



OR66

Annual Conference

10–12 September 2024

Bangor University

**CONFERENCE
MINI GUIDE**

Contents

Page 3	Conference Co-Chairs' Welcome
Page 4	Plenary Sessions
Page 5	ECR Session, Meet the Exhibitors, Midlands Network
Page 6	WORAN Breakfast Session, President's Medal, Making an Impact (MAI)
Page 7	Tuesday Programme
Page 8	Wednesday Programme
Page 9	Thursday Programme
Page 10-11	Sponsors
Page 12	Social Programme
Page 13	OR66 Organising Committee
Page 14	Campus Map

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HTML QR Code



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Welcome to OR66

This mini guide is designed to help you get the most out of OR66, The OR Society's annual conference. We hope you enjoy the next few days; reconnecting with old friends, making new contacts, sharing knowledge, and discovering innovative approaches to tackling real-world challenges.

The conference features a full programme of social activities, plenary talks, poster sessions, and streams covering all aspects of OR.

INTRODUCTION FROM THE COMMITTEE CO-CHAIRS

Welcome to OR66, the Operational Research Society's annual conference, held at the historic Bangor University. This year's event is particularly special as it marks the conclusion of The OR Society's 75th-anniversary celebrations, a significant milestone in the evolution of operational research.

We are thrilled to bring the conference back to Bangor, a place of natural beauty and academic excellence, for the first time since OR32 over 30 years ago. This year, OR66 will feature 23 diverse streams, reflecting the broad spectrum of our field and showcasing cutting-edge research from both practitioners and academics. We are especially excited about the strong engagement we've seen, with submissions far exceeding our expectations, ensuring a robust and dynamic program.

Our lineup includes distinguished plenary speakers who will share their insights on transportation, aviation, and healthcare. There will also be a Grand Challenge focused on North Wales, a Making an Impact session, workshops, and discussions on the future of OR and the role of generative AI in our work.

As we gather in Bangor, we look forward to celebrating The OR Society's rich legacy and exploring the future of operational research together. We hope that you enjoy both the academic exchange and the stunning surroundings of North Wales.

We look forward to seeing you at OR66!



Dr Mosab Bazargani
Academic Co-Chair



Mithu Norris
Practitioner Co-Chair



Dr Heather He
Academic Co-Chair

Plenary Sessions:

Don't miss our world-class plenary speakers:



Dr Jeroen Mulder

Technology innovation project manager
Air France-KLM

Tuesday, 10 September 2024 - 09:10 - 10:10

Talk title: *Operations Research challenges inside Air France-KLM*

Jeroen Mulder works for the Air France-KLM Group CIO Office as technology innovation project manager. He has a background in mathematics, a PhD in algebraic geometry, and more than 25 years of experience as an operations research analyst and data scientist. He has extensive experience in setting up simulation, optimisation, and statistical models for various business divisions, like Operations Control Centre, Hub Control Centre, Engineering and Maintenance, and Revenue Management at Air France-KLM.



Professor Sanja Petrovic

Professor of Operational Research
Nottingham University Business School

Wednesday, 11 September 2024 - 15:30 - 16:30

Talk title: *Can Operational Research improve well-being of healthcare?*

Sanja Petrovic is a Professor of Operational Research in Nottingham University Business School, UK. She has conducted and led multi-disciplinary research into development of models, heuristics and algorithms for a variety of real-world optimisation and scheduling problems, including radiotherapy planning, scheduling of patients, employee timetabling, production scheduling, vehicle routing problems and university timetabling.



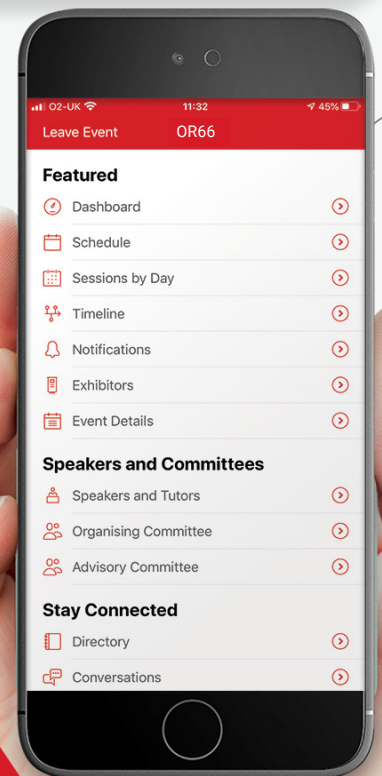
Professor Michel Gendreau

Professor of Operations Research
Polytechnique Montréal (Canada)

Thursday, 12 September 2024, 15:10 - 16:15

Talk title: *Stochastic vehicle routing: an overview*

Michel Gendreau is Professor of Operations Research in the Department of Mathematics and Industrial Engineering of Polytechnique Montréal (Canada). His main research area is the application of operations research methods to a wide range of problem areas: transportation and logistics systems planning and operation, energy production and storage, healthcare, and telecommunications. Prof. Gendreau has published more than 400 papers in peer-reviewed journals and conference proceedings, as well as numerous book chapters. He is also the co-editor of eight books dealing with transportation planning and scheduling, as well as with metaheuristics.



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

ECR Session

TUESDAY, 10 SEPTEMBER 2024 14:10 - 15:10 (Drama Rehearsal Room)

Working with companies, charities or public sector bodies can be a great way of helping academic research to have real impact, and generate new ideas. There are many forms this can take, such as knowledge exchange, consultancy work, or even as partners on a research project. But what are these collaborations like for the researcher? And how can we make the most of them?

The Early Career Researchers (ECR) Network will be holding a panel session at OR66 discussing these questions. We'll be hearing from a panel of more senior academics on their experiences of working with industry, both the opportunities and the challenges. There will be an opportunity for questions and discussion after each short talk.

Speakers are Professor Daniel Gartner (Cardiff University), Professor Kathy Kotiadis (University of Kent) and Dr Anna-Lena Sachs (Lancaster University).

Meet the Exhibitors

TUESDAY, 10 SEPTEMBER 2024 14:10 - 15:10 (Main Foyer Area)

Our exhibitors will be holding a special drop-in session where you can have one-to-one conversations with staff and find out about the latest projects they have been working on. Some will also be carrying out live software demonstrations.

Midlands Network - OR Awareness Training

TUESDAY, 10 SEPTEMBER 2024 14:10 - 15:10 (Greek Room)

We are starting a Midlands OR Networking Group to benefit our members and the communities we serve. It's important to note that this networking group covers both West and East Midlands, including Derbyshire, Herefordshire, Leicestershire, most of Lincolnshire (except for North and North East Lincolnshire), Northamptonshire, Nottinghamshire, Rutland, Shropshire, Staffordshire, Warwickshire, Worcestershire, and the West Midlands metropolitan boroughs. So, if you are located in the Midlands or are interested in learning more about the initiatives taking place within this beautiful and historical region of England, please attend this meeting.



WORAN Breakfast Session

WEDNESDAY, 11 SEPTEMBER 2024 08:00 - 09:00 (LR5)

Join WORAN for our first ever breakfast get-together. If this is your first conference or if you don't know many people here, it's the perfect opportunity to begin to meet people from other parts of the OR community, share experiences and make connections; and if you're more of a veteran, it's a great chance to catch up with old friends and welcome new ones.

Just grab your food and drink, and find a seat. Each table will have lightly-facilitated discussion - at a level suitable for the time of day, even if you are not really a morning person - and there will also be a short talk from WORAN Chair Katherine Kent. It'll be nice to see people there from the start, but feel free to join at any point if you are a late riser (or if your morning run has taken longer than planned).

President's Medal

WEDNESDAY, 11 SEPTEMBER 2024 16:30 - 17:45 (Eric Sunderland LT)

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

Shortlisted companies:

- Cranfield University and University of Bedford - Dr Trung Hieu Tran and Dr Thuba T. Nguyen
- Operational Research in Health Limited - Andrew Cooper
- Smith Institute - Adam Brummitt

Making an Impact (MAI)

WEDNESDAY, 11 SEPTEMBER 2024 (LR 1-5)

Wednesday at OR66 is dedicated to Making an Impact in our work. The MAI sessions feature tutorials, seminars, workshops, and other activities with a strong interactive and practical focus. The day is packed with sessions designed to help everyone become more effective in making an impact in their work. Highlights include sessions on AI in Practice, The Future of OR, and Systems Thinking.

Conference Agenda

DAY 1 - TUESDAY, 10 SEPTEMBER

08:00 - 09:00	Registration	
09:00 - 09:10	Welcome by Professor Edmund Burke, Vice-Chancellor of Bangor University and The OR Society	
09:10 - 10:10	Plenary Speaker Dr Jeroen Mulder - Operations Research Challenges inside Air France-KLM	
10:10 - 10:30	Networking Break	
10:30 - 12:00	PARALLEL SESSION 1 <ul style="list-style-type: none"> • AI & Machine Learning • AI & Machine Learning (2) • Community OR & Third Sector • Continuous Optimisation • Health & Social Care • Project & Risk Management • Responsible OR and AI - WORKSHOP • Strategic Decision Making and Policy Making • Supply Chain and Operations Management • Systems Thinking • Transportation 	
12:00 - 13:00	Lunch	
13:00 - 14:00	PARALLEL SESSION 2 <ul style="list-style-type: none"> • AI & Machine Learning (2) • AI & Machine Learning • Community OR & Third Sector • Forecasting • Health & Social Care • Hybrid Modelling and Simulation • Metaheuristics • Project & Risk Management • Strategic Decision Making and Policy Making • Systems Thinking 	
14:10 - 15:10	PARALLEL SESSION 3 <ul style="list-style-type: none"> • AI & Machine Learning • Health & Social Care • Project & Risk management • Strategic Decision & Policy making 	14:10 - 15:10 ECR Workshop 14:10 - 15:10 Exhibitors Demonstration Session 14:10 - 15:10 Midlands Network - OR Awareness Training
15:10 - 15:30	Networking Break	
15:30 - 16:30	President's Address, Dr Gilbert Owusu	
17:00 - 19:30	Social Trips (meeting point - outside the main entrance of the Main Arts Building at 4:45pm)	
20:00 - 21:00	Dinner served at Bar Uno (for delegates staying on site)	

Conference Agenda

DAY 2 - WEDNESDAY, 11 SEPTEMBER

08:00 - 09:00 WORAN breakfast meeting (LR5)

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

- Bridging the Gap: How to Deliver More Effective Knowledge Exchange Between Academia and Industry
- Grand Challenges and OR: 10 years on
- Doom loops & eco-wars: on the frontiers of systems thinking & practice
- Metaheuristics in Python

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

- Continuous Optimisation
- Soft OR & Problem Structuring Methods
- Systems Thinking
- Transportation
- Tourism & Hospitality
- KEYNOTE

09:00 - 11:00 **MAKING AN IMPACT (MAI) 2**

- The Futures of OR

10:30 - 11:00 Networking Break

11:00 - 12:30 **MAKING AN IMPACT (MAI)**

- Exploring Operations Research with R
- Human Centric Analytics (HCA): A workshop on how to foster the human centred development of analytics that augment human work effectively
- Exploring the perception and practice of integrating qualitative and quantitative methods in OR interventions
- Building the Relevance of OR, and The OR Society, the Future
- Measuring Impact in the Third Sector

11:00 - 12:30 **PARALLEL SESSION 5**

- Continuous Optimisation
- KEYNOTE
- Health & Social Care
- Poster Presentations
- Responsible OR and AI
- Soft OR & Problem Structuring
- Systems Thinking
- Transportation

12:30 - 13:30 Lunch

13:30 - 15:00 **MAKING AN IMPACT (MAI)**

- Using Generative AI in OR Practice
- Simulation powered digital twins: a hands-on tutorial on integrating live data in simulations and maintaining them for operational decision-making
- Systems Thinking for Strategic and Operational Improvement using ProH Modelling
- What should be in the Future OR Toolkit?

13:30 - 15:00 **PARALLEL SESSION 6**

- Combinatorial Optimisation
- Education in OR & Analytics
- Health & Social Care
- Soft OR & Problem Structuring
- Systems Thinking
- KEYNOTE

15:00 - 15:20 Networking Break

15:30 - 16:30 Plenary Speaker Prof. Sanja Petrovic - Can Operational Research improve well-being of healthcare?

16:30 - 17:45 President's medal

19:00 - 20:00 Drinks Reception

20:00 - 23:00 Gala Dinner (at Prichard-Jones Hall, Main Arts Building)

Conference Agenda

DAY 3 - THURSDAY, 12 SEPTEMBER

09:00 - 10:30

PARALLEL SESSION 7

- Combinatorial Optimisation
- Digital Twins
- Health & Social Care
- Hybrid Modelling and Simulation
- Optimisation Under Uncertainty
- Project & Risk Management
- Strategic Decision Making and Policy Making
- Supply Chain and Operations Management
- Systems Thinking KEYNOTE
- Tourism and Hospitality

10:30 - 11:00

Networking Break

11:00 - 12:30

PARALLEL SESSION 8

- Combinatorial Optimisation
- Data Envelopment Analysis
- Education in OR & Analytics
- Forecasting
- Health & Social Care
- Responsible OR and AI
- Strategic Decision Making and Policy Making
- Supply Chain and Operations Management
- Systems Thinking
- Tourism & Hospitality
- Transportation

12:30 - 13:30

Lunch

13:30 - 15:00

PARALLEL SESSION 9

- Combinatorial Optimisation
- Data Envelopment Analysis
- Digital Twins
- Forecasting
- Global Challenges
- Health & Social Care
- Responsible OR and AI - KEYNOTE
- Supply Chain and Operations Management
- Systems Thinking
- Systems Thinking WORKSHOP
- Transportation

15:10 - 16:15

Plenary Speaker Professor Michel Gendreau - Stochastic Vehicle Routing: an Overview

16:15 - 16:45

Farewell Tea & Coffee

Sponsors

EPCC is recognised as the UK's premier supercomputing centre. Since our inception in 1990, we have been providing our expertise in supercomputing and data science to the world to ensure the effective exploitation of novel computing throughout industry, academia, and commerce.

Work with world-leading software and data science experts

EPCC has over 100 experts in high-performance computing, code performance optimisation, data science, and machine learning. We are highly experienced in quickly integrating with your project team to help you achieve its research vision. We can work with you either on a sub-contracting basis or as an academic partner for a research grant application.

Access world class computational infrastructure

EPCC has been hosting and operating UK national research computing infrastructure and services since 1994. We

currently host and operate ARCHER2, the UK's most powerful supercomputer, and our capacity also includes cloud service provision. We host and operate the Edinburgh International Data Facility (EIDF), a private research cloud infrastructure designed to facilitate data analytics, data science, and machine learning training and inference. Public, private and third sector organisations all make use of EPCC's computing and data capacity to undertake research and development projects.

For more information, please visit our website at:

www.epcc.ed.ac.uk



Smith Institute

Smith Institute leverages operational research, data science and innovative AI with deep mathematical understanding to deliver a better tomorrow, economically, socially, and environmentally.

We specialise in custom-built optimisation and explainable decision support systems, guiding clients from initial concept to production readiness. By applying the latest mathematical thinking, advanced statistical techniques, and compelling visualisations, we reveal the insights behind the data to deliver confidence, assurance and a strategic advantage in rapidly evolving landscapes.

Our work helps clients in energy, transport, security, fast moving consumer goods and telecommunications to unlock the potential of their data, solve their most complex challenges and make optimal strategic decisions. All of this is underpinned by strong mathematical foundations and a dedication to operational research principles.

Find out more: smithinst.co.uk



Strategy, research and communications excellence:

A company founded on a passion for science and research, renowned for innovation and technical expertise, built of brilliant minds with a collective desire to deliver original, creative and successful solutions.

Established in 2011, HEOR is a leading independent market access consultancy with a reputation for high-quality, innovative market access strategies, evidence generation and value communications.

We are renowned for our research and academic excellence, strategic awareness and consultancy, and dedication to providing innovative and creative solutions. Our clients value our flexibility, integrity to scientific principles and best practice, and our ethos of true partnership.

We have a global presence and work across the UK, Europe, US, Canada, Central & South America, Asia-Pacific and the Middle East to provide a fully integrated market access service across the product life-cycle.

Sponsors



Founded in 2011, More Metrics specialises in creating innovative data products about family finances, health and lifestyle and attitudes on key social issues. They focus on open-source data and access thousands of available data points to create powerful solutions to support businesses across the UK. Their data is non personalised and typically provided by government and other public bodies. This makes all their output GDPR friendly and therefore quick and easy to use.

They have developed a sophisticated and widely tested process for turning the millions of raw data fields into useable and relevant outputs- they call it GeoMetrics and it offers:

- A wide range of postcode level data sets covering family finances, health and lifestyle and attitudes on key social issues
- Split by age, sex and occupation
- Over 700 standard data variables

More Metrics data is widely used by leading organisations across many business sectors, from the insurance and pensions market to the charity sector and retail. Their data continues to prove invaluable in providing insights into key factors and issues as well as uplifting data based products and processes.

For more information visit our website at www.moremetrics.co.uk.

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

SIMUL8



Cwmni Prifysgol Bangor
A Bangor University Company



M-SPARC is at the centre of innovation in North Wales and digital is at the heart of that innovation. Digital enables every industry from energy to transport, agriculture to tourism; there isn't a sector that hasn't been influenced by digitisation and digitalisation.

Increasingly our public services, healthcare and education services are underpinned by digital, touching both our personal and professional lives daily. Digital skills these days are essential.

The Digital team was established in 2022 to provide specialist digital support to our ecosystem and beyond. Interacting with local organisations, supporting startups and tenant companies, enabling collaborative digital projects across all sectors and into our communities. <https://m-sparc.com/grow-with-us/digidol/>



The MISTA (Multidisciplinary International Conference on Scheduling: Theory and Applications) conference series ran from 2003 to 2019, being held in Nottingham, UK (2003); New York, USA (2005); Paris, France (2007); Dublin, Ireland (2009); Arizona, USA (2011); Gent, Belgium (2013); Prague (Czech Republic) (2015); Kuala Lumpur (Malaysia) (2017) and Ningbo (China) 2019.

When the conference series ended the residual funds were transferred from MISTA (a registered UK charity) to the Operational Research Society (also a UK registered charity).

For OR66, part of the MISTA funds has been utilised to support one of this year's plenary speakers, Michel Gendreau.

Social Programme:

TUESDAY 10TH SEPTEMBER 5 PM-7:30 PM

The conference is not just about sharing the latest developments in OR, you also will have the opportunity to socialise and network with your colleagues and new friends. On Tuesday afternoon, we invite you to join one of the social excursions which provides the chance to explore the stunning landscapes of Bangor either through a walking tour, zip wire excursion or a tour of a local distillery. The OR Society provides travel for three excursions which is included in your ticket price.

On Tuesday 10th September 2024, please meet outside the main entrance of the Main Arts Building for **4:45pm**.

The trips will run between 17:00- 19:30.

■ ABER FALLS WALKING TOUR

The Mountain Walking Society at Bangor University will be running a walk to Aber Falls, with two walks to suit people of different abilities. The walk is expected to be about 1 hour 30 minutes long, with views of Aber Falls and surrounded by the Carneddau. The longer walk will go past a second waterfall and involve fording a small river. Both walks are in an SSSI and an ancient woodland. Please note that neither walks are likely to be wheelchair accessible.

Boots and waterproofs are recommended due to the likelihood of mud and the British climate. Please email event.enquiry@theorsociety.com if there are any medical conditions/allergies or accessibility requirements that the guides need to be aware of prior to the walk.

■ ZIP WORLD

Take flight from the top of the Penrhyn Quarry adventure terminal in this dual zip line adventure. After climbing the steps to the Adventure Terminal terrace, you'll be able to enjoy stunning views of the Penrhyn Quarry site and the bright blue lake below.

Having been clipped in by a Zip World instructor, the first of two zip lines will send you flying 110 metres through the air, from the Adventure Terminal to the tower that forms the launch point for your second zip line. With over 200 metres of zip line and an elevation drop of ten meters you'll pick up plenty of speed.

Please note there are limited spaces on this trip. Please view the following medical restrictions before booking the trip: www.zipworld.co.uk/medical-restrictions

■ ABER FALLS WHISKY DISTILLERY

Experience the rich heritage and craftsmanship of Welsh whisky with a tour of Aber Falls Whisky Distillery. Discover the intricate process behind their award-winning spirits, explore their state-of-the-art facilities, and enjoy exclusive tastings that showcase the unique flavours of their locally sourced ingredients. Join us for an unforgettable journey into the heart of whisky making in the picturesque setting of Aber Falls.

QUIZ NIGHT

Join us on Monday night at Bar Uno after dinner for an exciting Quiz Night packed with fun, laughter, and friendly competition. Test your knowledge, enjoy great company, and grab the chance to win exciting prizes.



OR66 Organising Committee

CONFERENCE CO-CHAIRS



Dr Mosab Bazargani
Academic Co-Chair



Mithu Norris
Practitioner Co- Chair



Dr Heather He
Academic Co-Chair

PROGRAMMING TEAM



Dr Jonathan Thompson
Programme Scheduler



Professor Maria Battarra
Programme Coordinator



Professor Stephan Onggo
Programme Coordinator



John Medhurst
Event Committee Chair/
Making an Impact

EVENT OFFICER – BANGOR UNIVERSITY



Ingrid Pedersen,
Executive Board office Manager & corporate Event Officer at Bangor University

OR SOCIETY CONFERENCE ORGANISERS



Sarah Davies
Head of Membership Engagement



Caitlin Griffin
Event Manager



Emma Nelson
Event and Partnerships Officer



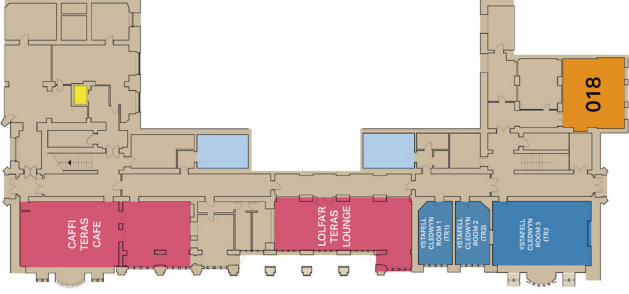
Karen Down
Event Officer

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

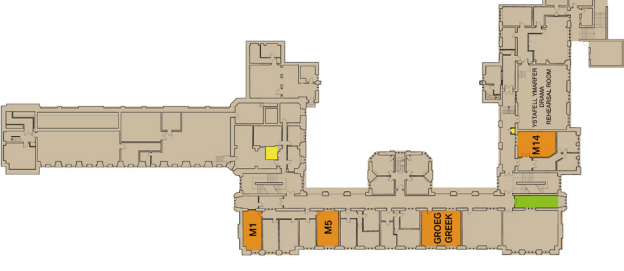
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FOOD AND DRINK
- YSTAFELL DARLITHO**
TEACHING SPACE
- LIFFT**
LIFT
- YSTAFELL CYFRIFIADUROL**
COMPUTER LAB
- LLYFRGELL**
LIBRARY
- TOILEDAU**
TOILETS
- YSTAFELL GYFARFOD**
MEETING ROOM

ISLAWR PRIF ADEILAD Y CELFYDDYDAU
MAIN ARTS BASEMENT FLOOR



LLAWR MESANIN PRIF ADEILAD Y CELFYDDYDAU
MAIN ARTS MEZZANINE FLOOR



LLAWR GWAELOD PRIF ADEILAD Y CELFYDDYDAU
MAIN ARTS GROUND FLOOR



LLAWR CYNTAF PRIF ADEILAD Y CELFYDDYDAU
MAIN ARTS FIRST FLOOR



LEFEL 3 CELFYDDYDAU NEWYDD
LEVEL 3 NEW ARTS

