



THE
OPERATIONAL
RESEARCH
SOCIETY

OR65:

Past | Present | Future

12-14 SEPTEMBER 2023

University of Bath



DATASPARQ

**CONFERENCE
MINI GUIDE**

The Operational Research
Society's Annual Conference

Contents

Page 3	Conference Co-Chairs' Welcome
Page 4	Plenary Sessions
Page 5	President's Medal, Making an Impact & Grand Challenge
Page 6	Social Programme
Page 7	Tuesday Programme
Page 8	Wednesday Programme
Page 9	Thursday Programme
Page 10- 12	Sponsors
Page 13	OR65 Organising Committee
Page 14	Campus Map

Download the app

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HTML QR Code



iOS QR Code



Android QR Code



Welcome to OR65

This mini guide will help you make the most of OR65, The OR Society's annual conference. We hope you have an excellent time over the next few days, reconnecting with the OR community, sharing knowledge and finding new ways of tackling real-world problems.

There is a busy programme of social activities, plenary talks, poster sessions and streams covering all aspects of OR.

INTRODUCTION FROM THE COMMITTEE CO-CHAIRS

The OR Society's annual conference OR65 Chairs Christos Vasilakis, Dr Melih Celik, and Mithu Norris invite you to attend the annual conference of The Operational Research Society. We would like to welcome a diverse and interdisciplinary OR community spanning from academia to practice dealing with theory, methodological development and applications from various business, public and private sectors. This prestigious event is a great opportunity to bring together distinguished researchers and practitioners from academia and industry to exchange knowledge, ideas and results in a broad range of topics relevant to OR.



Prof. Christos Vasilakis

Professor, Bath Management School
University of Bath
Conference Co-Chair



Mithu Norris

Head of GORS Central
Management Team
GORS
Practitioner Co-Chair



Dr Melih Celik,

Senior Lecturer
(Associate Lecturer)
University of Bath
Conference Co-Chair

Plenary Sessions:

Don't miss our world-class plenary speakers:



Prof. Dr. Erik Demeulemeester

EURO Plenary speaker

Thursday, 14 September 2023 - 13:30 - 14:30

Talk Title: Solving the proactive and reactive resource-constrained project scheduling problem

Erik Demeulemeester is Professor in the Research Center for Operations Management at the KU Leuven. He earned the degree of business engineering (field of Management Informatics) in 1987, the degree of Master of Business Administration in 1988 and a PhD in 1992, all from the KU Leuven.



Professor Maria Besiou

Dean of Research and Professor of Humanitarian Logistics at Kuhne Logistics University

Tuesday, 12 September 2023 - 11:15 - 12:15

Talk title: Research and practice impact in humanitarian operations: a critical review, challenges, and opportunities

Maria Besiou is Dean of Research and Professor of Humanitarian Logistics at Kühne Logistics University. She received her Ph.D. in Mechanical Engineering and Operations Management from Aristotle University of Thessaloniki (AUTH) in Greece. She holds a Diploma in Mechanical Engineering from AUTH. Before joining KLU she worked as a Postdoctoral Research Fellow at the Social Innovation Centre at INSEAD, France.



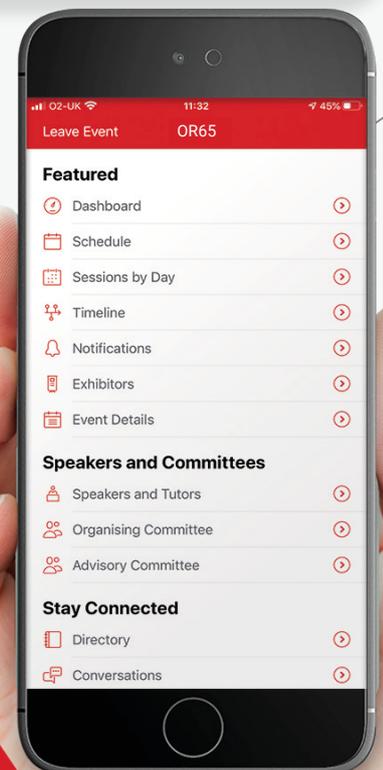
Mauricio G. C. Resende, Ph.D

Affiliate Professor of Industrial and Systems Engineering at the University of Washington

Wednesday, 13 September 2023, 13:15 - 14:15

Talk title: Forty years of industry-university collaboration

Mauricio G. C. Resende is an Affiliate Professor of Industrial and Systems Engineering at the University of Washington. He is most known for his work with metaheuristics, in particular GRASP (greedy randomised adaptive search procedures) and BRKGA (biased random-key genetic algorithms), as well as for his work with interior point methods for linear programming and network flows.



**TO FIND OUT MORE
about our plenary
speakers head to our app.**

President's Medal

WEDNESDAY, 13 SEPTEMBER 2023 14:15- 15:30

The President's Medal is one of The OR Society's most prestigious awards, and the judging session is a real highlight of the conference.

The President's Medal is awarded for the best practical application of OR submitted to the competition (a wide definition of OR is used). Come and hear presentations from each of the three shortlisted organisations as they pitch to the judging panel why their project best demonstrated excellence and impact in operational research.

Why not gather some friends and colleagues and create your own unofficial judging panel? The criteria include:

- The level of demonstrable benefit
- The intellectual and novel content of the solution
- The likely longevity of the solution
- The excellence of the OR process

Making an Impact (MAI)

WEDNESDAY, 13 SEPTEMBER 2023

Wednesday is the day OR65 brings a particular focus to Making an Impact in our work.

The MAI sessions involve tutorials, seminars, workshops and other activities with a strong interactive and practical element. We pack the day with sessions aimed at helping everybody to become more successful in making an impact in their work.

We have a variety of sessions this year which will be taking place such as creativity workshops, Women in OR and Analytics, volunteering in OR, 75 years of OR research, Systems Thinking and even Sherlocks Dilemma!

Grand Challenge at MAI

WEDNESDAY, 13 SEPTEMBER 2023

The Grand Challenge session facilitates collaboration in the OR community to understand and solve complex challenges. As part of MAI, this session has previously tackled the cost of living crisis in Coventry and even hosted a beer related game at OR64! Join the Grand Challenge workshop to find out what challenges we're taking on this year in Bath.

The Grand Challenge session will also be the launch of Pro Bono OR's 75th anniversary celebration – a series of Pro Bono projects focused on the same theme, aiming to demonstrate just how much good the OR community can do when we concentrate our efforts.

Social Programme:

The conference is not all about sharing the latest OR developments – it also makes space in the programme for you to share good times with your colleagues, meet new friends and to network in a relaxed setting with other businesses.

On Tuesday 12th September, please meet outside the Lime Tree restaurant on campus **by 17:00** to join one of two social trips offered below to explore Bath, a world heritage site.

Transport will be provided back to campus, but will leave at specific times so please check on the day if you wish to travel back to campus.

The trips will run between 17:30- 19:30.

■ WALKING TOUR OF BATH

Take in the sights of Bath in a fascinating trip around this historic city by foot. As part of the tour, experience seeing Bath abbey, the roman history and spot famous filming locations.

■ OPEN TOP BUS AROUND BATH

Rest your legs without missing the sights by joining a bus tour in Bath- the perfect introduction to the city's highlights. On board, enjoy the open-top deck on sunny days, learn about Bath's rich history with a surprising fact or two, and watch the bustle of the city go by.

Places will be allocated ahead of the conference, but speak to OR Society staff to see if you can join one of the tours!

GET-TOGETHERS

On Tuesday afternoon, University of Bath management school will be hosting a drinks reception from 15:45 in the Bath management school building. Join us for lots of networking and fun!

The Gala Dinner is the social high point of OR65. Join friends and colleagues around tables of a delightful evening being wined and dined in the famous Bath Pump Rooms, overlooking the Roman Baths. **Please meet outside the Lime Tree restaurant for 6:50pm for a coach departure to the Pump Rooms.** Join us to celebrate our 75th anniversary on this glamorous evening including a string quartet, pianist and after dinner speeches! The gala dinner is available to book for all full conference delegates at point of booking. Please note, places are limited due to capacity so please book as soon as possible to avoid disappointment.

WORAN will be hosting a networking event on Wednesday 13th September from 17:00 in Chancellors Building. We would love to see you there!



Conference Agenda

DAY 1 - TUESDAY, 12 SEPTEMBER

8:00 - 9:00	Registration
9:00 - 9:15	Welcome from School of Management Dean & the OR Society (Lecture Theatre CB1.10)
9:15 - 10:45	PARALLEL SESSION 1 <ul style="list-style-type: none"> • Artificial Intelligence and Machine Learning (3.16) • Behavioural OR (3.1) • Combinatorial Optimisation (4.5) • Community OR (3.9) • Optimisation under Uncertainty (3.15) • OR for Strategic Decision Making and Policy Making (4.16) • OR in Health and Social Care KEYNOTE: Martin Pitt (4.1) • Soft OR & Problem Structuring Methods (3.5) • Sustainable Development Goals (4.8) • Systems Thinking (5.1) • Transportation (4.10)
10:45 - 11:15	Networking Break
11:15 - 12:15	Plenary Speaker - Maria Besiou (Lecture Theatre CB1.10)
12:15 - 13:15	Lunch
13:15 - 14:45	PARALLEL SESSION 2 <ul style="list-style-type: none"> • Behavioural OR (4.5) • Continuous Optimisation (4.8) • Combinatorial Optimisation (4.16) • Data Envelopment Analysis (3.16) • Forecasting (3.9) • OR in Health and Social Care (3.1) • Project & Risk Management (3.15) • Soft OR & Problem Structuring Methods (3.5) • Supply Chain and Logistics Analytics (4.10) • Sustainable Development Goals (4.1) • Systems Thinking - KEYNOTE: Angela Wilkinson (5.1)
14:45 - 15:45	PARALLEL SESSION 3 <ul style="list-style-type: none"> • Artificial Intelligence and Machine Learning (3.9) • Data Envelopment Analysis (3.16) • Journal of the Operational Research Society (JORS) (4.8) • OR in Health and Social Care (3.1) • OR and Net Zero (4.1) • Optimisation under Uncertainty (4.5) • Soft OR & Problem Structuring Methods (3.5) • Supply Chain and Logistics Analytics (4.10) • Systems Thinking 1 (5.1) • Systems Thinking 2 (4.16) • Hybrid Modelling and Simulation (3.15)
15:45 - 17:00	Drink Reception (School of Management)
17:00 - 17:30	Travel to Social Trips
17:30 - 19:00	Social Trips
19:00 - 19:30	Travel from Social Trips
19:30	Dinner

Conference Agenda

DAY 2 - WEDNESDAY, 13 SEPTEMBER

8:00 - 9:00 Registration

09:00-10:30 **MAKING AN IMPACT (MAI)**

- Grand Challenges (3.5)
- ORS Strategy - Your Chance to Contribute (3.9)
- Exploring Operations Research with R (3.15)
- Human Centred Analytics (3.16)
- Systemic Leadership in Healthcare (4.1)
- Radical Inclusion (4.5)
- Large Scale Brain Networks and System Thinking (4.8)
- Sherlock's Dilemma (Lecture Theatre CB1.10)

09:00-10:30 **PARALLEL SESSION 4**

- Community OR (4.10)
- Data Science meets Optimisation (4.16)
- OR in Health and Social Care (3.1)
- Systems Thinking (5.1)

10:30 - 10:50 Networking Break

10:50 - 12:20 **MAKING AN IMPACT (MAI)**

- 75 Years of OR Practice (4.1)
- Going Real-Time Simulation Driven Twins (3.15)
- Stakeholder Management (3.16)
- Self-Governing Organisations (4.5)
- Running on Empty (4.8)
- The Relational Body (4.10)
- Have Fun and Give Back - ORS Volunteering (3.9)
- Poster Session (Lecture Theatre CB1.10)

10:50 -12:20 **PARALLEL SESSION 5**

- Education in OR Analytics (4.16)
- Optimisation under Uncertainty (3.1)
- OR in Health and Social Care (3.5)
- Systems Thinking (5.1)

12:20 -13:15 Lunch

13:15 -14:15 Plenary Speaker - Mauricio Resende (Lecture Theatre CB1.10)

14:15-15:30 President's medal (Lecture Theatre CB1.10)

15:30 -16:00 Networking Break

16:00-17:30 **MAKING AN IMPACT (MAI)**

- Creativity Workshop (3.15)
- L7 Systems Thinking Apprenticeship (4.1)
- Systems Thinking for Strat and Op Leadership (4.8)
- Systems Thinking and Acting (4.10)

16:00-17:00 **PARALLEL SESSION 6**

- Continuous Optimisation (3.1)
- OR for Strategic Decision Making and Policy Making (3.5)
- OR in Health and Social Care (4.16)
- Soft OR & Problem Structuring Methods (5.1)

17:00-18:45 WORAN at OR65 (3.9)

17:00-18:00 **PARALLEL SESSION 7**

- Facility Location (3.1)
- OR for Strategic Decision Making and Policy Making (3.5)
- Supply Chain and logistics Analytics (4.16)

Conference Agenda

DAY 2 - WEDNESDAY, 13 SEPTEMBER

18:50-19:45	Coach to Pumps Rooms
19:45-22:30	OR65 Gala Dinner at Pump Room
22:45-23:00	Transport back to Uni x 1 Coach
23:30-23:45	Transport back to Uni x 2 Coach

DAY 3 - THURSDAY, 14 SEPTEMBER

08:30 - 09:00 Registration

9:00-10:30

PARALLEL SESSION 8

- Data Science and Optimisation (4.10)
- Education in OR Analytics (4.8)
- Hybrid Modelling and Simulation (3.9)
- OR in Health and Social Care (3.15)
- Soft OR & Problem Structuring Methods KEYNOTE: Angela Espinosa (3.1)
- Supply Chain and Logistics Analytics (4.1)
- Systems Thinking 1 (3.5)
- Systems Thinking 2 (4.5)
- Systems Thinking 3 (5.1)

10:30 - 11:00 Networking Break

11:00 - 12:30

PARALLEL SESSION 9

- Hybrid Modelling and Simulation (3.1)
- Optimisation under Uncertainty (4.10)
- OR for Strategic Decision Making and Policy Making (3.5)
- OR in Health and Social Care (3.15)
- Soft OR & Problem Structuring Methods (3.9)
- Systems Thinking 1 (5.1)
- Systems Thinking 2 (4.5)
- Systems Thinking 3 (4.8)
- Systems Thinking 4 (4.1)

12:30 - 13:30 Lunch

12:30 - 13:30 SIG Chairs Lunch (4.10)

13:30 - 14:30 Plenary Speaker - Erik Demeulemeester (Lecture Theatre CB1.10)

14:30 - 16:00

PARALLEL SESSION 10

- Artificial Intelligence and Machine Learning (3.5)
- Forecasting (4.8)
- OR for Strategic Decision Making and Policy Making (3.1)
- OR in Health and Social Care (3.15)
- Soft OR & Problem Structuring Methods (3.9)
- Sustainable Development Goals (4.1)
- Systems Thinking (5.1)
- Transportation (4.10)

Sponsors & Exhibitors

HEADLINE SPONSOR:



DataspaRQ is a boutique AI & data services firm that designs, builds and runs cutting-edge, ethical AI & data solutions for some of the world's best-known companies.

Our close relationships with academic institutions enable us to bring the frontiers of AI & data research into industry to solve big, meaningful business challenges.

We combine data science expertise with a product mindset and robust engineering capability to build real world solutions that deliver impact every day.

Here are some examples of how we have helped clients:

- **Supply chain route optimisation** - Working with a top ten global logistics provider, DataspaRQ developed an AI

route optimisation solution that outperformed a leading planning tool, Paragon, by two percentage points, and is now working to operationalise the solution as it is expected to unlock additional savings of £2.5m+ a year.

- **AI-powered dynamic pricing:** Working with a leading London airport, we developed and operationalised a AI-powered dynamic pricing capability for their car parking and commercial products team that led to a 7% revenue uplift
- **Retail footprint optimisation:** Working with a leading retailer to improve store revenues by 10% by identifying higher yielding locations for a new service offering
- **Fraud detection:** Providing explainable AI to better detect fraudulent claims and highlight why to increase capacity of the underwriting team and drive growth

SPONSOR:



THE UNIVERSITY of EDINBURGH
School of Mathematics

The School of Mathematics at the University of Edinburgh is one of the world's leading mathematical sciences departments. It is home to outstanding researchers and innovative educational environment for both undergraduate and postgraduate students.

In the most recent REF submission, the long-standing joint research partnership between the University of Edinburgh and Heriot-Watt University, the Maxwell Institute, was delighted to have come 3rd in the UK for Mathematical Sciences, based on the quality and breadth of our combined research. Overall, 96% of their research is recognised as 'world leading' and 'internationally excellent' with over 56% of research activity given the highest possible 4* rating.

The School's Optimisation and Operational Research research group which is part of our Data and Decisions research theme, has a particular focus on the mathematical and computing aspects of optimisation. We regularly engage with industry through activities such as OR MSc dissertation projects, UK-wide student challenges, and academic consultancy

EVENT HOST & DRINKS SPONSOR:



The School of Management at the University of Bath is one of the UK's leading business schools. In the 2021 Research Excellence Framework, 56% of our submissions met the 4* standard (the highest possible) with 93% of our research being assessed as 'world leading' or 'internationally excellent'. This placed us 7th in the UK out of 108 submissions. We and are recognised as one of the top 20 most influential business schools in the world for 'teaching power' in The Financial Times Teaching Power Rankings 2021.

Sponsors & Exhibitors

SPONSOR:



**Consumer
Data
Research
Centre**

An ESRC Data
Investment

The Consumer Data Research Centre (CDRC) harnesses the power of vast consumer data generated in the UK to drive academic research and address societal and economic challenges. As a leader in academic engagement between industry and the social sciences, CDRC collaborates with various consumer data providers to offer unique insights into human behaviour and enhance our understanding of contemporary society. By facilitating access to and analysis of consumer data, CDRC empowers researchers to explore and study a wide range of topics, contributing to evidence-based decision-making and fostering collaboration between academia and industry.

SPONSOR:

Smithinstitute

Smith Institute leverages data science, innovative AI with deep mathematical understanding to fuel growth, inspire societal advancements, and safeguard our environment.

Our experience encompasses the security, defence, energy, transport and telecommunications sectors.

We enable accurate forecasting, optimised systems, automated decisions, and explainable, trustworthy AI solutions. Providing the confidence to act and the clarity to understand the impact.

SPONSOR:

[dstl]

The Science Inside

Dstl – the Defence Science and Technology Laboratory - is an executive agency of the UK Ministry of Defence (MOD) providing world-class expertise and delivering cutting-edge science and technology for the benefit of the nation and allies, including through its operational research capability.

FULL CONFERENCE EXHIBITOR:



Sirius Analysis specialises in the delivery of analysis to enable its customers to make informed investment decisions and deliver effective projects, using its core skills in Operational Research, Cost Analysis, Systems Engineering and P3M.

Sirius currently provides technical expertise to projects across a wide range of Defence and Government customers including the Ministry of Defence, NATO and Dstl, the research arm of the MOD. We also have experience of working in the nuclear, defence, space, transport, energy, logistics, and environmental sectors of the UK. Sirius is a member of several Government frameworks for the delivery of analysis and Systems Engineering, and delivers innovative solutions as an agile organisation built on the expertise of experienced practitioners.

Sponsors & Exhibitors

FULL CONFERENCE EXHIBITOR:

SIMUL8

For nearly 30 years, Simul8 has been producing simulation software so intuitive, fast and effective you'll use it every day. Simul8 simulation software has been used by the world's leading organizations to improve processes, increase efficiency, and reduce costs. A combination of powerful features, speed and ease of use has made our software the choice for new users and experts across a wide range of industries. Simul8 offers a unique, evidence-based approach to decision making - by using a virtual representation to test the impact of business changes, you can find

the best approach before implementation. From strategic to operational, simple to complex, our customers have used simulation to overcome diverse business challenges, including:

- Determining the impact of process changes
- Planning and validating new processes
- Assessing return, before any investment
- Identifying problems with complex processes
- Understanding the effect of variability or uncertainty
- Building buy-in for changes

TUESDAY EXHIBITOR:

ROYAL STATISTICAL SOCIETY

DATA | EVIDENCE | DECISIONS

Founded in 1834, we are one of the world's leading organisations advocating for the importance of statistics and data. We're a professional body for all statisticians and data analysts – wherever they may live.

We have more than 10,000 members in the UK and across the world. As a charity, we advocate for the key role of statistics and data in society, and work to ensure that policy formulation and decision making are informed by evidence for the public good.

TUESDAY EXHIBITOR:



Jumping Rivers is an analytics company based in the North East who specialise in creating bespoke solutions for modern business problems. Their team is made up of experts in data science and data engineering from many different backgrounds, and their wealth of knowledge and experience allows them to think outside the box and solve problems in new and innovative ways.

WEDNESDAY EXHIBITOR:

JGA *Developing Futures*

The JGA Group, independent Queen's Award-winning training provider was the first to offer the systems thinking practitioner apprenticeship. The line manager of Sharon Young of Milton Keynes City Council (now in the final stages of the programme) tells us that "Sharon has learned to work differently as a result of the course and there has been a step change in Sharon's approach to work. Sharon has more flexible thinking now." Sharon herself commented "Martin has been amazing and it's been a great opportunity.

OR65 Organising Committee

CONFERENCE CO-CHAIRS



Prof. Christos Vasilakis,
Professor of
Bath Management School
University of Bath



Mithu Norris,
Head of GORS Central
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Dr Melih Celik,
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Dr Zehra Onen Dumlu,
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Amalia Gjerloev,
PhD student and teaching assistant
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OR SOCIETY CONFERENCE ORGANISERS



Sarah Davies,
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Caitlin Griffin,
Event Manager



Karen Down,
Event Officer



Emma Nelson,
Event and Partnerships Officer

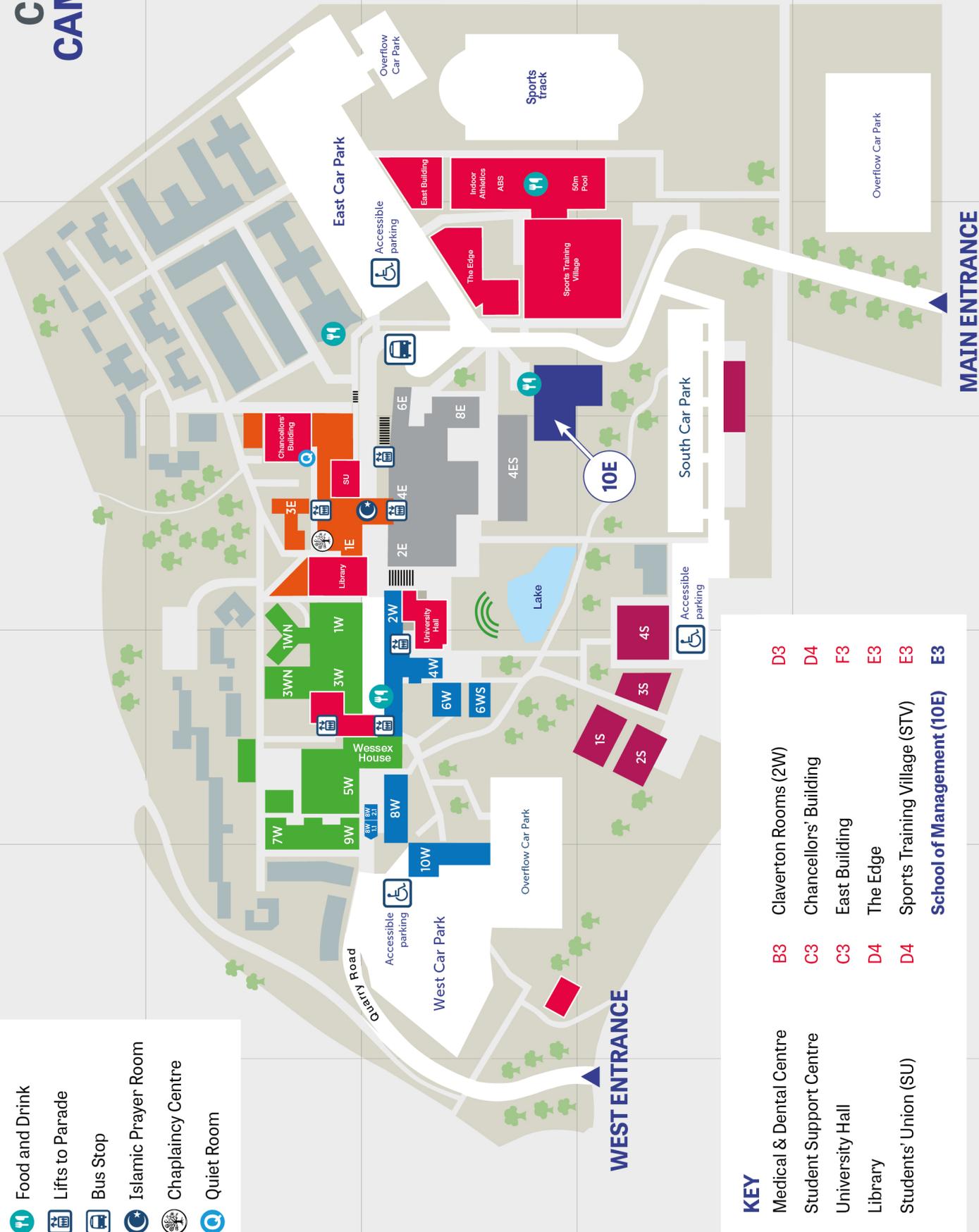
We would like to thank all of our wonderful volunteers who have helped to make this year's conference a success.

CLAVERTON CAMPUS MAP

5
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A B C D E F

- Food and Drink
- Lifts to Parade
- Bus Stop
- Islamic Prayer Room
- Chaplaincy Centre
- Quiet Room



KEY

Medical & Dental Centre	B3	Claverton Rooms (2W)	D3
Student Support Centre	C3	Chancellors' Building	D4
University Hall	C3	East Building	F3
Library	D4	The Edge	E3
Students' Union (SU)	D4	Sports Training Village (STV)	E3
		School of Management (10E)	E3

A B C D E F

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