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University of Cambridge

Welcome to the IRIS Collaboration Meeting

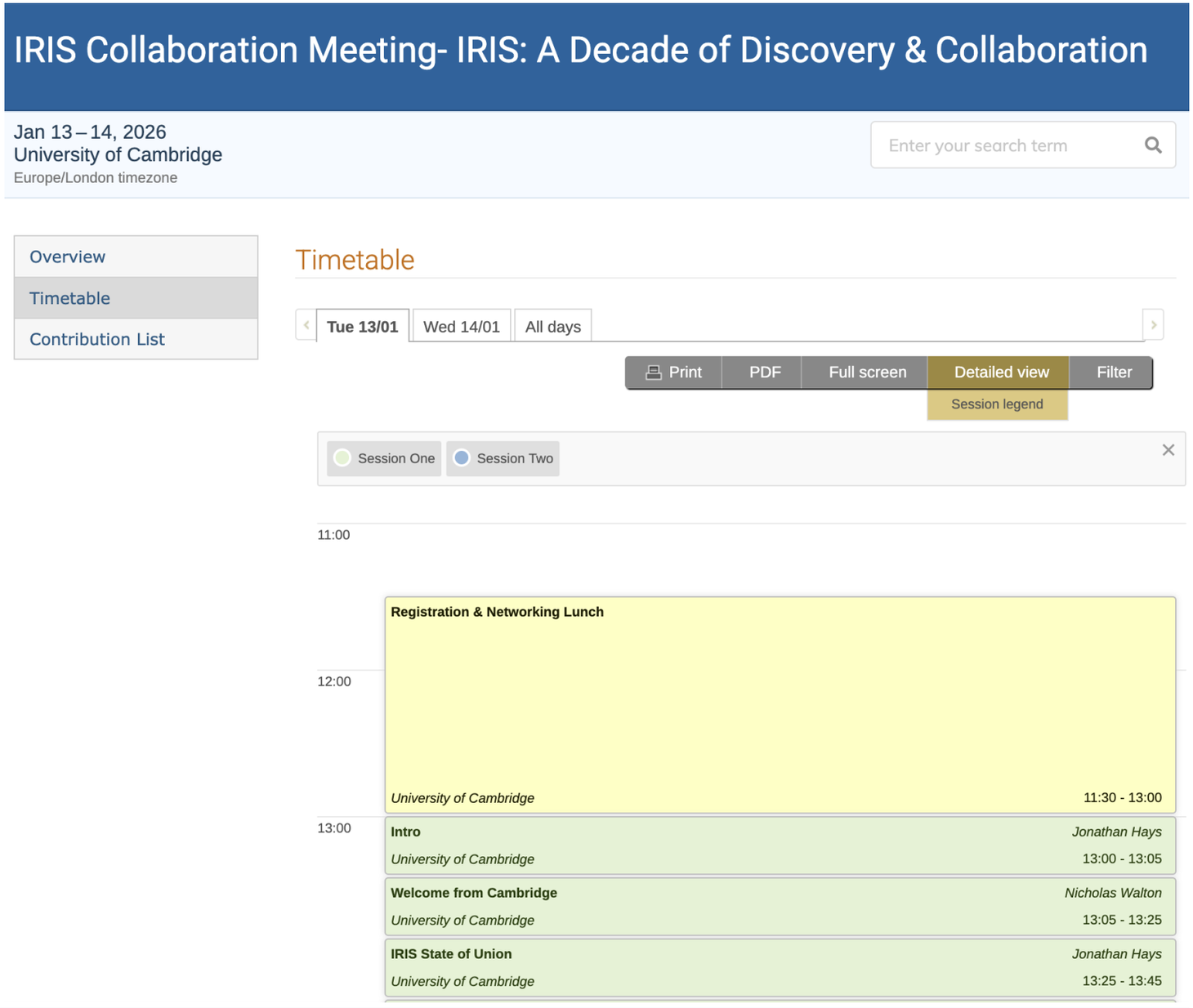
IRIS: A Decade of Discovery & Collaboration

Welcome to Cambridge

- Last IRIS F2F in Cambridge was pre-Covid – April 2019!
  - That was the first of these F2F meetings, see pages at https://indico.ph.qmul.ac.uk/indico/conferenceDisplay.py?confId=446
- Good to welcome you all to Cambridge again at the start of 2026
  - Significant evolution of IRIS in the last ½ decade with IRIS now established as vital core infrastructure underpinning much of STFC (and UK Space Agency) science
- Agenda over the next two days focused around Astro usage, Particle Physics usage, Facilities provision and IRIS operational systems
- Discussion sessions allow insights into next steps for the evolution of the IRIS digital research infrastructure

IRIS Meeting Logistics

- Lunch/ breaks in Hoyle Foyer
- Dinner tonight, Tuesday, 19.00 for 19.30 at the Granta Pub
- Taxi signup at reception
- Code of Conduct: any incidents then contact Andrew.sansum@stfc.ac.uk or Joanne.ogden@stfc.ac.uk
- Enjoy the meeting



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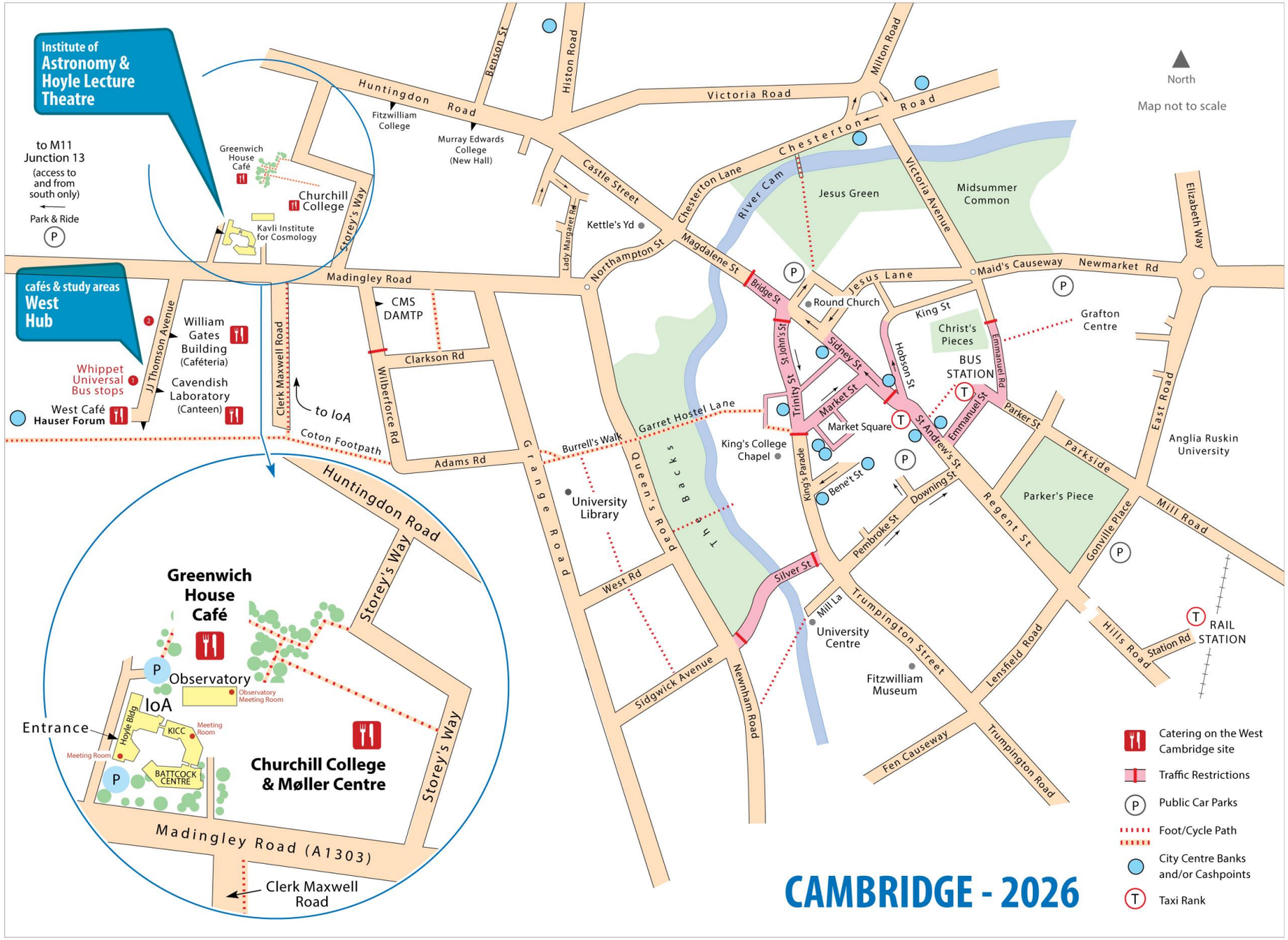

Institute of Astronomy & Hoyle Lecture Theatre
to M11 Junction 13 (access to and from south only)
Park & Ride
cafés & study areas West Hub
Whippet Universal Bus stops
West Café Hauser Forum
William Gates Building (Caféteria)
Cavendish Laboratory (Canteen)
Greenwich House Café
Churchill College
Kavli Institute for Cosmology
Fitzwilliam College
Murray Edwards College (New Hall)
CMS DAMTP
to IoA
Coton Footpath
Huntingdon Road
Madingley Road
Clarkson Rd
Adams Rd
Burrell's Walk
Garret Hostel Lane
Victoria Road
Milton Road
Chesterton Road
Chesterton Lane
Castle Street
Northampton St
Magdalene St
Bridge St
Jesus Lane
Maid's Causeway
Newmarket Rd
Elizabeth Way
River Cam
Jesus Green
Midsummer Common
Round Church
King St
Christ's Pieces
Grafton Centre
BUS STATION
Sidney St
Hobson St
Market St
Market Square
Trinity St
St John's St
Emmanuel Rd
Emmanuel St
St Andrew's St
Parker St
East Road
Anglia Ruskin University
Parkside
Parker's Piece
Mill Road
Gonville Place
Regent St
Downing St
Pembroke St
Silver St
King's College Chapel
Bene't St
King's Parade
University Library
Queen's Road
The Backs
Grange Road
West Rd
Sidgwick Avenue
Newnham Road
Mill La
University Centre
Fitzwilliam Museum
Trumpington Street
Trumpington Road
Fen Causeway
Lensfield Road
Hills Road
Station Rd
RAIL STATION
Lady Margaret Rd
Storey's Way
Clerk Maxwell Road
Wilberforce Rd
J J Thomson Avenue
Benson St
Histon Road
Victoria Avenue
Kettle's Yd
Greenwich House Café
Observatory
Observatory Meeting Room
IoA
Hoyle Bldg
KICC
Meeting Room
BATTCOCK CENTRE
Entrance
Churchill College & Møller Centre
Madingley Road (A1303)
Clerk Maxwell Road
North
Map not to scale
CAMBRIDGE - 2026
Catering on the West Cambridge site
Traffic Restrictions
Public Car Parks
Foot/Cycle Path
City Centre Banks and/or Cashpoints
Taxi Rank


© IoA 2014 - MAP NOT TO SCALE
B.P. INSTITUTE
STABLES GUESTHOUSE
MADINGLEY RISE HOUSE
EARTH SCIENCES - BULLARD LABORATORIES
GARDENER'S COTTAGE
Footpath to Storey's Way and Churchill College
OBSERVATORY
IoA Library
Croquet Lawn
INSTITUTE OF ASTRONOMY
(Hoyle Building main Reception)
Corfield Wing
KAVLI
NORTHUMBERLAND TELESCOPE
THORROWGOOD TELESCOPE
Emergency Assembly Point
Lecture Theatre
BATTCOCK CENTRE
APM
WORKSHOP
36-INCH TELESCOPE
3-MIRROR TELESCOPE
Car Park
Meeting Room
Cycle Shelter
Main Entrance
Toilets
Madingley Rise
M11 Junction 13 (to and from south only), and Madingley Road Park & Ride bus station
A1303 Madingley Road
J.J. Thomson Avenue
Uni-4 Bus Stops
City Centre
Clerk Maxwell Road
N
Site Map: Institute of Astronomy, Kavli Institute for Cosmology (KICC) & the Battcock Centre (Experimental Astrophysics)


IoA
Madingley Rise Site, University of Cambridge
Institute of Astronomy
Sheppard Flats
Fitzwilliam College Chapel
Benson House
Fitzwilliam College
Murray Edwards College
Möller Institute
Churchill Rd
Cambridge Bicycle Workshop
churchill college
St. Edmund's College, University of Cambridge
Churchill College
Namaste Village Cambridge
Cambridge University Park and Cycle
Madingley Rd
36 min
1.7 miles
Lucy Cavendish College
Kettle's Yard
Las Iguanas - Cambrid
Department of Applied Mathematics and...
Clarkson Rd
Grange Rd
Queen's Rd
St John's College Playing Fields
hauser forum
Emmanuel College Sports Ground
Cambridge Lawn Tennis Club
Bridge of Sighs
Stacey Ln
Willberforce Rd
Old Fields and Gym, Trinity College
Burrell's Field
North Paddock
The Avenue
Adams Rd
38 min
1.7 miles
Cambridge University Athletics Track
Hinsley Lane, Intercollegiate...
Sylvester Rd
South Paddock
Trinity Hall Cambridge
The Needham Research Institute
Cambridge University Library
Clare College Conferencing
West Court Gate - Clare Hall
Clare Hall Gym and Pool
Robinson College
King's College Chapel
The Backs
King's College Bridge
Bin Brook
King's College School
West Rd
West Road Concert Hall
Queens' College
Anchor Cambridge
Cranmer Rd
Hand Fulla Soul
Dane Dr
Leckhampton House, Corpus Christi College
Selwyn College, Cambridge
Sidgwick Site
Sue Hill Celebrant
Gough Way
Laundress Green
Silver St
Porters' Lodge
Pine Wlk
Spens Ave
Tyndale House
Stukeley Cl
Lee Seng Tee Hall
Google Maps
Grant pub

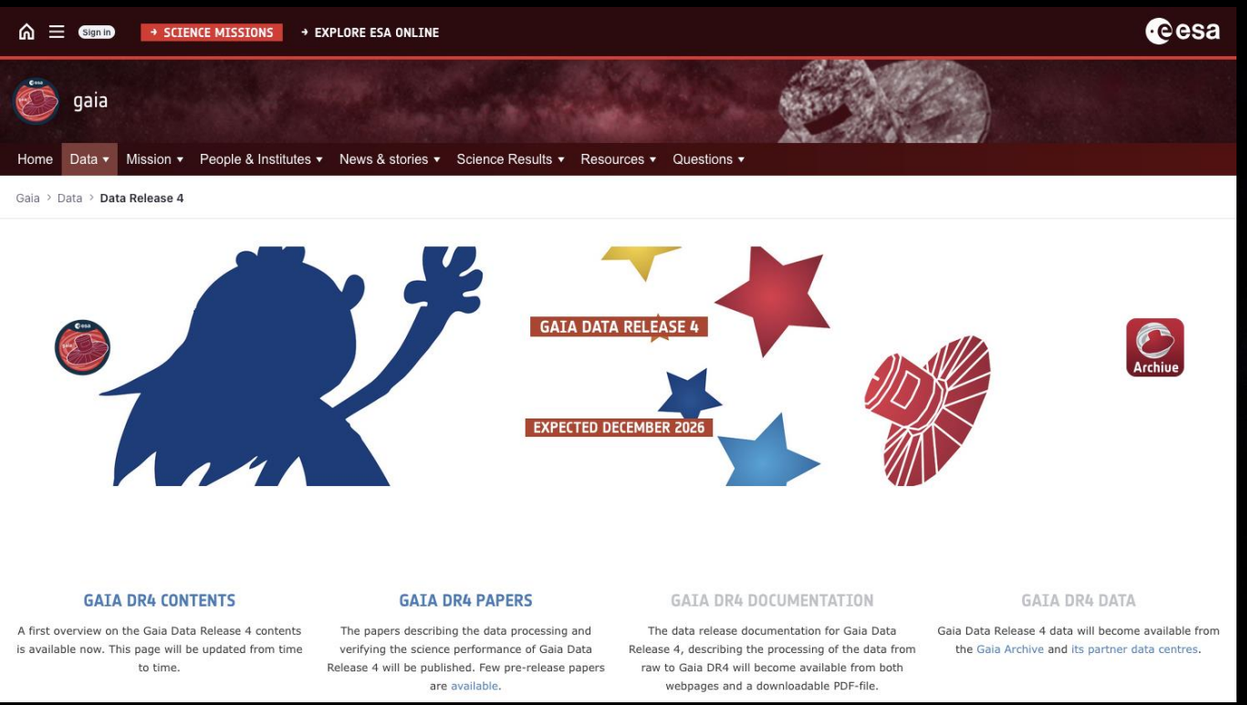
IRIS @ Cambridge

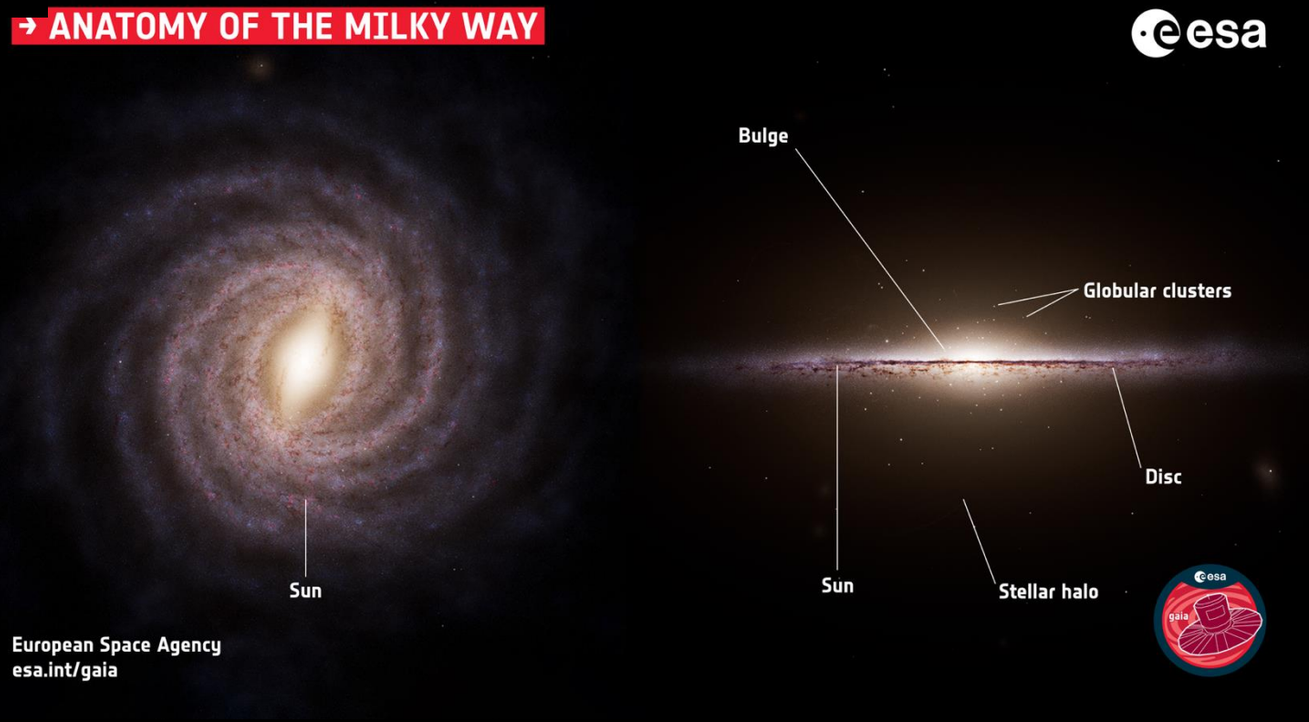
- Cambridge as an IRIS resource user
  - Ground based astronomy – WEAVE, 4MOST, MOONS
    - Alireza Molaeinezhad (today @ 15.40)
  - Space based astronomy
    - ESA Gaia: Patrick Burgess (today @ 15.55)
    - ESA PLATO: Dominic Ford (today @ 16.20)
- Cambridge as an IRIS Resource provider:
  - Via Cambridge/ DiRAC: CSD3: see https://www.csd3.cam.ac.uk/
  - See presentation by Wojchiech Turek (Weds @14.50)
- Cambridge as an innovator in AI
  - Hardware: AIRR-DAWN
  - Use of AI: e.g. driving science discovery: Miles Cranmer's presentation

Gaia is ESA's most scientifically productive space science mission

For the upcoming Dec 2026 nominal mission data release: Gaia DR4, all photometric and spectrophotometric processing carried out using the IRIS digital research infrastructure

IRIS essential for the generation of the full 10+ yr data release, Gaia DR5





IRIS@Cambridge: Astronomy

- Cambridge has been an early supporter of IRIS
  - providing IRIS infrastructure and underpinning operational software (e.g. OpenStack developments)
  - Deploying operational systems to IRIS for both ground-based and space-based astronomy at scale
- Early use of IRIS (2020) involved pilot study assessment
- Evolution is now that major processing is essentially entirely carried out using IRIS provided underlying hardware
  - Gaia core processing now deployed fully on IRIS (fully transition from the earlier bespoke hardware system May 2024)
  - PLATO exoplanet analysis system operational system designed to use IRIS, importantly using IRIS across multiple sites since March 2025.

IRIS Futures

- IRIS provides economies of scale, resilience in deployment
  - Containerised deployment allows use of IRIS resources at many sites
  - Access to idle cycles for peak processing
- Cambridge projects now fully committed to IRIS
  - Core functions deployed to IRIS (not just nice to have add ons)
  - Reduced call on UKRI for local hardware deployments (so IRIS provides the h/w which can be procured and deployed cost effectively)
- Cost of exit now significant → IRIS is an essential underlying digital research infrastructure supporting high value data projects
  - Implies IRIS focus on providing a solid, reliable infrastructure with a focus on 24/7 operations

UKRI AI Research Resource(AIRR) Phase 1

- AIRR, a cluster of advanced computers for AI research, has received a £300 million investment, to include a new Cambridge-based supercomputer.
- **AIRR is being delivered by UKRI on behalf of the UK Government Department for Science Innovation and Technology (DSIT).**
- The Dawn supercomputer at the University of Cambridge, will serve as an integral part of the AIRR alongside the previously announced University of Bristol Isambard-AI supercomputer.

DAWN leads: Richard McMahon and Paul Calleja

DAWN

Apply for AIRR: see guidance at https://www.gov.uk/government/publications/ai-research-resource

Hardware

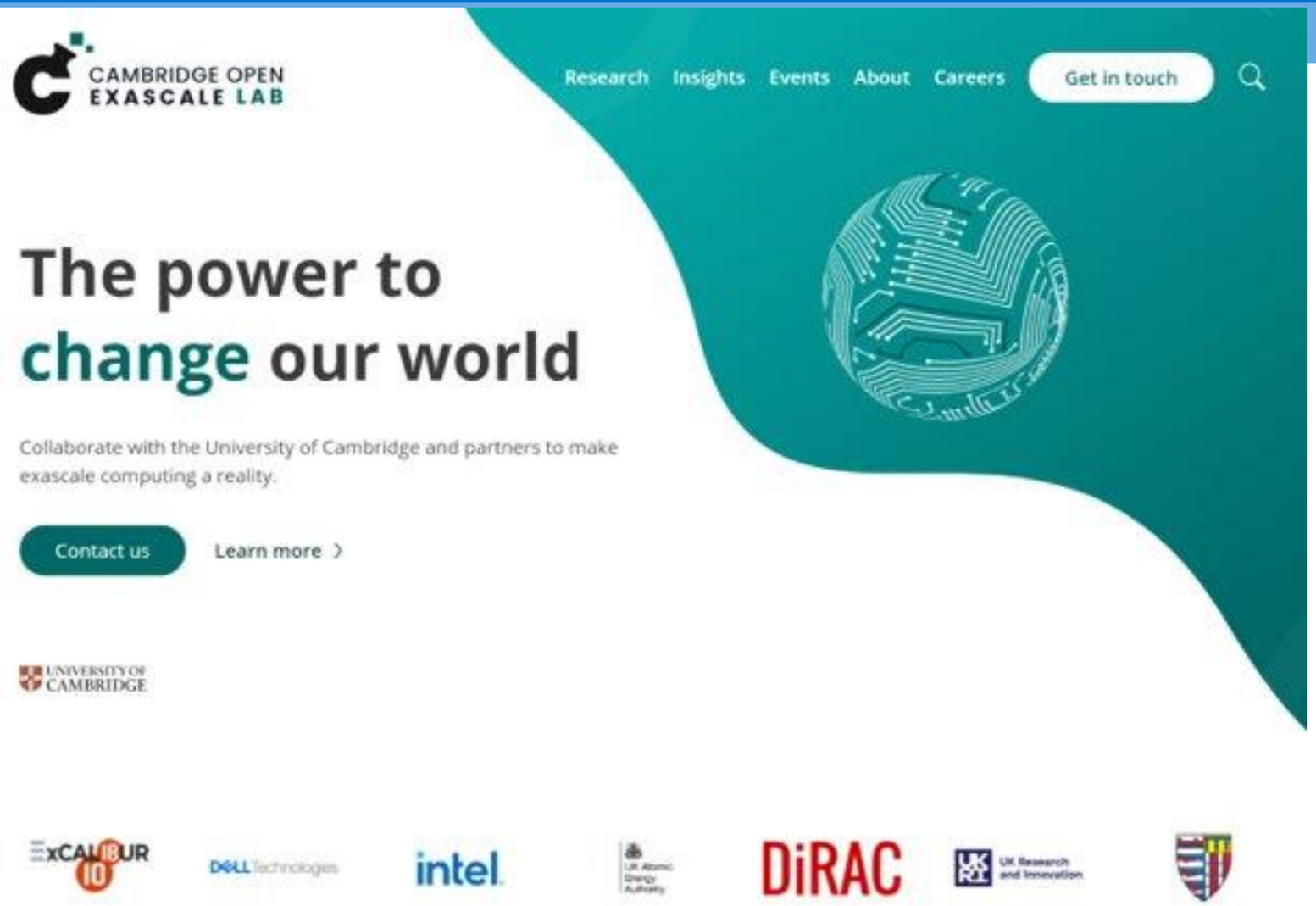
- 256 Dell PowerEdge XE9640 Intel nodes with Direct Liquid Cooling
- 2 x 48 cores Intel Xeon 4th gen (Sapphire Rapids) CPUs
- 4 x Intel Data Center Max GPU 1550 (Ponte Vecchio) GPUs (1024 GPU in total)
- 4 x HDR 200Gb/s per node
- **Number 41** on Top 500 in November 2023 (19.46 PFlops)[64bit] with 243 nodes (65th in Nov 2024 list)

DAWN in Cambridge Data Centre

Key Design Principles

- OpenStack used to deploy DAWN nodes into CSD3 Slurm which is a Tier 2 National HPC service.
- Cloud-Native Multi-Tenancy: Supports various user environments (Jupyter, MLOps, SLURM).
- Energy Efficiency: Low environmental impact with advanced cooling technologies.

The Cambridge Open Zettascale Laboratory



- Partnership with Intel, Dell, StackHPC
- Working with global research teams.
- Bringing together existing themes of activity.
  - Exascale storage solutions for data I/O, analytics and visualisation
  - Energy Efficient Computing
  - OneAPI Centre of Excellence, looking at programming tools at Exascale.
- Philanthropic funding from Dell Technologies.

Enjoy the meeting over the next two days

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