

IT Needs of Researchers

This biennial survey, the second commissioned by PVC Prof Tim Softley, seeks to understand the IT you need to support your research and how that is changing over time. The results from the 2017 Survey and a report on follow-on actions can be found at <https://intranet.birmingham.ac.uk/it/teams/infrastructure/research/bear/documents/public/website-revised-2015/survey/IT-Survey-YouSaidWeDid-v1.2-public.pdf>

We are interested to know where developments in your discipline require new tech solutions as well as where there are gaps in the current IT service you receive. This may require new service innovation or enhancements to current services. Whilst we cannot promise to deliver all that is asked for, your views will help shape the strategy for IT provision for researchers for the coming years and support the goals of 'Birmingham 2026'.

The Survey is split into 4 parts. You do not have to answer all parts or all questions, but please provide us with responses in the areas that are important to you.

Part 1 seeks to understand how well we are doing with the services we currently provide centrally.

Part 2 looks more closely at needs which may be specific to you, your research group, and your College.

Part 3 seeks your opinion on new or transformed services which will be considered for central, University wide provision and which will be of benefit to a broad spectrum of researchers.

Part 4 (at the bottom of this page) is for reference and outlines the services currently provided centrally.

Details of the Survey

If you complete the whole survey it should take between 10 and 15 minutes (although there are several free text input fields where you may choose to spend more time.)

A PDF version of the survey showing all questions is available at XXXXXX

About You

Whilst we would appreciate knowing your name and department, anonymous returns are also acceptable.

Your name

Your Research Area

Your College

- College of Arts and Law
- College of Engineering and Physical Sciences
- College of Life and Environmental Sciences
- College of Medical and Dental Sciences
- College of Social Sciences
- Other

If 'Other' please specify

Your School

Your email address

Are you a member of staff or a research student

- Staff including Honorary appointees
- Research Student
- Associate Staff

May we contact you in the future to understand in more detail your IT requirements?

- Yes
- No

How should IT Services best communicate with you? (Please tick all that would be useful)

- Email
- Newsletter or blog
- Regular seminars in your School or College
- Advertised drop-in sessions across campus
- Through Buzz and Buzz Bites
- Social media
- Other

If 'Other' please specify

Part 1: Your Views on Current Services

In this Section we seek your opinion on how well central services, including BEAR meet your current needs. The BEAR services are provided to support data or computationally intensive research and aimed at meeting the needs of a wide spectrum of University researchers. Collectively known as BEAR (Birmingham Environment for Academic Research) the services are described in more detail in Part 4 and can also be found at www.bear.bham.ac.uk

FYI - In Part 2 we will turn to think more closely about specific College requirements. The final section of this Survey invites you to tell us about your ideas for transforming the services to meet the evolving needs of research.

Do you use existing BEAR services?

- Yes
 No

Which BEAR services do you use? (Please tick all that apply)

- BlueBEAR, our Linux-based, batch processing High Performance Computing (HPC) cluster
- CaStLeS, (VM and HPC) compute and storage for life sciences research
- BEAR Cloud, the next generation of powerful compute resources built for flexibility, accessibility and efficiency.
- BEAR Datashare, offering dropbox-type facilities for collaboration both on and off campus
- BEAR View, offering visualisation, collaboration and large scale videoconferencing facilities
- BEAR Research Data Store (RDS), providing storage for 'work-in-progress' data.
- BEAR Software
- BEAR Research Data Network, catering for the fast transmission of exceptional data volumes, generated by specific scientific equipment on campus.
- BEAR Plus, additional computational resources available to Birmingham researchers through the Tier2 regional centres such as HPC Midlands Plus and other national resources.
- Exclusive BEAR, enabling research groups with demanding or time-sensitive workloads to buy centrally managed and dedicated compute capacity
- BEAR Gitlab
- BEAR Database Service, runs on MariaDB which is compatible with MySQL. The service runs in a high-availability cluster and is available both from the BlueBEAR cluster and from the campus network.
- BEAR Training

Are you aware of the committees (and your College representatives) that oversee research computing operations? Please tick all those you know of.

- Academic IT Reference Group (AIRG) chaired by PVC Prof Tim Softley
- Research Computing Management Committee (RCMC) chaired by Dr Colin Rowat
- CaStLeS Exec and Strategic Oversight Group
- BEAR User Group, led by Dr Liza Jabbour

In what way do BEAR services not meet your need?

National and Other External Resources

Do you use regional, national or international computing facilities for your research? Please indicate all that apply:

- HPC-Midlands-Plus
- Archer
- Prace
- Other (including industrial partnerships)
- Commercial Cloud
- I do not use national or external resources

Have you / would you consider purchasing dedicated resources within the BEAR infrastructure? These resource (compute power or storage) could be funded through research grants or other income, and Advanced Research Computing manages them on your behalf.

Yes No

If you are considering purchasing dedicated resources within the BEAR infrastructure you may need more information. Please ask any questions here.

Do you currently use application software on BlueBEAR or BEAR Cloud (including CaStLeS)?

Yes No

Which application software do you use on BlueBEAR or BEAR Cloud or CaStLeS?

- ABAQUS
- ANSYS
- Keras
- MATLAB
- OpenFOAM
- PyTorch
- Python
- R
- TensorFlow
- Other

If 'Other' please specify

Thinking about application software provided centrally for your desktop or available within the BEAR computing environment (BlueBEAR, BEAR Cloud and CaStLeS) are there missing applications or application areas that would make a real difference to your research work?

 Yes

 No

Before answering, please check the list of applications currently available on BEAR, see <https://intranet.birmingham.ac.uk/it/teams/infrastructure/research/bear/bluebear/apps>

Which additional applications would you like to see made available on BEAR?

Which additional applications would you like to see made available to your desktop?

Training

Are you aware of the training provided by IT Services to support use of BEAR services and computational aspects of research?

 Yes

 No

(for details see <https://intranet.birmingham.ac.uk/it/teams/infrastructure/research/bear/bear-training>)

	1 Not at all satisfied	2	3	4	5 Very satisfied
If you have attended BEAR training, how satisfied were you with the training provided?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate which additional training courses would be of benefit.

- Matlab
- R
- Programming languages and techniques
- Data management
- Data analytics
- Deep Learning and AI
- Advanced Use of BlueBEAR
- Other training courses

Please indicate what other training courses would be of value.

Coding Needs and Support

	1	Not at all important	2	3	4	5 Very important
How important is programming to your research? By programming here we mean writing your own/your Group's computer code, scripting, or developing macros to run within existing applications.		<input type="radio"/>				

How would you rate the quality of the code you/your Group write? Does it produce robust, reproducible, findable and shareable methods, results and research?

- 1 Inadequate
- 2
- 3
- 4
- 5 Excellent

	1	Not at all important	2	3	4	5 Very important
How importantly would you rate the availability of programming support - an expert working with your group for a few days over the course of a year?		<input type="radio"/>				

Overall Satisfaction with BEAR

	1	Not at all satisfied	2	3	4	5 Very satisfied
How satisfied are you with the overall level of support for BEAR services that you receive from the Advanced Research Computing (BEAR) Team?		<input type="radio"/>				

What could be done to improve the support for BEAR services that you receive?

Do you have any other comments on BEAR services?

Data Storage and Management Feedback

Are you aware of the requirements for research data management and sharing mandated by the University and research funders?

- Yes
 No

For background information and support see

<https://intranet.birmingham.ac.uk/as/libraryservices/library/research/rdm>

Do you have Data Management Plans (DMPs) in place for all or some of your research projects?

- All funded projects
 some of my funded projects
 All projects whether funded or not
 None of my projects

Are you aware of the central University data storage and related services for research: the BEAR Research Data Store (RDS) and the ePrints Repository - part of the University of Birmingham Institutional Research Archive (UBIRA) delivered by the Library?

- Yes
 No

(The RDS is designed to provide a safe and secure home for your research data while the work is in progress; while the ePrints repository in UBIRA will retain your data after publication or when it is ready to be made 'open')

	1 Not at all	2	3	4	5 Very well
How well does the BEAR Research Data Store (RDS) meet the needs of your active research data?	<input type="radio"/>				
How well does the UBIRA ePrints Respository meet your open data needs?	<input type="radio"/>				

Where do you store your data? (Please tick all that apply)

- On my own/research group storage
 On Department/ School or College storage
 On the BEAR RDS
 On subject-specific repositories
 In the UBIRA ePrints repository (for data associated with publications & open data)
 I don't have enough disc space I have to throw data away
 Other

If 'Subject-specific repository' please specify

If 'Other' please specify

Typically how much working Research Data would your work on one of your research projects generate during the lifetime of the project?

- Less than 0.5 TBytes (500 GBytes)
- 0.5 - 1 TBytes
- 1 - 5 TBytes
- 5 - 10 TBytes
- 10 - 100 TBytes
- More than 100 TBytes
- I do not know

Typically how many concurrent projects are you involved with?

- 0 to 2
- 3 to 5
- 5 to 10
- 10 to 20
- more than 20
- I do not know

How much data associated with a publication (Open Data) will your work on one of your current research projects generate on average that needs to be retained and made available by the University upon publication of research results ?

- Less than 0.5 TBytes (500 GBytes)
- 0.5 - 1 TBytes
- 1 - 5 TBytes
- 5 - 10 TBytes
- 10 - 100 TBytes
- More than 100 TBytes
- I do not know

On average, how many publications a year are you involved with that will require this volume of data?

Do you routinely consider and include the costs of your data storage when preparing and submitting funding bids?

- Yes
- No

Tell us why you do not include data storage costs.

- I have my own and adequate storage
- I only need the default 3TBS provided by BEAR RDS
- Data will be stored in a subject specific repository on completion
- I had not considered the costs of storage
- Other

Tell us about anything else you need to meet the Open Data requirements for your research projects?

Datasets

- Yes
- No

Are your research needs met by the datasets purchased/made available by the University?

If your dataset needs are not met, what is missing?

Collaboration Tools

When you are working collaboratively with your Birmingham colleagues what IT tools do you use:

- BEAR DataShare
- Dropbox
- Skype
- BEAR GitLab
- Github
- Electronic Lab Notebooks
- Sharepoint
- Other

If 'Other' please specify

Collaboration Tools

When you collaborate with colleagues nationally/internationally what IT tools do you use:

- BEAR DataShare
- Dropbox
- Skype
- BEAR GitLab
- Github
- Electronic Lab Notebooks
- Sharepoint
- Other

If 'Other' please specify

You have already given us feedback on BEAR. Please focus here on your overall Satisfaction with other aspects of IT Services support for research

What is the biggest IT barrier you face in doing your research?

	1 Not at all satisfied	2,	3	4	5 Very satisfied
How satisfied are you with the overall level of support you receive from IT Services?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any other comments about centrally supported IT for research?

What else could IT Services do to help the University achieve its Birmingham 2026 research goals?

<https://www.birmingham.ac.uk/strategic-framework/Overview/birmingham-2026.aspx>

Part 2: Specific Needs of Your Research Area, School or College

Part 1 has concentrated on BEAR and other broadly applicable, centrally provided resources. Here we would like to explore specialist or local needs, perhaps confined to one College or School or a particular operation e.g support for the computers associated with instruments or desktops

Which local sources of IT support do you rely on for your research needs?

- Self-sufficient
 Other member of Research Group/School
 College IT Staff
 Other

Are any of your needs best met by services focussed within your Group/School/College?

- Yes
 No

Please describe what services are best met within Group/School/College and why this is important

Please tell us about your desktop environment.

- Windows PC/Laptop (managed by College IT Staff)
 Mac (managed by College IT Staff)
 Linux workstation (managed by you/your Group)
 Linux workstation (managed by College IT Staff)
 Own device
 Other

If other, please describe

Are these local resources maintained and managed by

- The College
 Your School
 Your research group
 By funding from research grants
 Non-existent

Part 3 Looking to the Future

Is AI or Machine Learning of relevance to your area of research?

- Yes
 No
 Maybe

A new BEAR AI service, based on IBM POWER9 and with the PowerAI software suite will be launched later this Spring.

Please contact us at bearinfo@contacts.bham.ac.uk if you would like to discuss possibilities.

Are there areas of expansion or new directions in which you see your research developing which will require enhanced IT support or support from other areas of Professional Services? Please specify.

Select a category and then tell us what single IT-related innovation or radical change to an existing service would make the most difference to your research activity?

- Innovation
 Transform Existing Service

Please tell us about the innovation that would substantially enhance your ability to do your research.

Please tell us about your idea for transforming an existing service that would have a positive impact on your research.

Would you add the cost of (substantial) coding support from Research Software Engineer to your grant applications if such a service existed?

- Yes
 No

You have completed all questions in the survey. Part 4 below is provided as a reference to existing services.

Please scroll down to the bottom of the page to SUBMIT your answers.

Part 4 Current Provision

There are no questions in the Section. It summarises the services currently provided to support research.

Services provided under the BEAR banner - the 'Birmingham Environment for Academic Research' - are given below. More detail can be found at www.birmingham.ac.uk/bear

Software to aid your research, provided either at cost or free, is listed at :
<https://intranet.birmingham.ac.uk/it/teams/infrastructure/end-user/software/SoftwareA-Z> and
<https://mysoftware.bham.ac.uk>

Datasets - provided and supported by the Library Services - can be found at
<https://intranet.birmingham.ac.uk/as/libraryservices/library/services/research>

Details of UBIRA and the ePrints open data repository can be found on the Library web pages at
<https://intranet.birmingham.ac.uk/as/libraryservices/library/research>

Summary of BEAR Services

BEAR is a collection of complementary IT resources managed by IT Services that are designed to support research. Further details and operational policies can be found on the BEAR website at www.birmingham.ac.uk/BEAR.

Currently the components of BEAR are:

- BlueBEAR, our Linux-based batch processing High Performance Computing (HPC) cluster
- BEAR Cloud (including CaStLeS), powerful compute resources, providing virtual machines (VMs) built for flexibility, accessibility and efficiency.
- BEAR Datashare, offering dropbox-type facilities for collaboration both on and off campus
- BEAR View, offering visualisation, collaboration and large scale videoconferencing facilities including a 4 metre by 2 metre display screen, 2D and 3-D imaging and movement tracking.
- BEAR Research Data Store (RDS), providing storage for 'work-in-progress' data, including a facility for groups with exceptionally large requirements to purchase capacity.
- BEAR Archive: a cost effective and energy efficient archive for the long-term retention of research data which is not open (or associated with a publication but redacted) and not in use.
- * BEAR Software: advice, coaching and coding services from Research Software Engineers.
- * BEAR Gitlab: an on-campus software repository supporting academic programmers through the whole software lifecycle.
- BEAR Research Data Network, catering for the fast transmission of exceptional data volumes, generated by specific scientific equipment on campus.
- BEAR Plus, additional computational resources available to Birmingham researchers through the Tier 2 regional centres and other national resources. (Some of these national resources may be paid-for services)
- Exclusive BEAR, enabling research groups with demanding or time-sensitive workloads to buy centrally managed and dedicated compute capacity. Costs for management and all supporting infrastructure (racks, switches and of course electricity) are usually met by IT Services.
- BEAR database service. The service runs on MariaDB which is compatible with MySQL. The service runs in a high-availability cluster and is available both from the BlueBEAR cluster and from the campus network.

Data Services

In the data section mention is made of 'Research Data' and 'Open Data'. These terms are defined below:

"Research Data": the University has adopted the definition of Research Data from the Concordat on Open Research Data (<http://www.rcuk.ac.uk/research/pendata/>):

"Research data are the evidence that underpins the answer to the research question, and can be used to validate findings regardless of its form (e.g. print, digital, or physical). These might be quantitative information or qualitative statements collected by researchers in the course of their work by experimentation, observation, modelling, interview or other methods, or information derived from existing evidence. Data may be raw or primary (e.g. direct from measurement or collection) or derived from primary data for subsequent analysis or interpretation (e.g. cleaned up or as an extract from a larger data set), or derived from existing sources where the rights may be held by others. Data may be defined as 'relational' or 'functional' components of research, thus signalling that their identification and value lies in whether and how researchers use them as evidence for claims. They may include, for example, statistics, collections of digital images, sound recordings, transcripts of interviews, survey data and fieldwork observations with appropriate annotations, an interpretation, an artwork, archives, found objects, published texts or a manuscript.

"Open Data" - means Research Data that are retained at the conclusion of a project which are then available to be subject to further scrutiny openly and without restriction. This Policy provides further information on the retention of Research Data on completion of a research project, and what Research Data may be made open, and where restrictions on access might apply.

Research Software Development

Alongside the new BEAR Software service, peer support for those who develop software as part of their research effort is available through the Academic Programmers Special Interest Group

<http://www.birmingham.ac.uk/research/activity/mds/centres/computational-biology/academic-programmers-sig.aspx>