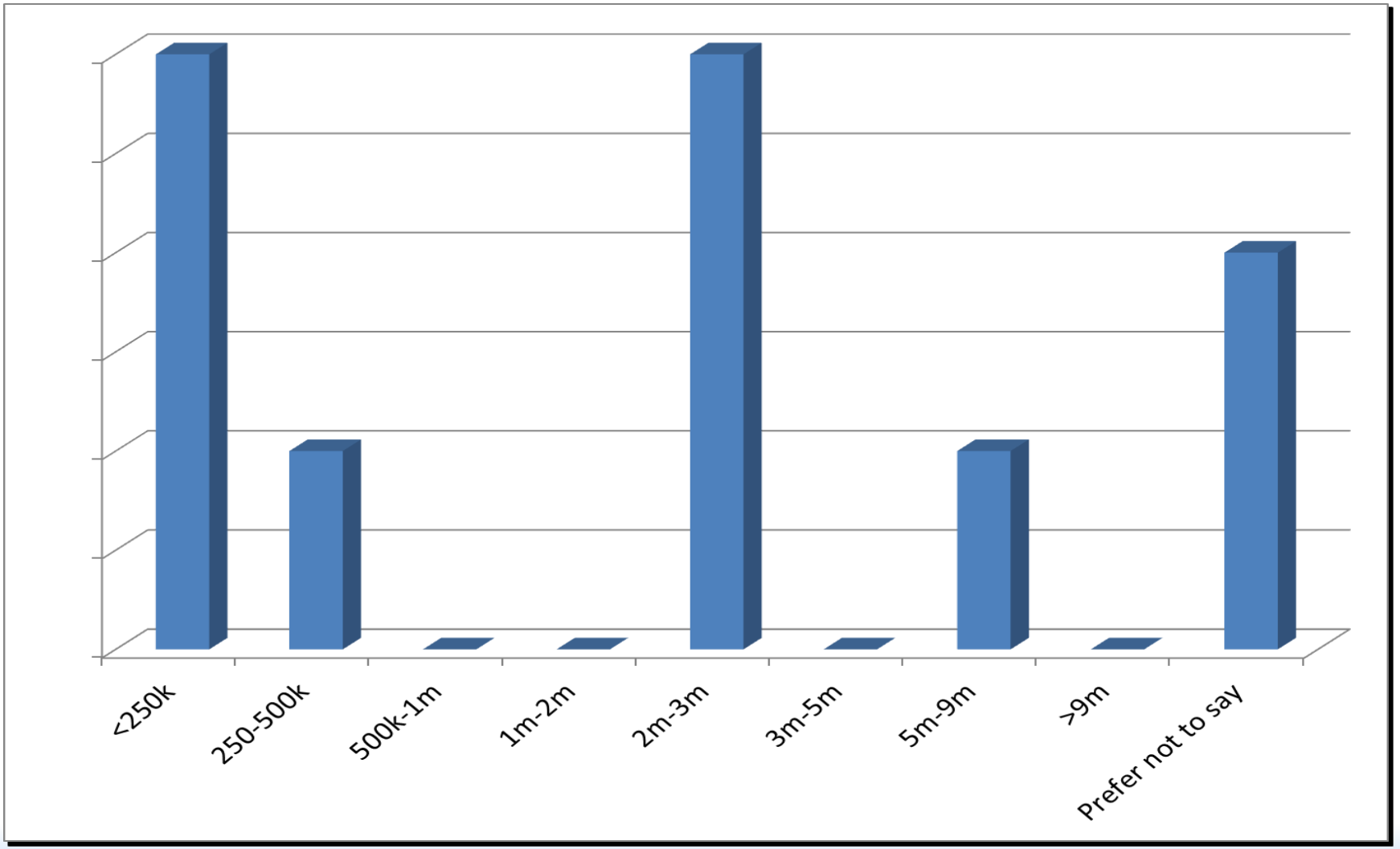
Charge for HPC consultants



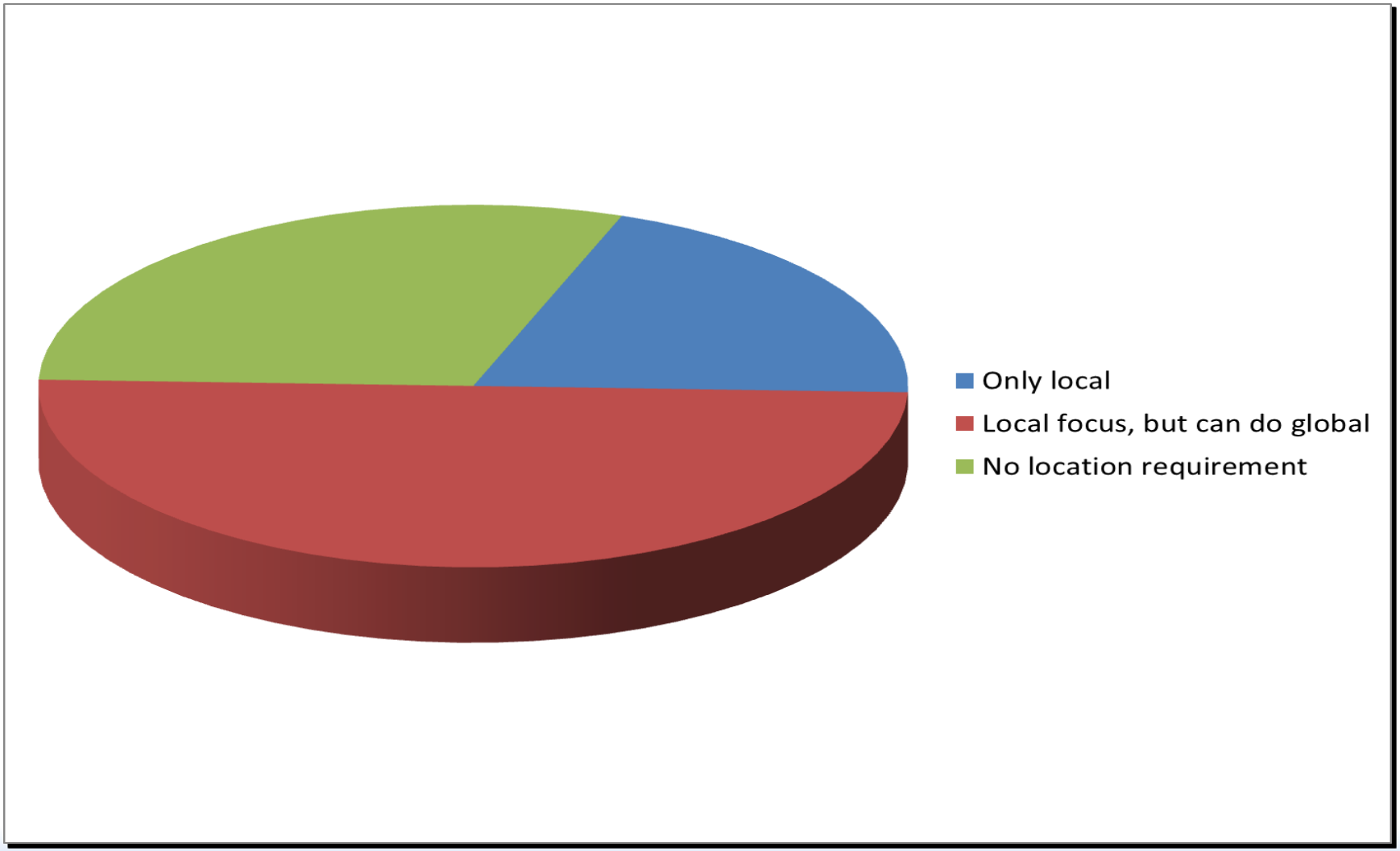
Charge for courses



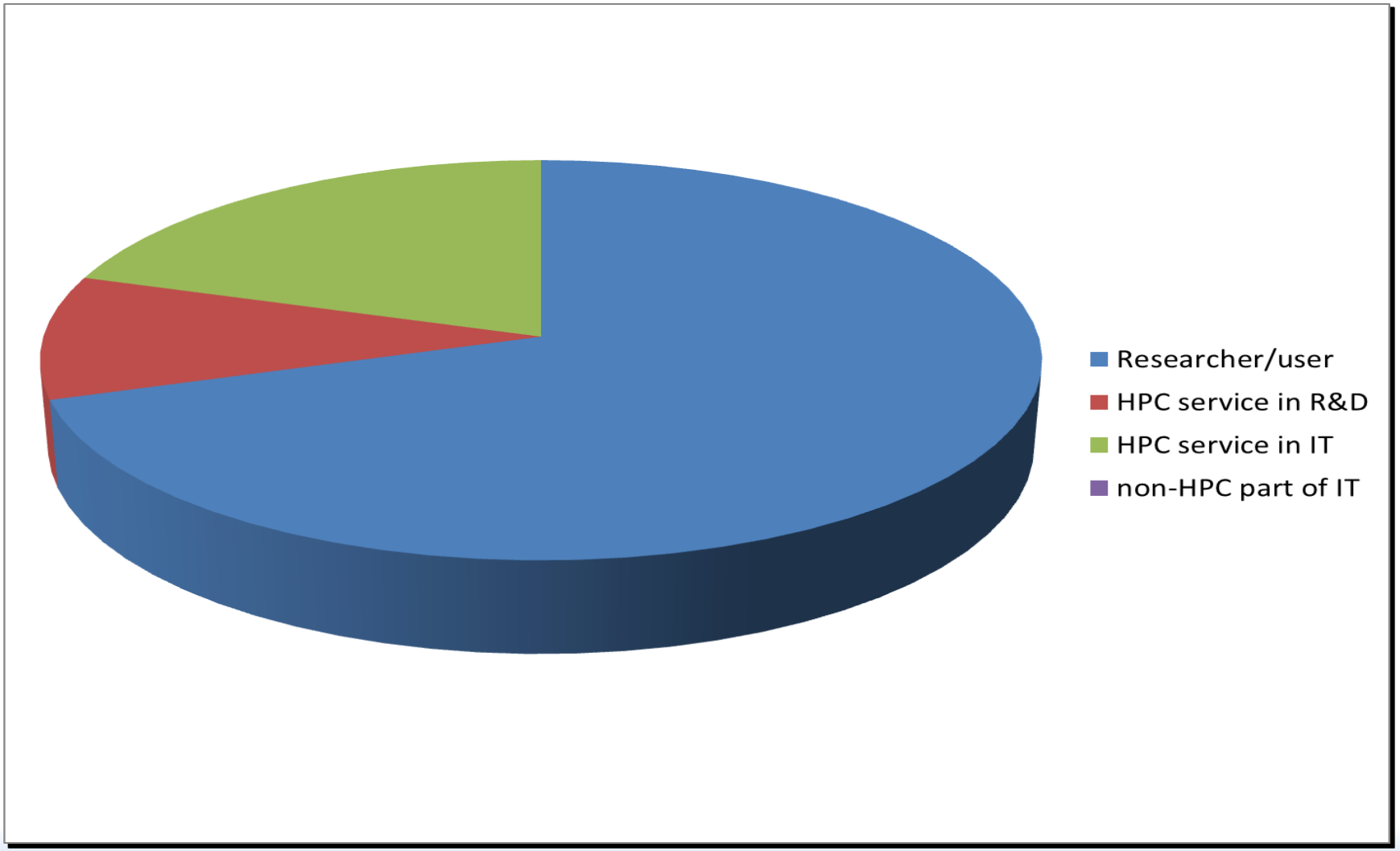
Typical annual income from industry (US $m)



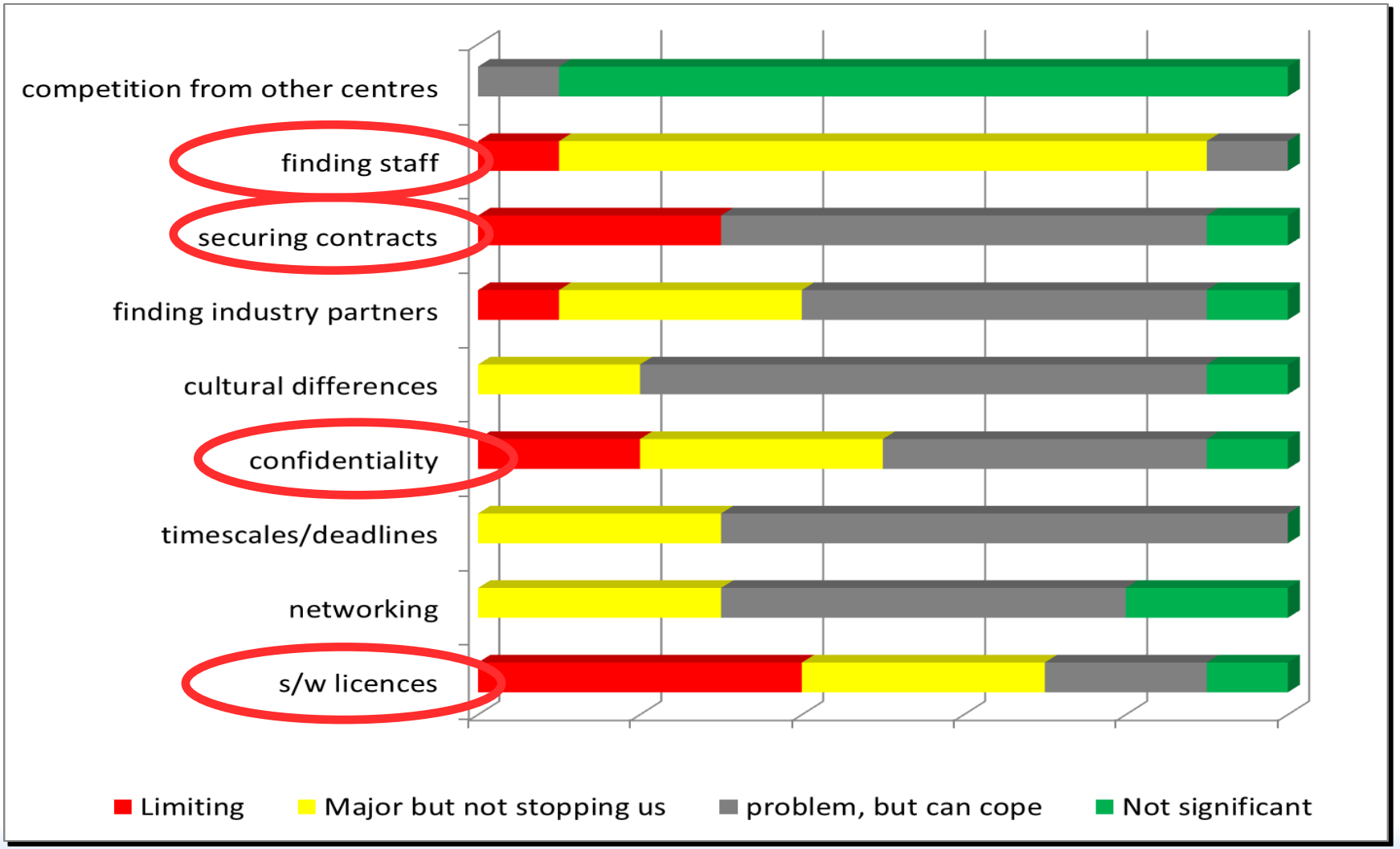
Requirement for regional focus



Which part of company do you engage with?



Challenges working with industry



Summary

Industry engagement is hard work

Need to commit & invest (e.g., sales effort)

Recognise different needs, culture, processes, …

If (when) it works – it delivers real value to industry

@hpcnotes (Andrew Jones)

Results Matter. Trust NAG.

EXPERTS IN HPC & NUMERICAL COMPUTING

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