

EVENT BROCHURE

Implementing Digital Innovation in a Nuclear Environment

Thursday 15th October and Wednesday 21st October

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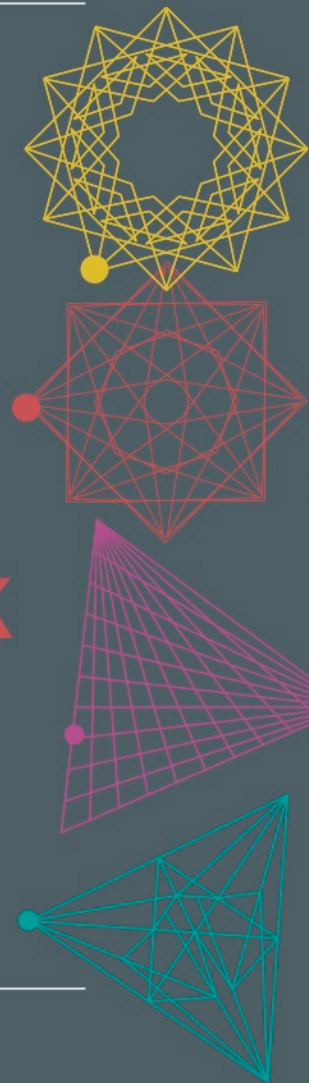
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Contents

MESSAGE FROM THE CHAIR

PAGE 1

PROGRAMME

PAGE 2 - 3

SPEAKER PROFILES

PAGE 4- 18

SESSION SUMMARIES

PAGE 19 - 21





Digital in the nuclear industry

Industry X. Combining emerging, connected and smart technology to digitally transform industry.



Welcome from the Chair

Welcome to the Nuclear Institute's 2020 'Go Digital' conference, being held on-line for the first time this year. It has been an extremely challenging - and some say unprecedented even – year which has brought digital technologies very much to the fore in the 'new normal' way of working. Of course, this is a much broader view of how technology and innovation can impact traditional ways of working, and more specific industry-focussed subject matter will be discussed at this year's conference.

Titled 'Implementing Digital Innovation in a Nuclear Environment' this year's event aims to provide practical advice, information sharing and a discussion platform to improve digital utilisation and adoption. The massive leaps and scale of opportunities presented by digital technologies, and bringing such an astonishingly rapid change to most people's business and family lives during the Covid-19 pandemic was unimaginable 20 years ago. While the UK nuclear sector still expects significant near to mid-term investment, so the opportunities to deploy digital technologies and approaches continue to present themselves.

Across both days we will hear leading professionals in the field, led by Magnox Ltd and Chaired by CEO Gwen Parry-Jones OBE on day 1, and Sellafield Ltd, Chaired by Dr Rebecca Weston on day 2 sharing their knowledge, experience and future plans for the further implementation of digital technologies across decommissioning projects, radioactive waste management and asset support, reactor design and in nuclear new-build.

Additionally, we will hear from leading sector supply chain companies on the vital roles they play and the cross-sector learning that they can bring to the table. We are delighted that Accenture Industry X.0 is the headline sponsor of our 2020 event, and very pleased that Colin Ellam, Managing Director, UK&I Industry X.0 will be presenting exclusively on Learning From Experience. We are also extremely grateful to all our participating speakers and their associated companies for taking time out of very busy schedules to be here today.



Last but not least, a big thank you to those members of the Nuclear Institute Digital Special Interest Group (SIG) who have given their time to draw up the two-day programme and arrange the speakers, thank you!

The Nuclear Institute aspires to be a home to all Nuclear Professionals; I welcome you all to this event and hope that you are able to participate and contribute to a successful day.

Philip Isgar
Sunbeam Solutions
NI Digital SIG Chair

Programme - Day 1

Thursday 15th October

All speakers confirmed at the time of publishing this programme. Circumstances may occur that prevent as published participation and could lead to a speaker or topic alteration.

09:00 **Introduction from the Chair/Moderator**
Chair: Gwen Parry-Jones OBE, NI President, CEO Magnox Ltd

Session 1

09:05 **Digital Strategy for Reactor Decommissioning**
John Norton, Head of Technical Strategy, Magnox Ltd
Supported by: Alan Bennett and Scott Powell, Magnox Ltd

10:00 – 10:10 Virtual Coffee / Comfort Break / Innovation Pitches

10:10 **Introduction from the Chair/Moderator**
Chair: Gwen Parry-Jones OBE, NI President, CEO Magnox Ltd

Session 2

10:15 **Learning from other Sectors**
Colin Ellam, Managing Director, Accenture Industry X.0

Panel Session 3

Applying Digital Twin and learning from other Sectors

Panel Chair: Neil Thompson, Director, Digital Construction Atkins
with

- 11:10**
- John Norton, Magnox Head of Technical Strategy, Magnox Ltd
 - Ionel Nistor, Head of Nuclear R&D, EDF Energy UK
 - Nigel Hart, Head of Digital, UK SMR Programme, Rolls-Royce
 - Mark Greatrix, Director - Head of Digital and Technologies, Waldeck Consulting

Programme - Day 2

Wednesday 21st October

09:00 Introduction from the Chair/Moderator
Chair: Dr Rebecca Weston, Chief Operating Officer,
Sellafield Ltd

Session 4

09:05 Sellafield is going Digital
John Robison, Head of Digital Engineering Capability, Sellafield Ltd
Supported by: Neil Picthall, Enterprise Asset Management
Programme Manager, Sellafield Ltd

10:00 – 10:10 Virtual Coffee / Comfort Break / Innovation Pitches

10:10 Introduction from the Chair/Moderator
Chair: Dr Rebecca Weston, Chief Operating Officer,
Sellafield Ltd

Session 4

10:15 Activities in Digital Research and Development
Mark Bankhead, Technology Manager, NNL
Supported by: Amr Saleh YGN

Panel Session 6

Digital Solutions addressing COVID-19

Panel Chair: Diane Daw, Nuclear Business Development
Manager, Altran UK *with*

- 11:10**
- Sam Stephens, Chief Engineer, Atkins
 - Mark Greatrix, Director, Head of Digital and Technologies, Waldeck Consulting
 - Kurt Metcalfe, Lead Consultant, BIM and Digital Engineering, Cavendish Nuclear
 - Neil Picthall, Enterprise Asset Management Programme Manager, Sellafield Ltd

12:00 - Conference Close

GWEN PARRY-JONES OBE

Chief Executive Officer of Magnox Limited



Gwen Parry-Jones OBE started her career in 1989 as a reactor physicist at

Magnox's Wylfa power station, before taking up several management positions at British Energy and then EDF Energy, in the UK and Canada.

In 2008 she became the Station Director of Heysham 1 power station and was the first woman in the UK to have run a nuclear power station. During her time at EDF Energy, Gwen was also awarded an Officer of the Order of the British Empire (OBE) for services to science and technology.

Previous to joining Magnox Ltd, Gwen was the Executive Director of Operations Development at Horizon Nuclear Power. Gwen is the current President of the Nuclear Institute and is also a Fellow of the Institute of Physics

JOHN NORTON

Head of Technical Strategy, Magnox Ltd



John joined Magnox in May 2019 as Head of Technical Strategy to drive the implementation of the strategy to accelerate the decommissioning of UK Magnox Reactors. He also co-chairs the Nuclear Decommissioning and Waste Research Forum, and supports the NI Digital Engineering SIG – Steering Group.

John gained his Masters in Mechanical Engineering from Leeds University, followed by his Masters in Business Administration from their Business School. He has worked at IMI, Sellafield, LLWR, NNL, AWE, and with the NDA. As a Fellow of the IMechE he is keen to continue to develop others in all aspects of engineering.

John's primary technical focus is to bring together the necessary decommissioning techniques and methodologies within the digital engineering environment; to provide a platform for innovation, modelling, testing and training, whilst engaging stakeholders to enable permissioning and approval.

ALAN BENNETT

Engineering Manager, Reactor Decommissioning Programme, Magnox



Alan is an established Engineering Manager with 40 plus years of experience in the nuclear industry focussed on remote handling and nuclear decommissioning projects. He has mainly been based at Winfrith and Harwell working for UKAEA, then RSRL and more recently Magnox.

Alan has led the delivery and governance of the engineering aspects for large nuclear decommissioning projects. He has set up and led engineering teams to design, develop and deliver technical strategies and remote handling equipment and techniques to dismantle and decommission key nuclear plant including nuclear reactors (e.g. SGHWR and Dragon at Winfrith) and other key facilities such as post-irradiation examination (PIE) facilities.

He has operational experience including the management of active operations to carry out remote handling and PIE work. He has also acted as Project Manager for large decommissioning projects, and has led the technical aspects for the preparation and management of large engineering procurement contracts.

SCOTT POWELL

Senior Consultant, Magnox Ltd



Scott is a Fellow of the Institution of Civil Engineers with 20 years' experience in civil and structural engineering in the UK and New Zealand. He has worked for Magnox Ltd for 10 years on a multitude of engineering design, construction and demolition projects.

He currently manages an innovations programme for Magnox Ltd. This focuses on technological innovations which can make the Magnox sites safer and more economic in their mission to manage and remove hazards. Current innovations projects include remote robotic inspections in hazardous areas, robotic NDT and the use of UAVs for civil engineering inspections.

Scott leads the Digital Engineering Strategy for Magnox and chairs the NDA Working Group on Remote Sensing investigating the use of satellite applications in managing the Magnox sites. He is also working with the NDA to develop a remote operations centre of excellence to harmonise the efforts of the NDA estates and drive efficiency through shared learning throughout the nuclear industry and through government.

In 2019, his leadership of the engineering challenge associated with the control of stored energy was recognised by the NDA Safety Awards, where his team were highly commended for the improvements in managing spring hanger risks.

COLIN ELLAM

Managing Director, Accenture Industry X.0



Colin's role in Accenture's Resources business unit concentrates on bringing digital innovation to clients operating in highly regulated industrial markets such as Oil & Gas, Mining, Chemicals, Utilities and of course, Nuclear.

His focus is across the full lifecycle of large and complex assets from design, through the build stage and into successful operations, not forgetting the life extension and decommissioning of these assets at the back end.

He started his career at 16yrs old as a UKAEA Risley Apprentice and has worked across all the UK's nuclear sites while with NNC, AMEC, Morgan Sindall and Accenture.

Before re-joining Accenture in June 2019, Colin was the Information & Management Systems Director at Horizon Nuclear Power and was on the project for three years until the project's suspension in March 2019.

NEIL THOMPSON

Director of Digital Construction, Atkins



As Director of Digital Construction at Atkins, member of SNC Lavalin Group, Neil is part of the leadership team responsible for the definition and implementation of a global transformation program.

The role involves identifying and sharing digital innovation, creating new business opportunities and service lines, and encouraging cultural shift across an organisation of over 50,000 employees.

Neil's passion lies in determining how to improve the design, build and operation of social & economic infrastructure, through integrated technologies and services. Tackling the productivity problem using his background as a construction manager, engineer and economist, he is working to redefine business models, harness robotics and apply digitally driven engineering.

Amongst a range of other professional activities, Neil also is a Delivery Lead on the National Digital Twin Programme and Chair of the IET's Digital Built Environment Board

IONEL NISTOR

Head of Nuclear R&D, EDF UK



Ionel Nistor is the Head of Nuclear R&D at EDF in the UK responsible for the strategic and operational development, management, governance and delivery oversight of the Nuclear R&D programs: Nuclear Generation and Nuclear Decommissioning.

Graduated of the Military Technical Academy from Bucharest - Romania in 1997, he started the professional career as lecturer and research engineer in ballistic sciences in the defense sector.

He graduated then from the University Paul Sabatier of Toulouse in 2002, completing the Master of Science in Mechanical Engineering, followed by a PhD thesis in Mechanical Engineering successfully defended in 2005 at the Polytechnic National Institute of Toulouse, France.

After a post-doctoral fellowship at the National French Institute of Petroleum, he joined EDF R&D in 2007 where he held several positions around modelling and simulation and digital areas, from software developer to team manager. He was leading the Working Groups created to deliver the Cloud Computing and Digital Twins strategies at EDF R&D France.

As Head of Nuclear R&D, he currently represents EDF UK in several national and international organizations in governance and advisory boards including, UK Nuclear Decommissioning Authority, Nuclear Advanced Manufacturing Research Centre, South West Nuclear Hub, Materials Ageing Institute, UK Infrastructure Industry Innovation Partnership, European Sustainable Nuclear Energy Technology Platform and FORATOM.

NIGEL HART

**Head of Digital,
UK SMR Programme,
Rolls-Royce**



Nigel has over 20 years of experience of industrial innovation and technology development and is currently Head of Digital of the UK Small Modular Reactor Programme.

The UK-SMR programme is ideally placed to take advantage of the latest in secure digital technologies, adapting existing solutions and implementing new ideas to provide a level of data fidelity and information not seen before in the nuclear industry.

Nigel is member of R² Data Labs, the global data innovation division of Rolls-Royce. His previous roles have included Head of Technology of the SMR programme, Manager of the Nuclear-AMRC and Head of Rolls-Royce's Advanced Technology Centre in Singapore.

MARK GREATRIX MSc

**Director of Digital and
Technologies,
Waldeck Consulting**



Mark is a digitally and technology focused professional with a Master of Science (MSc) focused in Building Information Modelling Management from Middlesex University.

Having over 20 years' experience working closely with project teams delivering innovative and technology focused solutions for blue chip clients from within specialist multi-disciplinary design organizations in the AEC industry, Mark has a demonstrated history, skilled in Strategic BIM consultancy, observing all facets of BIM principles and associated deliverables.

His role within Waldeck as the Research & Development Lead sees him providing strategic advisory services, supporting organizational and project strategies, as well as developing and embedding innovative and disruptive digital technology solutions to support business work streams.

DR REBECCA WESTON

**Chief Operating
Officer, Sellafield Ltd**



As COO for Sellafield Limited, Rebecca is responsible for the overall programme delivery and performance of the operations at Sellafield, one of the world's most complex nuclear and industrial sites. Her span includes all aspects of retrieval and legacy clean-up, spent fuel and special nuclear material management, as well as nuclear waste management, decommissioning and remediation.

She has experience across large and small manufacturing organisations and has held senior leadership positions across Programme and Project Delivery, Operations and Commercial, as well as Technical and R&D.

A PhD qualified Chartered Physicist and Engineer, Rebecca has an Executive MBA and holds non-executive and volunteer roles, across a range of organisations that drive economic development and learning, including the Cumbria Local Enterprise Partnership.

Implementing Digital Innovation in a Nuclear Environment

JOHN ROBISON **MSc, CEng,** **AMIStructE, FIET,** **Head of Digital** **Engineering Capability** **Sellafield Ltd**



John has 35 years' experience in the design and construction of chemical and nuclear facilities where, for the last ten years, he has focused on the use and development of design and information management systems.

He is currently the Head of Digital Engineering for Sellafield Ltd. where he is leading their implementation of digital project delivery within the wider business context of Sellafield's digital ambition.

MARK BANKHEAD **Technology Manager,** **National Nuclear** **Laboratory**



Dr Mark Bankhead is a technology manager in chemical modelling and High Performance Computing at the National Nuclear Laboratory.

He is a chartered chemist with over 17 years' experience working in nuclear R&D. He has led a number of initiatives in digital for NNL, including an ongoing £2m investment in computing infrastructure, and Nuclear Innovation Programme activities in digital integration and in digital manufacture.

NEIL PITCHALL

Enterprise Asset Management Programme Manager and Digital Transformation Lead, Sellafield Ltd



Neil has worked at Sellafield for over 15 years in a variety of operational, project, programme and strategy roles. The last three years has primarily been focused on how Sellafield transforms across its asset management lifecycle and the role of Digital Transformation at Sellafield.

In doing so he has led a stream of work associated with what Digital means for Sellafield and how this is fundamentally different to traditional IT with a strong focus on people, process and data changes.

To accelerate Digital, Neil has supported the delivery of a number of 'proof of value' concepts across Sellafield which informed the development and publication of Sellafield Ltd's first Digital Strategy earlier this year.

He has a strong desire to achieve Digital Transformation at Sellafield in order to deliver improved enterprise performance, and plays an active daily role in enabling this to be achieved. Some areas of focus currently are around adoption of improvements to support Sellafield Ltd's asset management lifecycle, an operating model shift to deliver iterative and agile improvements and the company's continued response to the Covid-19 pandemic.

He is continuously learning in this field, and actively participates in a number of external events and networks to bring shared knowledge and experience back to Sellafield.

AMR SALEH

Strategic Advisor, National Nuclear Laboratory / YGN



Amr is a chemical engineering graduate, who believes he is fortunate to have worked at Sellafield, BEIS and now NNL. He has a keen interest in supporting the UK nuclear sector in realising the benefits of digital technologies, and joined the nuclear industry as he believes it is at the heart of the most existential issues the history of the world has ever seen.

Amr passionately believes nuclear has a major role to play in addressing challenges including climate change, national safety and security as well as saving lives through nuclear medicine, and joined the sector as he wants to make a difference

Implementing Digital Innovation in a Nuclear Environment

DIANE DAW

Nuclear Business Development Manager, Altran UK

Diane is an experienced Head of Energy with a demonstrable history of working in safety-critical sectors within the engineering services industry.



She is a strong research professional skilled in developing digital solutions for clients, to improve productivity, change business models and deliver benefit.

With a Computer Science background and business acumen Diane is able to bring together technical knowledge with business acumen to identify digital solutions which have a value and are deliverable.

KURT METCALFE

Lead Consultant – BIM & Digital Engineering Cavendish Nuclear

Kurt is a chartered member of the Chartered Institute of Architectural Technologists, with a varied knowledge and practical experience on a variety of projects from individual residential projects, through to complex commercial and Nuclear with over 20 years' experience in the construction industry.



Kurt has been involved with BIM and Digital Engineering for the last 12 years, working within BIM management/delivery and strategy development on projects, promoting collaborative working practices, procedures and engagement of teams to work faster, safer and at lower cost.

SAMUEL STEPHENS

Chief Engineer, Atkins



Sam leads the digital transformation of SNC-Lavalin's Nuclear business and is a member of the Nuclear Products and Technology team.

His role is to accelerate the adoption of digital technologies across SNC-Lavalin's client base and incubate new digital solutions to address current and emerging challenges.

He is passionate about driving innovation and adoption of new technologies in day to day work, and works with teams around the world to develop solutions to the most challenging problems across the nuclear lifecycle.

Sam is a Chartered Engineer and Member of the Institution of Civil Engineers, with 16 years' experience working across the UK nuclear sector in defence, decommissioning and power generation.

Session Summaries

Day 1, Session 1

Digital Strategy for Reactor Decommissioning



John Norton, Head of Technical Strategy, Magnox Ltd
Supported by: Kevin McIntyre and Scott Powell, Magnox Ltd

Magnox Ltd has 10 nuclear reactor sites and 2 research reactor sites, all of which are defueled and in progressive stages of decommissioning. Recently the Bradwell site was placed into a Safestore configuration to commence a period of Care and Maintenance, aimed at securing the site for decades with minimal interventions.

Until now, the preferred strategy was to place all the 10 reactor sites into long term Safestore configurations. However building on the lessons from Bradwell, a recent change in strategy moves Magnox towards a rolling programme of reactor decommissioning, which enables the UK to develop a strong reactor decommissioning capability over the coming decades.

Magnox is embracing digital engineering across its current programmes and shall need to embed this capability in the accelerated programme for reactor decommissioning. It is recognised that digital engineering enables information to be shared easily across business functions, from accuracy of specification and contract information, to risk mitigation in large programmes.

Scott Powell is a Senior Consultant with Magnox and shall present some current examples of Digital Engineering deployed across Reactor Sites. From drones inspecting facilities and providing high resolution laser scan information to

Alan Bennett / Kevin McIntyre oversee the Reactor Decommissioning Programme at Winfrith which is currently dismantling the Steam Generating Heavy Water Reactor (SGHWR). This programme has utilised digital engineering from; Imagery, 3D CAD Modelling, Cloud Point Surveys, Robotics, Virtual Reality Training, and deployed drones both internally and externally.

John Norton as Head of Technical Strategy shall discuss the future requirements to balance the benefits of digital engineering with the technical challenges of decommissioning the Magnox fleet of reactors. From management of degrading facilities, accurate characterisation of inventories, decommissioning methodologies and modelling, to equipment testing and training of operators to deliver value for money and develop the UK Decommissioning Capabilities.

Session Summaries

Day 1, Session 2

Learning From Other Sectors

Colin Ellam, Managing Director, Accenture Industry X.0

In the past six months, companies across all industrial settings have experienced significant challenges to their operating models and tested their readiness for the new 'digital' normal.

Colin will share examples and discuss how other adjacent industries are adapting and accelerating changes to their operating models to embrace digital transformation that enables a more productive environment from a more distributed workforce.

Day 1, Session 3

Applying Digital Twin and learning from other Sectors

Panel Chair: Neil Thompson, Director, Digital Construction Atkins with
John Norton, Head of Technical Strategy, Magnox Ltd
Ionel Nistor, Head of R&D, Nuclear, EDF Energy UK
Nigel Hart, Head of Digital, SMR Programme Rolls-Royce
Mark Greatrix, Director - Head of Digital and Technologies, Waldeck Consulting

Session 3 will provide an overview of the leadership the UK is taking in the adoption of digital twins across the built environment and bring perspectives from nuclear decommissioning, generation, new build and small modular reactors on how these concepts will be applied in the nuclear industry. The session will be chaired by Neil Thompson, Director of Digital Construction at Atkins, member of SNC-Lavalin Group who will share his perspectives from the Centre for Digital Built Britain, the National Digital Twin Programme and the steps early adopters in other sectors are taking. Neil will invite panellists from Magnox, EDF Energy, Rolls Royce and Waldeck to share their perspectives and they future vision for digital twins in the nuclear sector.

Digital Transformation at Sellafield



John Robison, Head of Digital Engineering Capability, Sellafield Ltd

Sellafield are on a Digital Transformation Journey, in this presentation John will explain why they are on this journey, what they have put in place to enable the success of the journey and what they have yet to complete.

The presentation will describe their Digital Transformation's past and future timeline including how executive support was achieved, the five Digital Objectives and six digital themes (Collaboration, Data/Information, Mobility, Intelligence, People and process, Automation) of its Digital Strategy, how the Strategy forms a core part of the corporate strategy and how this strategy is being implemented through strategic cascade into business plans and programmes.

The six digital themes outlined below will then be further developed using a number of specific examples:

- 1) Collaboration: cloud adoption strategy, requirements for a Common Data Environment, BIM exploitation within the O&M phase.
- 2) Data & information: Enterprise approach, progress with Sellafield's OIR, AIR and EIR and the standards that support this.
- 3) Mobility: Covid response, connected working, personas.
- 4) Intelligence: Digital dashboards, Business analytics and Machine learning.
- 5) People and Process: Enterprise Architecture journey, vision and principles. Business architecture journey. Change management.
- 6) Automation: IoT, Digital twins and VR.