DRI Retreat Overview

Alan Real, Director of Advanced Research Computing, Durham University

Welcome & housekeeping.

- Event logistics:
- No fire alarms are scheduled.
- If alarm goes off, leave at the back of the room (or down the stairs behind the stage)
  - Assemble under the railway arches.
- Toilets by the registration table.
- Webpage: https://n8cir.org.uk/dri-retreat/
  - Enquiries: enquiries@n8cir.org.uk
  - Handles/Hashtags: @N8CIR, #DRIRetreat
- Online details
  - Airmeet platform
  - All in-person attendees have access to online event.
- Post-event
  - Material will be made available online
  - Videos will be edited (some content may be redacted) & made available online.
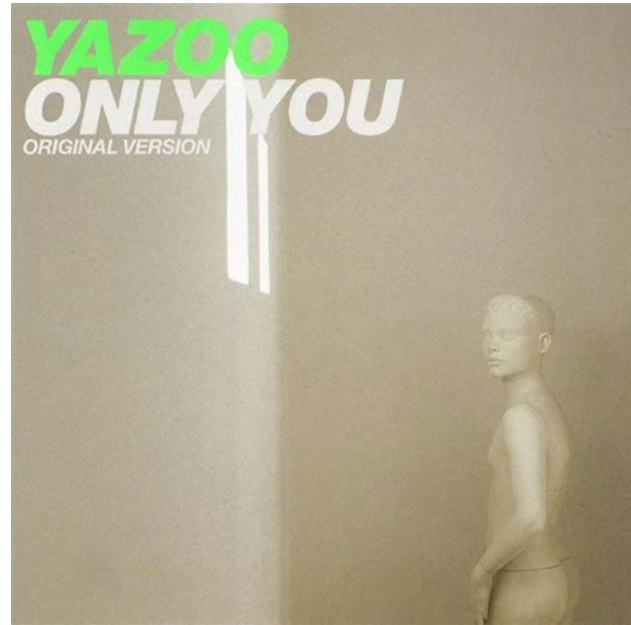
This Is an Experiment!

This is an Experiment!

- This is the first event of its kind in the UK
- Built on the "Virtual Residency programme" from Oklahoma USA
  - 7 annual cohorts
- Everything except the material today is exciting and new ☺
- This means that you're helping us to pioneer a new way of developing the next generation of Digital Research Infrastructure professionals.

Only You …

- … can make the DRI Retreat a success.
  - Ask questions – the only dumb questions are the ones you don't ask.
  - Volunteer your ideas and experiences.
  - Ultimately, it's you who will have to be in charge, not us.

This Is So New, We Don't Know How to Teach It

- For many of the topics, there isn't a single 'way'.

- We're yet to define the topics to the extent that we really know who the 'experts' are who know everything about a given thing.

- Much of the expertise differs based upon context

- **So, most of the sessions are panels**
  - we'll learn from each other!

DRI professionals

aka

(e.g.)
Research computing facilitator (Researcher facing)
HPC sysadmin (System facing)
Research Data librarian (Data facing)
Research Software Engineer (Software facing)
Research computing Director (Stakeholder facing)

What is a DRI professional

- Work with users – researchers and educators – to help them improve their research and/or education productivity and aspirations via advanced digital technologies.

- Typically, one or a few DRI professionals have responsibility for an entire institution, or even multiple institutions.
- Some DRI professionals are or used to be:
  - Academics (current or former);
  - postdocs (current or former);
  - research staff (current or former);
  - IT professionals, including from Enterprise IT (current or former);
  - graduate or undergraduate students (current or former).

What is a DRI professional is NOT?

- A DRI professional is **NOT NECESSARILY** a computer scientist

(in fact, probably most DRI professionals come from non-CS disciplines).

- A DRI professional is **NOT NECESSARILY** a sysadmin (in fact, probably most DRI professionals have little or no system-facing role).

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What Do DRI professionals do?

Professionals who work directly with Science, Technology, Engineering and Mathematics (STEM) and non-STEM researchers and scholars (e.g., humanities), to advance the computing-intensive/data-intensive aspects of their research/scholarship/creative activity.

What Do DRI professionals do (cont.)

Amplify researcher productivity via:

- adapting researcher workflows to DRI systems (e.g., supercomputers, clouds, storage) and teaching how to use these systems;

- bridging between researchers and technology experts;

- anticipating new computing needs for emerging research activities (e.g., GPUs for machine learning);

- helping researchers with limited coding experience to design use-case-specific software and to port to advanced architectures;

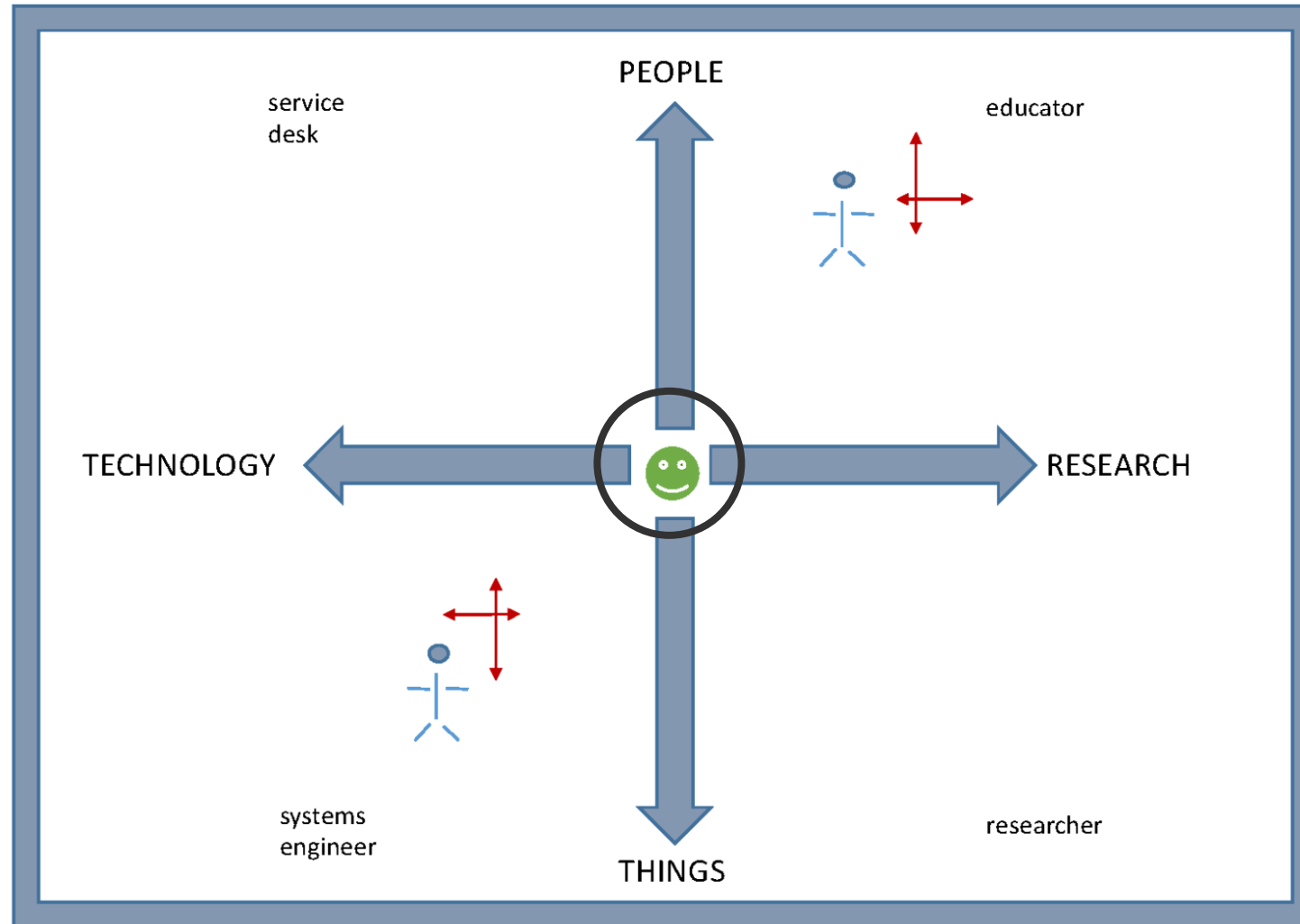- teaching research cybersecurity and compliance (e.g., DSP toolkit);

What else do DRI professionals do?

DRI professionals amplifies researcher productivity via:

- developing strategies for specific use cases;

- teaching data management;

- providing local and national training opportunities (e.g., Software Carpentry workshops for novice research computing skills);

- helping researchers evaluate technology solutions;

- recruiting new users and new use cases;

- researcher advocate to central administration;

- preparing e-Infrastructure focused portions of publications, posters, etc;

- composing text for grant proposals.

What Qualities do DRI professionals posess?

Neeman/Cuff 2016

Who Cares About DRI professionals?

- <u>Researchers</u>: They find us incredibly helpful!
- <u>National leadership</u>:

<u>https://www.ukri.org/wp-content/uploads/2020/10/UKRI-201020-UKinfrastructure-opportunities-to-grow-our-capacity-FINAL.pdf</u>

E-Infrastructure cited as both a sector of research infrastructure development and critical underpinning capability across all research sectors with People, skills and training regarded as critical enabler.

And why else would they fund this?!

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Why Enterprise IT Approaches to Training Won't Work for DRI Professionals

Enterprise IT Training Won't Work

- **Enterprise IT**: Millions of professionals & growing
  Degree programs (AS, BS, MS, PhD, certificates)
    - Certifications (e.g., BCS, CISSP, RHCE, MCSE, etc)
    - Enormous resources devoted to constantly updating skills
    - **NOTE**: This **DOESN'T** take into account the explosion of data science degree programs in the late 2010s.
- **Research Computing**: Thousands of professionals
    - No degree programs
    - No certifications
    - Minimal resources for updating skills
    - Therefore, informal education is our best bet – like this!

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DRI Retreat
aka
Soft skills training for DRI professionals pilot programme

DRI Retreat: What?

- We teach pre-service and in-service DRI professionals how to do (or do better) Research Computing facilitation.
- But then there is a (not so) hidden secret agenda ….

- EPSRC DRI phase 1 call criteria:
  - alignment to one of the following UKRI DRI objectives:
    - Develop and prioritise opportunities for additional utilisation of EPSRC HPC estate to further **expand user base**, including provision for **UKRI researchers outside EPSRC remit.**
    - Scoping and commissioning of activities to support **expansion of the HPC userbase**
    - **Building the UK's skills base** and **software development** community required for the continued operation of **high quality HPC services**.

- Felt like equipping people with professional skills specific to supporting the DRI and its current and future user community would help enable these aims.

DRI retreat: How?

- Proposed week-long workshop to EPSRC as part of DRI Phase-1 investment.

- Funds awarded late December 2021

- Used consultation mechanisms in N8 to pull together an agenda.

- Reached out to many DRI professionals to act as panelists

- Publicised like crazy

- **Only Oklahoma Virtual Residency had ever been dumb enough to try to teach this stuff.**

DRI retreat: Why?

- DRI professionals have strong experience within their discipline (often non-CS).

- Most DRI professionals haven't been Academic staff.

- Sometimes little or no research experience (especially for IT staff who have an enterprise IT background).

- Even if strong research background, typically little or no experience with research outside their own discipline.

- No programme exists outside US Virtual residency for teaching people how to be a DRI professional

- In the olden days, you could take your time learning how to do this – but not anymore ….

- An effective UK DRI needs DRI professionals to be nurtured from as wide a demographic as possible.

DRI retreat: Who's Here?

We can't yet say who's <u>attending</u> this week's workshop, but we can say who's <u>preregistered</u>:

- 225 registrations
    - 107 In-person
    - 118 Remote
    - Across 50 institutions

- >50 Speakers
- >25 institutions

Why is Helping Researchers Hard?

- **Ubiquity**: Within any discipline, a greater proportion of researchers do computing-intensive and/or data-intensive research now than ever before.

- **Applicability**: More disciplines do computing-intensive and/or data-intensive research now than ever before.

- **System Complexity**: The storage hierarchy is getting deeper (flash, non-volatile RAM etc), and parallelism is getting more hybrid (GPUs etc).

- **Conceptual Distance**: The mental gap from handheld computing to command line/Linux/batch/remote/shared.

But we still only have one hour to teach them how to use e-Infrastructure before they lose interest!

Agenda

Session Times	Monday 28 March	Tuesday 29 March	Wednesday 30 March	Thursday 31 March	Friday 1 April
9am		Usability	DRI System Components	Grant Writing	Fostering Positive Vendor Relations
10am					
11am		Intake Interviews / Practical Intake Interviews	Cloud Technologies	Effective Teams	Stories From the Trenches
12 noon	Arrival, registration and lunch	Lunch	Lunch	Lunch	Wrap-up
1pm	The DRI Context	Anticipating Needs	Novel Technologies	Strategic Thinking and Vision	Lunch and Depart
2pm					
3pm	Academic Perspectives	Outreach	Managing a Portfolio	The Funding Landscape	
4pm					
5pm	The DRI Landscape	Industry Panel	Unconference Session	Developing a Profession	
6pm					
7pm			Retreat Dinner		
8pm					

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What Are We Here to Accomplish?

- Learn how to work with researchers who are using e-Infrastructure.
  - Learn how to find them.
  - Learn how to help them.
- Learn how to be institutional research computing leaders.
- Start thinking about becoming national DRI leaders.

- Opportunity for the community to re-connect after pandemic.
- Important to nurture its collective voice.

What Aren't, and Are, We Trying to Do?

- We **AREN'T** trying to teach you a lot of technical content.
  - You can learn that from other sources.
- We **ARE** trying to teach you
the **PROFESSION** of DRI facilitation and leadership.

What's Our Hidden Secret Agenda?

- The real goal is to prepare for an upcoming transition from:
  - more need for this kind of skilled workforce, but
  - fewer people who know how to do it, with
  - no mechanism to prepare a sufficiently large cohort.

- To a streamlined the process so that new DRI professionals can become fully productive quickly, so we can keep up with demand.
  - To some of the participants already know how to do elements of this.
  - But it took a very long time to learn on their own.

- This is where will we find the DRI leaders of tomorrow.

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You're Next ...

Why Be an Institutional DRI Leader?

- Good, warmhearted, virtuous reasons:
  - You have good ideas based on experience and observation, which if implemented would tremendously help your institution's researchers!
  - You love helping researchers use computing to improve their research! (If you didn't, you never would have taken this job.)
  - You know that your administration needs help understanding research computing, and you're great at that!
- Wicked, selfish, mercenary reasons:
  - Better pay.
  - Higher job security.
    - These are because, at any institution, the fraction of employees who are willing to be the grownup in the room is always low.

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Why Be a National DRI Leader?

- Good, warmhearted, virtuous reasons:
  - The national community would benefit from your keen insights!
  - You'll have a chance to influence the course of research history!
- Wicked, selfish, mercenary reasons:
  - Getting noticed by other national leaders will advance your career.

Why This is the Best Job Ever

Every day, you get to see how the work you do helps other people to be successful.

Acknowledgements

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- All of you for helping make this happen!

- N8 Partners