THE
Tech Magazine

THE MAGAZINE OF THE IST

Spring Lane Building

IST Technical Conference 2022

Wednesday 14th September
University of York

iST

THE Tech Magazine

The magazine for, and made by, the technical community.

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The IST **eNewsletter** has gone from strength to strength in design and content and has naturally changed from being a traditional newsletter into an established magazine over the last five years. We wanted to thank everyone for their positive and encouraging comments. The content has been popular in representing the technical workforce from different sectors. We wanted to take this one step further, hence the transition to **The Tech Magazine**, to give technicians a publication they could contribute to, as well as ensuring the technical community is well represented. We want to keep adapting all our publications to be useful for your work and career. Please let us know if you have any feedback or opinions.

IST members can contribute with articles of interest / opinion pieces or research and information blogs. Members can advertise their projects, awards, or even advertise or offer an advert for their organisation.

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THE TECHNICAL COMMUNITY

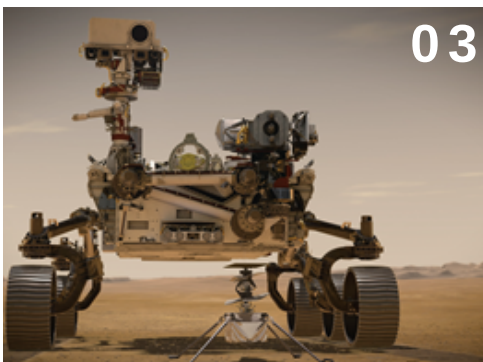Giving technicians the visibility & recognition they deserve

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WELCOME

Terry Croft MBE CSci FIScT

CHAIR'S MESSAGE

"The ability to talk to other technicians and technical managers is so valuable."

Terry Croft, MBE CSci FIScT
IST Chair

As we pass the second anniversary of the Covid pandemic lockdown, the good news is that all the restrictions have been lifted and in theory at least, we are returning to normality. With spring in the air, this time of year always reminds me that it is the start of the conference season and finally, the opportunity for face-to-face events and renewing old acquaintances and meeting new colleagues from the technical community.

These events are not only an opportunity to discuss new equipment and services with companies and manufacturers, attend excellent workshops and presentations but also to network. The ability to talk to other technicians and technical managers is so valuable. Being able to discuss problems and issues and find that you're not alone in this, but even better, you are being told the answer to the problem! I have never been disappointed with these types of events I've attended and as a member of both TMU (Technical Managers in Universities) and UBMA (University Bioscience Managers' Association) and pleased to announce that they are delivering their conferences this year as face-to-face events. UBMA takes its conference to the University of Limerick in Ireland this year between the 27th and 29th April. TMU are holding their conference from the 22nd to 24th June at Cardiff University. So, for members (or potential members) of those organisations, check out their websites for further details.

The IST Annual Conference, which is open to members and non-members, covering all sectors from Arts to Engineering will also be a live event on the 14th September at York University. I am looking forward to welcoming you all to this event which has an exciting programme for all technical staff and managers. Further information will shortly be available on our website.

There are many other events being both developed and already scheduled for 2022 and we will be highlighting these in our upcoming bulletins.

One thing we as organisations, professional bodies and formal networks have in common is the support we give to the technical community as each individual travels their career pathway. Part of our work is to showcase the vital work technicians undertake and to ensure that employers understand the value of their technical staff and the major contribution they make to their company or organisation. With the lifting of restrictions, we can return to delivering our local and regional events as well as supporting other events by delivering workshops and presentations.

CPD is essential in any technical or managerial role. The need to ensure your skills and competencies are up to date is vital. This places you in an excellent position to keep progressing your career, either within you company or organisation or moving onto new pastures to gain promotion. The IST is here to help and advice members on CPD and professional registration, Further details are available on our website.

This nicely allows me to highlight another article in this edition of our Tech Magazine by our Registrar, Dr Michelle Jackson, whose day job is Technical Careers Manager at the Midlands Innovation Talent Project. Michelle gives an excellent overview of Technical Careers in Higher Education and Beyond. An excellent read with several top tips.

Hopefully, the worst of Covid is over and as we step into spring, we are now able to move forward and enjoy the 2022 season of events, workshops and conferences for our technical community and I look forward to seeing many of you in person over this year.

With best wishes,

Terry

The IST is run by technicians for technicians so, join one of our teams and play your part.
Contact the office: office@istonline.org.uk

A Brief History of Structural Integrity
Daxue Sun

What was it that destroyed t he Challenger? On 28 January 1986, shortly into the second minute after its launch in Florida, the Space Shuttle Challenger blasted apart and killed all the crew on board. NASA's investigation report in the aftermath of the explosion found that the self-destruction disaster was caused by what seemed to be a failure of the secondary O-ring as illustrated in Figure 1,one of the "implicit" structural components in space shuttle design. Richard Feynman, a top Nobel Prize Physicist, who led the Rogers Commission to discover the root cause of the disaster, scribbled in his note; "The O-ring became less resilient and subjected to seal failure at ice-cold temperature. "The number of the O-rings per field joint was thereafter increased to three, which duly satisfied the requirement of containing the high-temperature and high-pressure gases produced by burning solid propellant
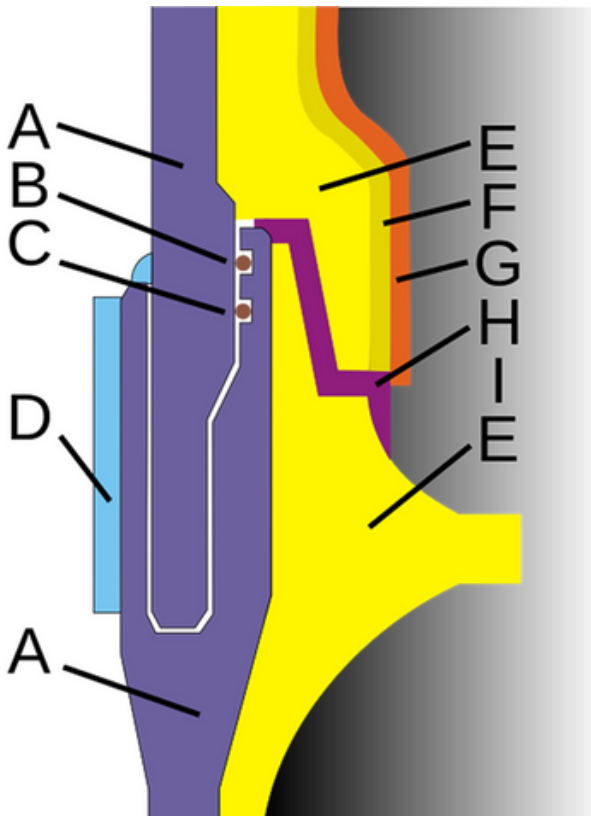
Figure 1. Sketch of Simplified Rocket SRB Joints: A–Steel Wall; B–Base O-ring Gasket; C–Back up O-ring Gasket; D–Cover; E & F–Insulation Layers; G–Decoration Layer; H–Seal; I–Solid Propellant.(credit: en.wikipedia.org)

There is always a place for mistakes in engineering history. On 24 May 1847 a passenger train fell through the Dee Bridge in Chester into the River Dee and resulted in five deaths. It was about 6 months into service following its design design by Robert Stephenson. The accident created a national furore that came close an accusation of manslaughter for Robert Stephenson. The original investigation suggested that the flexing bending loads from the moving train wrecked the cast-iron girders. A recent research work1 noted and confirmed that the bridge probably failed by exceeding the material failure limit of stress concentration due to defects at the sharp corners on the cast-iron girders. There existed a concern of growing fatigue crack before the accident with an allegedly very large deflection at the centre of the span when a train was passing over the bridge. The geometrically discontinuous corner on the girders, as illustrated in Figure 2, was presented in its original drawing with no knowledge of fracture mechanics in the era of Victorian Engineering, which inherited the conundrum of cavetto moulding manufacturing and had presumably been added on as an organic but artistic flourish.

Figure 2. Section of the Oak Joists laid on the Inner Flanges of the Cast Iron Girders [2]

A Brief History of Structural Integrity
Daxue Sun

On the night of 14 April 1912, the "unsinkable" RMS Titanic with 2,224 passengers on board struck a colossal iceberg in the North Atlantic on her maiden voyage from Southampton to N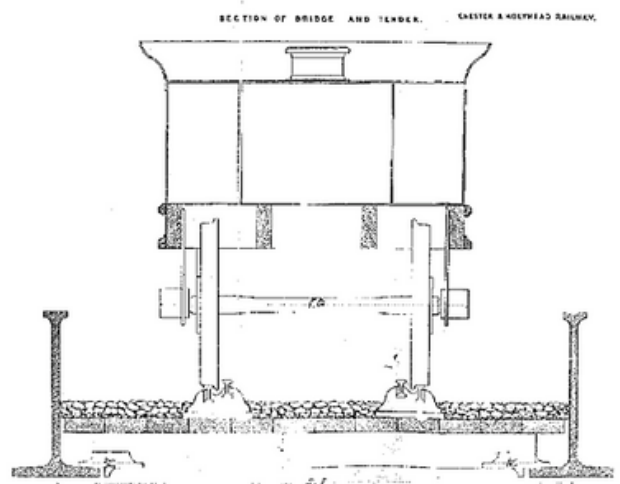ew York. The sinking of the Titanic has become one of the most well-known disasters in history. The ultimate question was what really sank the Titanic? Jennifer Hooper McCarty & Tim Foecke2 laid out a trail of engineering forensic evidence that explained the haunting riddle. The failure of the hull steel as shown in Figure 3, resulted from brittle fractures caused by the high sulphur content of the steel, the low-temperature water on the night of the disaster, and the high impact loading of the collision with the iceberg. When the Titanic hit the iceberg, the hull plates split open and continued cracking as the water flooded the ship. Low-water temperatures and high impact loading also caused the brittle failure of the rivets used to fasten the hull plates to the ship's main structure. Some wrought-iron rivets from the Titanic's hull were recently hauled up, as shown in Figure 4, from the depths for scientific analysis and were found to be riddled with unusually high concentrations of slag, making the rivets brittle and prone to fracture failure. On such impact, the rivets were either sheared off or the heads popped off because of excessive loading, which opened up the riveted seams. Also, the rivets around the perimeter of the plates elongated due to the stresses applied by the water, which broke the caulking and provided another inlet for the water.
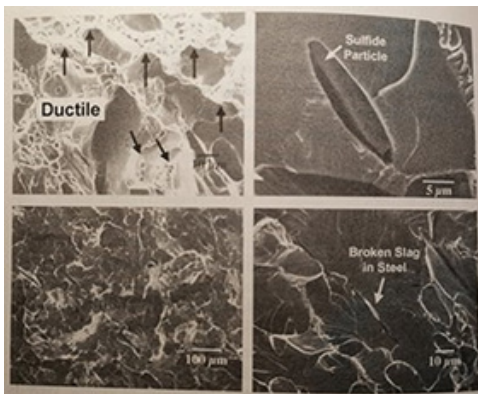

Figure 3. Scanning Electron Microscopy of Titanic Fractured Hull Steel

Figure 4 Rivets Recovered from the Wreck of Titanic

Where there are mistakes made there are lessons to learn. But it was not until the 1920s that the original concept of fracture energy was conceived by Alan Arnold Griffith3,4 &5, a pioneer in fracture mechanics who studied a PhD in mechanical engineering at the University of Liverpool. His research continued to investigate the fracture mechanism of brittle glass sheets at the Royal Aircraft Establishment in Farnborough, and made him famous for his studies in material failure. His theory showed that brittle material could be treated as an equilibrium problem from which surface strain energy was rapidly disrupted if matrix material contained a crack [2] under an undesirable load. It postulated a relationship between crack length, surface energy, and stress from which the so-called elliptical microcracks would introduce high stress concentrations near the tips. Its theorem predicted that the compressive strength of a material was eight times greater than its tensile strength. However, this situation could only be validated against glass materials. It turns out that perhaps in metallic materials, there is a great deal more energy dissipation associated with plastic deformation near the crack tip than with breaking atomic bonds.

In order to break open a material adjacent atoms need to be separated from one another and break the bonds between them. This requires a steady supply of energy to do the work required to separate one pair of atoms after another to break the bonds. In 1948 Griffith's initial development was modified by George R Irwin6, a US Naval Research Laboratory in Washington D.C., and Egon Orowan7 a Hungarian-British metallurgist, covering both in the field of theoretical and experimental work on many types of materials. A century later research work8 in fracture mechanics is still ongoing in terms of using some challenging mathematics to explain Griffith's theory, including materials with the very low critical crack length for spontaneous failure.

A fundamental question raised toward engineering safety was how damage tolerant design could have been used to avoid overlooking faults and at the same time reducing intangible mistakes? Since the 19th century design engineers have never stopped trying to understand and improve engineering designs through their entire product life cycle by using the existing safety factors, introducing true safety margins, and redefining design permissibles 9,10,11&12.

A Brief History of Structural Integrity
Daxue Sun

Moving forward in the future it is rather like tip-toeing towards a cliff edge if safety factors in design codes are reduced up to a point where there are no troubles, but beyond which the risks will then stack up very quickly. For those who wish to go further still, Eurocodes appear to be 5-10% lower than the established UK practice, but care will need to be taken in the calculation of loads and stresses to achieve a lower probability of structural failure.

Early detection and effective evaluation of potential damage are critical to maintaining the safe operation of engineering structures, whose failure could cause loss of life or property, or even ruin the environment. One month after the Titanic disaster in 1912 the first patent for underwater echo ranging sonar was filed by English meteorologist Lewis Richardson13. After WWI in 1918 Richard Seifert Jr. conducted pioneering experiments in Germany on X-ray application in science and technology14 in cooperation with welding institutes. . In the early 1920s William Hoke realised that magnetic particles could be used with magnetism as a means of locating or detecting defects because the magnetic field with a surface or subsurface flaw could be distorted.

In 1928 Electro-Magnetic Steel Testing Device (MPI) was made by the Equipment and Engineering Company Ltd of Strand in England15. Since then non destructive testing methods have been deployed and practiced for many decades in various industries. The NDT/NDE community is facing a huge challenge with more quantitative and qualitative detection of flaws being needed to help predict structural failure as the demand for technology development continues to grow.
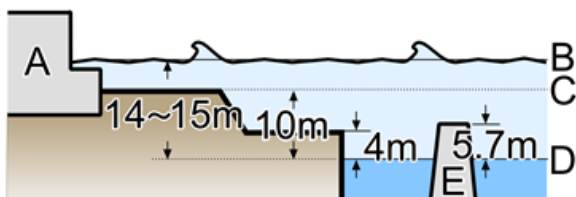

Figure 5. Sketch of tsunami wave height that struck Fukushima nuclear stations approximately 50 minutes after the earthquake, A: Power station buildings, B: Peak height of tsunami, C: Ground level of site, D: Average sea level, E: Seawall to block waves. (credit: en.wikipedia.org)

However, beyond the belief of most ordinary people catastrophic structural failures still repeatedly happen in our contemporary society. On 11 March 2011 the Fukushima Daiichi nuclear disaster was triggered by a giant tsunami, which resulted in the loss of reactor core cooling and led to 3 nuclear meltdowns, 3 hydrogen explosions, and consequently the release of radioactive contaminations on Units 1, 2, and 3.

A year after the disaster Japan's Fukushima Nuclear Accident Independent Investigation Commission (NAIIC) found that the causes of the accident could have been foreseeable. Tokyo Electric Power Company (TEPCO), the plant operator, had failed to meet the basic safety requirements such as risk assessment, preparing for containment collateral damage, and developing of evacuation plans. The tsunami wave arrived at the nuclear stations approximately 50 minutes after the magnitude 9.0 Richter earthquake, as illustrated in Figure 5 above, overwhelming the plant ground level of the nuclear site by 4 or 5 meters, which is much greater than the historical tsunami record height. In response many towns along Japan's east coastline have since built 12.5-meter tall concrete seawalls to help protect against future tsunamis.
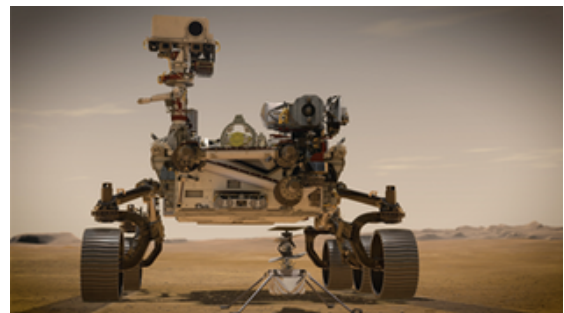
Figure 6 Perseverance rover and Ingenuity helicopter on Mars (credit: NASA/JPL)

The future of structural integrity is completely open and engineers across the engineering community begin writing new chapters. On 18 February 2021 the world witnessed NASA's Perseverance Rover's successful landing on Mars. On 30 April 2021, just a couple of months of preparation after its impressive landing, the Perseverance Rover became the first spacecraft to hear and record another spacecraft. The Ingenuity helicopter hovering around in the thin air of Mars. Thus marking a new historical first since the Sojourner became the first rover to explore another planet when it rolled onto Martian terrain on 5 July 1997. Jim Watzin, the director of NASA's Mars Exploration Program said, "*As you look further beyond just the exploration activities that we're doing, and fast forward to the point in time where we would have human exploration, the ability to scout will become very, very valuable.*"

Prof Dr Daxue Sun (CEng FIMechE, CSci & FIScT) is a nuclear scientist and a principal engineer in structural integrity at Mechanical Capability of Sellafield Ltd since 2008, and an honorary visiting professor of USTL & NEU since 2020.

Technical careers in Higher Education and beyond
Michelle Elizabeth Jackson

Michelle Elizabeth Jackson BSc(Hons) MBA PhD FIScT CSci FCMI CMgr

As a university Technical Careers Manager, and previously as a Technical Manager, I often hear the phrase 'I'm waiting for deadmans shoes' where technicians don't see any other option for progression than to wait for their line manager to leave or retire. Is there an alternative?Traditionally in university, technicians can follow a pathway to a technical manager or technical specialist role (although some are now creating a technical tutor route as well). If you want to follow these routes it is worth looking at the criteria associated with these roles and consider what development you can undertake to meet them, but you don't have to wait for your line manager to leave, you can move to a different department or a different university. There are however many different entry and exit points along these pathways and I often ask my mentees to think outside the box in terms of how they can make use of their transferable skills in different types of roles, possibly even in a different organisation. There are many examples where technicians have left the traditional pathways to become academics, H&S Officers, professional developers, building managers, facility managers, administrative managers and even accountants.

Taking a proactive approach to career development is vital. I would urge technicians to take control of their own careers, and make the most of any opportunities that come their way"
J*oan Ward, Deputy-Chair IST*

There are opportunities out there and the best place to start is to find out what you might want to do, talk to other people about their roles, check out job adverts and job descriptions for different roles, try something new or volunteer to sit on a committee. When you have an idea of what you might be interested in work out if you need to develop other skills and how you are going to do that. Be proactive about career development and prepare yourself to put in the best application possible when jobs arise.

Top tips

- Undertake some self-reflection about what is important to you in a job
- Try a skills analysis such as a SWOT to identify potential skills gaps
- Look at job descriptions advertised with different roles, and map your competencies out against the specific criteria to identify potential gaps
- Create a Personal Development Plan to address the gaps
- Network–find out what other people in different roles do not only in your department, but also across and outside the organisation
- Update your CV
- Apply for jobs or practise applying for jobs
- Setup a mock interview for a potential job
- Have a career conversation with your line manager or a trusted colleague/friend
- Get yourself a mentor or sponsor

Find out more about the TALENT Project here:
https://www.mitalent.ac.uk/

Michelle Jackson is a Technical Careers Manager at Midlands Innovation TALENT Project

Technicians in science and technology - range of levels and discipline
Sarah Howells

A national report has generated new insights into the role of technicians in higher education (HE), research and innovation that will shape the future of the technical workforce in the UK.

The opportunity for technicians

This is an exciting time to be a technician, whatever discipline, level or role. The report recognises the breath of expertise offered by technicians and the role technical staff play in teaching, driving research and innovation and knowledge exchange. By engaging with the TALENT Commission recommendations, technical staff can help to strengthen the community and contribute to a positive, thriving, and inclusive working environment, helping to reduce or remove pre-existing barriers.

The TALENT Commission, funded by UKRI-Research England, published data about skills, roles and careers of the UK's technical talent along with 16 targeted recommendations for the whole sector.

The report reveals a bold vision to strengthen the UK's position in science, engineering and the creative industries. It offers solutions to strengthen the technical community, ensuring that it is diverse, inclusive, sustainable and fit for purpose-now and in the future.

The TALENT Commission calls for sector-wide changes that will lead to the broadening of technical career entry routes across vocational and academic pathways, investment in technical careers at all levels and greater involvement of technicians within decision making processes and on committees.

Furthermore, the recommendations also ensure that technical skills, roles, and careers will be recognised, respected, aspired to, supported, and developed. The government has ambitions to become a science superpower and plans to invest heavily in research and development. If this sector understands-and then invests in-the right technical talent, expertise the sector will help to meet this ambition.

Targeted recommendations for technicians:

- Engaging with learning and development opportunities, mentoring programmes and opportunities to speak at events
- Discuss career progression and development opportunities with your line manager, seeking support for training and covering of day-to-day duties
- Participate in outreach activities with schools and colleges, open days and internal showcase events and opportunities
- Actively network with other technicians and share best practice
- Engage with local and national Technician Commitment initiatives
- Engage with opportunities to represent technical staff on decision-making committees at department, faculty, and/or institution-level, and beyond. These maybe pre-existing, new, or future opportunities.

Taking advantage of future opportunities as they arise will continue to break down barriers to inclusion and recognition within research, innovation, and education sectors. The full TALENT Commission report with all 16 targeted recommendations is available to download at https://www.mitalent.ac.uk/theTALENTcommission

TALENT Commission case studies

Technical Representation: An 'early warning system' for staff and students Craig Brown, Loughborough University.

Craig is a technical manager who describes himself as 'an early warning system' for what's happening on the ground at Loughborough University. This new type of role began in 2010, when he joined the Senior Management Team–one of the first roles of its kind.

"I'm a conduit of information both ways," says Craig. "I bring in a different experience that I think enhances what happens with committees, because I've got a different eye for it than someone purely academic or administrative. If I wasn't there, or someone like me, it would be a negative to the school as a whole, not just technical staff."

Technicians in science and technology - range of levels and discipline
Sarah Howells

Craig says he has an eye for health and safety, any dangerous situations regarding equipment, how the university's buildings work and what issues students are experiencing. His input helps to overcome issues before injuries or reputational damage occurs. It also helps to build networks and connections, so some issues can be resolved quietly and efficiently, through a conversation or email.

Creating Career Pathways Simon Breeden and Nik Williams, University of York.

Carving out career pathways within the technical workforce has been a problem that has sat on the 'too hard to do pile' for years, admits Simon, Head of Technical Services at the University of York. But thanks to the Technician Commitment, work to correct this really took off in 2017.

Now a career development structure has been created using a family of generic role descriptors to help staff see how they can progress their careers. And Nik, HR partner for Sciences and Research and Enterprise at the university, is working strategically with senior leadership to make sure the right people are involved at the right time.

One of the first tangible achievements–as well as the generic role descriptors –is the introduction of rolling secondment opportunities, so a young grade 5 can take an opportunity to work at grade 6 one day a week to gain experience. Plus, the university has recently got a grade 8 technical specialist role agreed with HR. Until this point, career development had very much been led by the individual.

Technician Commitment

Monika Chhetry
Transformation Technician, John Innes Centre

Sarah Howells is Marketing and Communications Manager for [Midlands Innovation](#) *and the* [MITALENT Programme](#)

MITalent Events

The Festival of Learning for Technicians will run from Monday 9 May to Friday 27 May 2022 (inc)
There will be over 15 workshops held over the three weeks run by MI TALENT training and career managers, L&OD representatives from universities within the MI partnership plus some technician led activity.

MITalent Leadership Progreammes
MI TALENT is launching two brand new Leadership Programmes for technicians from the eight Midlands Innovation institutions.

MITalent Roadshows
The TALENT Careers and Training team are visiting all the Midlands Innovation partner universities to speak to technicians and line managers about the learning and development opportunities that TALENT offers

For more information about any of the above please visit the [MITalent website](#)

MI TALENT

Improving training consistency with Training Master Kits
Tim Sandle

Effective training is an essential part of what it takes to be a good technician. One area of the training process that contributes to the that process is the documentation and having a standardised approach is useful for driving consistent practices, as well as helping those undertaking training in terms of familiarity. This article presents some thoughts in technical training, it is not intended to replace or counter advice from IST.

What should training documentation look like? While there is no 'one size fits all' approach, there are certain elements that make some training master kits better than others. Training master kits can include the training folder and training materials, with materials best organised around a set of competencies for specific tasks or processes. The materials can be hard copy or digital.

By way of example, this article discusses some approaches that training can take and the types of supporting documentation that can prove useful. Starting with the technician's training record, this could include:

- Attendance at an initial theoretical training course. Here the trainee should describe the science behind the activity and provide them with the appropriate laboratory SOPs, and safety system manuals. This should also include explaining to the trainee why the test is important and how much their contribution matters.
- Visit to the area where the activity is taking place (if the workspace is unfamiliar to the trainee).
- Evidence of completion of an interim assessment. Theses are not always required, this will depend on the complexity of the task and the number of stages. The trainee could ask specific questions relating to the activity and record these together with their responses.
- Evidence of effective execution of the task (such as observed, supervised and unsupervised)
- Results of the practical activities.
- Results review.
- Final evaluation and assessment.

In terms of evidence, the following can be used:

- A copy of the learning plan.
- Records of any professional discussions (this could be a specific learning activity and it is typical to document the questions asked and trainee responses).
- A performance evidence record.
- Records of reflective learning. This is a record of any learning activity observed, witnessed or for which a reflective or self-account has been produced.
- A record of update training.

In devising a training programme it is important to engage the trainee. Even the best, the most comprehensive training programme will not be retained by a disinterested audience. The continual challenge for trainers is how to capture and maintain the interest of the audience throughout the training process.

Training should ideally begin with a learning plan. This is a document put together by the training provider, and it may involve consultation with the trainee and the trainee's mentor or line manager. It is important that the trainee and the trainer agree a learning plan at the outset of training and document what learning activity needs to take place to support individuals through their full training programme.

The learning plan should outline the planned learning activity including assessment, review and feedback (including action plans and follow up). For quality auditing purposes, dates must be recorded and signed for as they form part of the audit trail. At the end of the process, the learning activity should fulfil or consolidate all training requirements.

To reiterate, there is no universal approach for technical training. This article presents some thoughts which can be considered when developing a training plan, with the aim of driving consistency within an organisation and to help to ensure that each person going through a given training process which is subject to the same rigorous process.

Dr. Tim Sandle PhD FIScT CBiol is the Head of Compliance at Bio Products Laboratory (@timsandle)

IST MEMBER BENEFITS

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Alicia Colson named in Top 50 list of explorers to watch

Alicia Colson PhD FGRS FI'10 FSA
Photo credit: Douglas Rideout

Many congratulations to one of our IST and AI Special Interest Group members, Alicia Colson, who has been included in the list of Top 50 world explorers to watch, by the Explorers Club.

The EC50 program amplifies explorers from around the globe and across a wide field of disciplines that push the boundaries of exploration. Naming these global exploration leaders to the EC50 shines a bright light on their extraordinary work and provides the recognition they so deserve.

An excerpt of the case submitted is as follows:

Explain the impact of your work and your hope for the future.

My collaboration with leading Elders from the Lac Seul First Nation, in north-western Ontario, Canada enables them to achieve specific goals. The Elders wish to enable their voices to be heard, producing two academic articles. The first will explain the meaning of their pictograph sites to local indigenous peoples to outsiders. One Elder's father, painted them as an apprentice shaman (a medicine man). The second studies a birchbark scroll, created by a medicine woman who was a member of their community. An expedition is planned for several field seasons from 2022 - engaging a team of Oji-Cree (Ojibway) and non-indigenous colleagues from Canada and the UK on the sites in the Lac Seul First Nation's Reserve (104 square miles).

The task is demanding. The researchers recognize and set out our colonial 'baggage'. Intellectual rigour is crucial, so as to confront the many ethical issues that arise. We must be prepared to challenge accepted paradigms of whatever origin and avoid the deep crevasses of the academic terrain. We must stand above popular intellectual trends and can ignore the inevitable pressure from the academy for 'quick and dirty' results. This is so that indigenous, Algonquian, methods and techniques of learning and thinking can be interpolated with non-indigenous ones in the field. The images, the rock paintings of the Lac Seul will cease to be viewed as separate silent 'objects', but integral components of that living breathing animist world of those who call these lands in northern Ontario their homelands.

For more information view the EC50 list:

Julia Barkans wins international Excellence in Lab Leadership Award

Julia Barkans, The Head of the OU's Laboratory Facilities, and IST member & CSci, has won an international award for 'Excellence in Lab Leadership'. The Awards aim to recognise individuals who demonstrate exceptional leadership and management skills within their scientific organisations. Many congratulations from all at the IST.

The competition invited industry professionals to nominate themselves or their colleagues, to recognise the hard work and dedication to their role as a lab manager and entrants were required to demonstrate the success of their staff and organisation, and how the nominated lab manager played a starring role in that success. Entries were reviewed by a panel of industry leaders consisting of laboratory managers and leadership personnel who chose the five that offered the best evidence of an effective lab leader.

I started off her career as a Medical Laboratory Scientific Officer, specializing first in histology and later immunology. This provided excellent training for her to apply and gain a research post in immunology at the Royal Postgraduate Medical School in London. She was then invited to join a group in the Dept of Allergy and Clinical Immunology at the National Heart & Lung Inst (NHLI), Imperial College initially to develop a panel of antibodies to the eosinophil. Subsequently, she supported multiple research programmes and the management of health and safety within NHLI as a member of the H&S Management team before eventually taking on the role of Laboratory Manager.

Julia joined the Biomedical Research Network at the Open University in 2007 as a Laboratory Manager, and in 2015 was appointed to the role of Senior Laboratory Manager, managing the entire Science Faculties laboratory infrastructure.

Julia Barkans BSc MIScT CSci

Julia said: *"I was absolutely delighted. I am so honoured to have been nominated for this award by my team.*

"A good leader should lead by example. They should be enthusiastic, have integrity, empathy and always be inclusive. They should review process, however, not make changes for the sake of change. They will seek advice from the team and admit if they get something wrong. They will notice talent and nurture it. They will continually motivate and have pride in the team they have developed or are in the process of developing.

"In adopting this practice, a good leader can direct, guide, and influence the behaviours they expect in others."

Julia and the other award winners will be honoured during the **2022 Leadership Summit in Baltimore, US, 16–18 May,** where they will accept their awards in front of a community of their peers.

NTDC Technician Development Project: Promoting to the next generation - Russell Wilson

I'm looking for help from technical staff from all disciplines who work in higher education and research sectors. I need your help with a collaborative project focussed around promoting technical careers to the next generation. I'm looking hoping for input from as many members of technical staff from across as wide a range of disciplines and HEI's as possible to take part in a virtual exhibition. Share your passion for your role using a pre-recorded format such as a video recording, poster, podcast, or whatever media you can think of. Perhaps you would like to highlight your career path, share why you love your job or showcase your talent, it doesn't matter what you submit what matters is you do so with the aim is to engage and inspire the future generation of technicians.

Many technicians have already signed up to take part in this virtual event with all material being displayed in a 3D exhibition hall platform. The aim is to have a range of exhibits from a diverse group of technical disciplines, that are specifically tailored towards pupils currently studying at high school encouraging pupils to learn more about technical careers. This exhibition would remain open for a full year and would be advertised with the help of our institutions, current established links with schools and other associated organisations. The online nature of the exhibition provides an opportunity to reach a large audience with no caps on total numbers and will remain open for a full calendar year. At the end of the project all material created will be stored and shared on an accessible storage space with permissions given to all exhibitors meaning they will have access to the material for future engagement events such as science fairs, STEM events, open days etc. This will be a useful bank of resources for technicians to utilise when visiting schools or further promoting technical careers in their regional area.

I have provided a link to a virtual learning and teaching exhibition that was organised by our LTA team here at Edinburgh Napier. This will help give you an idea of the 3D virtual space and is the software I intend to utilise for the project. I have also attached a couple of links, firstly to an example video that I have created for the exhibition and secondly to a video I created using an platform called *Biteable* which I have previously used to create short videos promoting work to further engage students with the technical team during lockdown and promote the lab plastic recycling scheme rolled out by my technical colleagues. I have access to this software and will happily help and assist with the creation of any material/addition of animation if anyone feels this would be useful.

If you are interested in getting involved and potentially providing material for the virtual exhibition, then please contact myself via email at r.wilson@napier.ac.uk. So far representatives from more than eight HEIs have intimated that they wish to get involved with the project and I am hoping to engage with as many Technicians across as many disciplines as possible.

Russell Wilson BSc MIScT RSci is a Laboratory Technician in Sport, Exercise and Health Sciences

IST Fellowship Awards 2022

We are delighted to announce that we have approved five new fellowship elections to mark the start of 2022.

All five new Fellows are outstanding examples of individuals who have made significant and ongoing contributions to their workplace, their technical environments and the technical community as a whole – our congratulations on their awards and we are really looking forward to working more closely with them going forward.

Our new fellows are:

Paul Ashford
BA MSc FIScT CSci

Managing Director at Roper Management Consultants Ltd Executive Director ICCBBA.
Paul has been an IST member for a few years and has in recent times been an active CSci assessor for the IST and the Science Council. Paul has also recently joined the Science Council support team as a volunteer.

Caleb Wright
BA MA FIScT

Apprenticeship Scheme Manager, University of Birmingham.
Caleb is responsible for the development and delivery of the University's Apprenticeship Strategy. He is also Co-Chair of the Higher Education Trailblazer Consortium and a member of the Apprenticeship Diversity Champions Network, and the West Midlands Apprentice Ambassador Network. Caleb has twelve years' experience in Human Resource Management in both the Higher Education and Third sector. Caleb holds a Masters in HRM and is an alumnus of the University of Manchester.
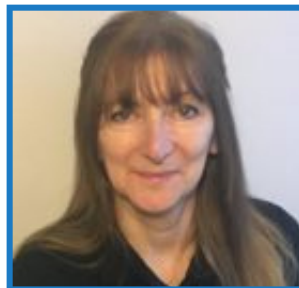
Karen Henderson
PhD FIScT CSci

Director of Technical Services, University of Reading
Karen has been a member of the IST for approaching ten years, having secured professional registration at CSci level in 2017. Karen has not only been an active supporter of the IST over many years, but also works closely with the National Technician Development Centre (NTDC),] supporting her employer to develop the technical workforce.

Lucy Hudson
BSc FIScT

Dept Operations Manager, University of York.
Lucy joined the IST in 2018 and has been a consistent and valued supporter since, providing voluntary support particularly regarding our annual conferences. She has made a significant contribution in her workplace over the last 30 years, and also acts as a voluntary specialist advisor to the NTDC.

Robert Carter
BSc FIScT CSci

Product Manager at National Laboratory Service (Environment Agency).
Robert joined the IST in 2015, gaining his CSci in 2018. He is a mentor for potential registrants at his workplace and is an experienced registration application assessor with both the IST and the Science Council.

AI Special Interest Group Update

The AI Special Interest Group was established in 2021 to consider issues associated with the very broad topic that is referred to as AI (Artificial Intelligence).

AI is employed in increasingly diverse areas of society, including criminal justice, financial services, health and social care, digital and social media, energy and utilities, and many others. At the same time, data modelling methods employed by AI providers are often poorly understood by both users of the supplied technology and those people affected by its application. This lack of knowledge, and by implication transparency and accountability, in AI can be worrying. More should be done to ensure that AI is understood, its benefits harvested more readily and any risks mitigated.

The IST SIG on Artificial Intelligence will set out to explain and where necessary challenge the development of new such technologies where they relate to human-computer interaction. We hope the group will provide a unique vehicle made up of industry professionals, government representatives and academics that will help to drive the debate on AI from societal and technological viewpoints. The intention of an IST AI Group is to provide a cross-disciplinary forum for discussing actual and potential uses of AI. We are also interested in exploring elements such as bias, transparency, explainability and policy in terms of AI development.

AI has been termed the 4th industrial revolution, taking what was started in the 3rd, with the adoption of computers & automation, and enhancing it with smart and autonomous systems fuelled by data and machine learning

The SIG should appeal to IST members with a general interest in AI. The plan is to hold regular meetings and workshops on AI and AI-related topics of interest, and also aim to promote links with experts working in the field of AI.

The workshops/seminars held to date include:
- What is AI?
  Dr Richard Saldanha
- Unlocking innovation through ethics in tech
  Olivia Gambelin
- RangL: A competition platform to accelerate progress in data-driven control problems
  Prof John Moriarty
- AI and Climate Change
  Dr. Rosana de Oliveira Gomes
- Can AI actually 'remove' discrimination in recruitment?
  Dr Eleanor Drage
- Show me the money: Ethical funding for Trustworthy AI
  Dr Alison Gardner
- Cultural micro-nodes for smart cities
  Carole Edrich and Drago Indjic

If you are interested in joining the seminars, head to:
https://istonline.org.uk/networks/artificial-intelligence-sig/

If you would like to be added to the AI SIG mailing list, please contact: office@istonline.org.uk.

Women in Tech Group Update

The Women in Tech Network Group aims to advance the knowledge and interests of women in Technology, support and empower females, and to help overcome barriers to, or within, scientific/analytical/technical careers. This will be done through events, both professional and related, and informative sessions. We will look to create subcommittees to advance the Women in Tech impact and vision and would like to put an emphasis on young women in Tech, and on working on getting more women interested in STEAM subjects.

The group have developed and delivered a number of events to date, and more are planned for the coming year, and we have a plan to develop a supportive community. Some of the benefits you can expect from the network are:

- Talks on subjects such as Overcoming barriers to analytical careers, Impostor Syndrome, Consultancy, Leadership and Negotiation
- A supportive community
- Women in STEAM Showcase
- Young Professionals in STEAM Showcase
- Career Talks
- Workplace Support
- Networking
- CPD Benefits

....to name just a few!

To date the group has offered several open seminars, with topics including:

- Becoming an underwater astronaut - life as a submariner
- Say it like youn eman it - confidence building
- Personal development
- Career Break and how to manage them
- Mindset & mental health.....to come in July

We welcome suggestions for more open sessions, so if you have any ideas or wish to join the groups please let us know via office@istonline.org.uk
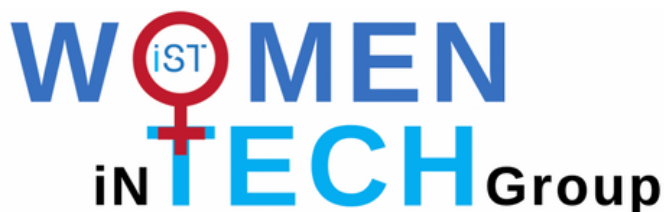
Women in STEAM Profile Showcase

Work on the Women in STEAM showcase has already begun, with the aim of gathering profile posters of a wide range of Women in Tech. It is intended that this will become are resource that schools can access in order to highlight the breadth of careers available to women, with the hope that the posters will encourage and inspire girls to consider careers in STEAM. The current gallery is found on https://istonline.org.uk/networks/women-in-tech-group/profiles-showcase/

We would welcome showcase profile data from our IST members so that we can build this showcase. If you would like to be involved please contact office@istonline.org.uk

AI in Brief:
Can AI tell us when to repair our systems?
Murray McMonies MIScT

All engineering systems degrade. However, degradation is rarely predictable, linear or similar between systems. Often failure occurs without any perceptible warning. Condition Based Monitoring (CBM) in its most simplistic terms, aims to measure degradation to inform when a component or system needs changed, to avoid unexpected failure but also to avoid unnecessary replacement.

Logically, even if it was not labelled as such, engineers have always used CBM throughout history but the advances in modern technology to enhance sensor capability and data capture has developed CBM into a science and industry in its own right. How do we make sense of the inevitable mass of data available? The growth of advanced computer modelling and AI provides some promise, but can it really tell us when to replace that part?

AI driven machines are bounded by their inability to correctly frame a problem due to the lack of context. They are purely driven to identify patterns from data rather than, in the case of an engineer, identifying reasoning and applying engineering logic to the observed data. An engineer can understand the wider context of the operating environment and will apply engineering logic to changes and variables and will apply unconscious assumptions but will also, sometimes more importantly, understand when these conditions are absent.

Degradation is dependent on many variables and can be affected beyond just usage, which makes it extremely difficult to ascertain remaining useful life. Endogenous factors, environmental factors, measurements errors and instantaneous shock events can significantly impact degradation rates, which can be extremely difficult to model and factor within AI predictions of remaining useful life.

Whilst AI may play an important role in assisting CBM data collection and synthesis, context will remain key and the analysis and decision-making process is the engineer's. To that end, it remains imperative that any AI system remains explainable to the engineer.

Murray McMonies is a Project Support Officer with the Royal Navy and is a member of the IST's newly formed AI Special Interest Group.

AI in Brief:
A question of bias
Dr Richard Saldanha MIScT

Negative use of the word bias seems to appear in almost every article written about artificial intelligence, machine learning or just plain computer programming these days. It has almost become the technological go to synonym for bad. Unfair bias is often depicted as the fault of unrepresentative data or more directly that of the system programmers whose frame of reference is so narrow they couldn't possibly avoid injecting such bias, wittingly or unwittingly, into their code. It's only when some obviously disadvantaged group shouts foul do we see the true extent of the damage such evil code has wrought. Whilst those claims certainly grab headlines, it is a naïve way to look at mathematical modelling. The truth about bias is somewhat more subtle.

What is bias?

For the data modeller, bias is simply a way of measuring how well some estimation mechanism works in determining the true value. For example, I know that my bathroom scales underestimate my weight by around 7%. Therefore, I should make a suitable adjustment for whatever measurement is obtained in order to correct for this. I make no statement about the intrinsic nature of my bathroom scales being good or bad. The idea of systematically under or overestimating a quantity can be extended to any type of measurement, e.g. the precise length of a coastline, the speed of sound or the degree of redshift for some celestial body. Nothing pejorative about bias here, it is just quantitative fact.

Data bias

We are often told that the underlying training data are at fault when unfair bias is apparently perceived. I had to correct a certain learned Oxford University sociologist who made the sweeping statement in a public seminar that "all facial recognition systems are inherently racist"— really? I suggested that such systems might be poorly trained but they weren't necessarily racist. For example, when I travelled to Guangzhou in China a few years ago, was I upset that I couldn't use an automated facial recognition system at the airport? No, I was quite happy to interact with the perfectly polite human immigration officials.

There are in fact ways to correct for under-represented groups in training data. A valid human dataset need not be a perfectly stratified random sample of the population we choose to study. We might, for example, artificially increase or sample more from ethnic minorities so that our facial recognition system works more generally. What we are actually doing here is deliberately biasing our data to build a 'better' system. In fact, we might well sacrifice higher overall system accuracy, for the bulk of a population, in favour of a more generally applicable but possibly less accurate system that copes reasonably well with differing racial features and skin tones. The over-representation of rarity in a data study is a technique that is often employed when rare occurrence is of particular significance or interest. The use of deliberate but perfectly valid data bias can be found in respectable medical, economic and geographical studies as well as in many other areas of research. Provided such studies explain clearly how the underlying data have been manipulated, and the likely effect on results, the approach is suitably justified.

Model bias

Model bias is an error arising from erroneous assumptions in a model. High bias can cause a model to miss the relevant relations between features (inputs) and a target (output). This is known as underfitting. For example, if we know a relationship between two variables is nonlinear then using a straight line as a model (which we can of course do) is immediately going to be biased. A straight line can't hope to capture the nonlinearity in the true relationship. But if there are good reasons for using a simpler model and the limitations of such a model are understood and explained then is this such a bad thing? The Standard Model in physics is a superb invention even though it leaves some phenomena unexplained and falls short of being a complete theory of fundamental interactions. A famous aphorism in statistics is all models are wrong but some models are useful. This is certainly my mantra. I don't think we are about to throw the Standard Model away just yet. Similarly, whilst using a linear model when we know a relationship is nonlinear is an extreme simplification, a locally quadratic model for more general smooth surfaces works remarkably well in numerical optimisation.

AI in Brief:
A question of bias
Dr Richard Saldanha MIScT

Bias-variance tradeoff

The bias-variance tradeoff is the property of a model that the variance of the model parameters estimated across samples can be reduced by increasing the bias in those parameters. The variance is an error from sensitivity to small fluctuations in training data. High variance may result from an algorithm modelling the random noise in the training data (overfitting). We desire models that have both low bias and low variance but (without going into technical details) there is an inherent conflict in this relationship that means such a desire is often hard to achieve. In particular, we often increase model bias in order to lower variance. We generally want models that fit reasonably well and aren't too brittle (have high variance) when we deploy them in the real world.

Remarks

The presence of bias in a system, in and of itself, doesn't automatically invalidate that system. In fact, as described above, the deliberate manipulation of bias can actually have a positive effect. Instead, it is the failure to understand or cater for bias more generally when its presence is known to have a detrimental effect, especially with regard to people either directly or indirectly, that is a serious cause for alarm. Personally, I'd like to see a little more nuance from writers in their use of the word bias.

Don't get me wrong. I'm not claiming we haven't built systems that disadvantage people on the basis of features such as age, ethnicity or gender when they absolutely shouldn't but the deliberate and sinister design of such faulty systems is, I believe, a rarity. It is far more the unwitting creation of such systems that is to blame. Modellers, programmers and anyone else dealing with systems design need to be more open and honest about the underlying assumptions they make, be aware of the flaws in both data and models (they always exist), and be more circumspect in claims about what their systems actually say.

Figure 1: The legendary Nakamichi Dragon cassette deck from the early 80s [one needs to be of a certain age] featured a fine bias calibration mechanism. Bias is an inaudible high-frequency current used in the recording process. When bias is increased, distortion is reduced but unfortunately high-frequency response worsens. Conversely, when bias is decreased, distortion increases but high-frequency response is improved. Here we have an example of bias trade-off in electronics. There is of course nothing intrinsically bad about bias in this context. (Photo reproduced with the permission of Tone Magazine: www.tonepublications.com).

Richard Saldanha is a Visiting Lecturer in Statistical Machine Learning at Queen Mary University of London; co-heads the independent consultancy firm, Oxquant; and is a member of the IST's newly formed AI Special Interest Group.

AI Brief:
I joke therefore I am? AI and text generation
Kanupriya Bhargava MIScT

*"**Dinosaurs are crazy weird, right? How did they survive without having credit cards? I guess they didn't...**"*

While this may sound like a non sequitur, this is one of the many jokes which you would hear if you watched Netflix's first stand-up comedy special written entirely by bots. Netflix collaborated with comedy writer Keaton Patti who enlisted a bot to watch over hundreds of thousands of hours of comedy routines and then write one of its very own. A (very) simple technical translation of what Patti did is use Artificial Intelligence (AI) to analyse and find patterns in large amounts of text data (comedy scripts) and then generate a whole new script based on what it had "learned."

AI based technology is ubiquitous these days, and it is being used to generate text not only for Netflix content creation but also for chat bots, virtual assistants, product descriptions for e-commerce sites, etc. Text generators use Natural Language Processing (NLP),a subfield of AI, to extract information from text and speech data, effectively giving computers the ability to understand and generate human-like language. It does so by using pre-defined algorithms to finds patterns in large structured data. Once the algorithm has "learned" from the data, it can then generate text based on a given prompt.

The most notable example of a text generator is the Generative Pre-trained Transformer 3 (GPT-3), which was created by Open AI, an AI research lab based in San Francisco. Making use of large text datasets from books and the internet, including all of the Wikipedia corpus,GPT-3 is able to produce high quality and incredibly convincing human-like text. In addition to generating text, it can perform text summarisation and language translation. While it is undoubtedly a powerful tool, it has its vices and limitations. As GPT-3 is "trained" using data from the internet, it may unintentionally incorporate some of the biases and toxicity of the world wide web.

With the advancement in computational power and availability of large amounts of data, text generators have come a long way. Yet there is still plenty of room for advancement with much needed human intervention and vetting. Especially when it comes to content creation, this technology is not yet ready to replace human ingenuity. It does however provide some good laughs and light-hearted entertainment even if it is at the expense of our financially insolvent prehistoric ancestors.

Kanupriya Bhargava is an Associate Analyst with Swiss Re and is a member of the IST's newly formed AI Special Interest Group.

Events to date and future dates for your diary

Francis Crick Institute
Date: 23/03/2022
Exhibitor
Laurence Dawkins-Hall & Joan Ward

Edinburgh College of Arts ITTS Forum
Date: 14/04/2022
Registered Practitioner Presentation
Joan Ward

SLS Laboratory Show & Conference
Date: 18/05/2022
Exhibitor and CPD Masterclass
Michelle Jackson & Joan Ward

Queens University Belfast Technical Conference
Date: 26/05/2022
Exhibitor and Professional Registration Workshop
Laurence Dawkins-Hall

University of Glasgow Technical Conference
Date:08/06/2022
Professional Registration Workshop
Laurence Dawkins-Hall

University of Exeter Technical Services Conference
Date: 21/06/0222
Exhibitor and Professional Registration Workshop
Laurence Dawkins-Hall & Joan Ward

University of Salford Technician Event
Date:05/07/2022
Registered Practitioner Workshop
Joan Ward

Newcastle University Trchnical Partnership Conference
Date: 06/07/2022
Exhibitor
Arthur Nicholas

University of York - IST Technical Conference
Date: 14/09/2022
IST Annual Conference 2022
Members and non-members are welcome and further details of the event are showing on the next page. We will be open for bookings very soon so come and join us it promises to be a great day.

I**ST Annual General Meeting 2022**

We are meeting once again over Zoom for our **IST Annual General Meeting** and it will take place on **Thursday 26th May 2022 from 11.00-11.45** am (BST).

After some discussion at the Executive it was decided to continue using a virtual platform in order allow as many of our members as possible to attend the meeting. Any IST member can register to attend and we hope you can join us.

The AGM is an opportunity for our members to hear updates on what the IST has been doing over the last 12 months and what our priorities are going forward. Members are also free to ask questions, provide feedback on how they feel we are doing and offer suggestions for activities/support that would be useful to them in the future. With this in mind, we have a draft agenda, to which members can add items on request (suggestions to be emailed to office@istonline.org.uk at least seven days before the event).

If you are intending to join us please register here. We will circulate the Zoom link and updated Agenda several days before the event, to all those members who have registered to attend.

iST Supporting the technical workforce in the creative, digital, engineering and science technologies
Annual General Meeting 2022
26 May 11.00-11.45 via Zoom
All IST members are welcome
Get Involved!

"I enjoyed meeting like-minded people"

"The talks were excellent, a suitable length and clear"

"Definitely worthwhile"

SCAN ME

AWARDS

IST One-Day Technical Conference 2022

Spring Lane Building, University of York
Wednesday 14th September

Conference Theme: Teams Behind the Scenes

#ISTconf2022   #istonline

Prices:
Members & Groups>6: **£39**
Non-Members: **£49**
University of York Staff: **Free**

Keynote Speakers
Sponsors & Exhibitors
Tech Showcase
15+ Workshops
Career Zone
Networking
Lunch

This exciting one-day conference with talks, workshops, tours and demonstrations, offers you an opportunity to update your technical knowledge/skills and enhance your CPD record.

The IST Technical Conference is aimed at technical staff/managers in any industry and sector, from science and engineering to arts and media.

Conference Workshop Themes
Arts & Media, Career Development, Digital & AI, Environment & Sustainability, Health & Safety

More information on the website soon

https://istonline.org.uk | **@istonline** | **office@istonline.org.uk**

Request for Science Museum volunteers

For a couple of years, the IST has been involved with a project which the Science Museum have been driving, which involves their building a new Technicians Gallery (The David Sainsbury Gallery) in the Museum which is intended to provide a showcase for technical talents/expertise/careers that will be a resource for 11-17 year olds considering careers in STEAM subjects. The project is funded by the Gatsby Foundation and is aimed at showing what great careers opportunities are available via the technician route. It will also support the government's drive to increase technical staff numbers in the coming years. During a recent visit to the Museum for an Open Day session about the new Gallery, it was great to see that this is now starting to come together nicely, with an aim to open up in October/November2022. A couple of the activities that the project team will be working on over the next few months, sounded really interesting and they will provide some scope technical staff/apprentices to get involved.

1.The programme team are looking for volunteer technical staff and apprentices to help develop activities for Gallery visitors (target group of visitors 11-17 year olds). Once an activity is built the technicians/apprentices will help deliver the activity that they have built to a series of school visitors. The Science Museum will provide training and all the support needed to develop and deliver the activities. This represents a brilliant opportunity for staff to acquire a whole new skill set, not only in planning but in the build and delivery phase, and also for their organisations to raise their outreach profile. Clearly, there is a time commitment involved with this and technical staff/apprentices and their employers will need to be aware of this.

2.The team would also like technical staff and apprentices to get involved in group chats about their careers, the things that inspire them, how they got into their current roles and how they see their careers developing. These chats will be recorded and made available for visitors to watch when they choose the relevant career options that they may be interested in pursuing. The time commitment for this will be a day, chatting and recording.

We feel that it's an exciting opportunity for organisations and technical staff, and the project can potentially do much to inspire the next generation of STEAM technical personnel. If you think either/both of these may be of interest to you and/or your staff, please discuss this with your manager and let us know (office@istonline.org.uk). We will then pass on your details to the Gallery project team. I understand that the four career zones that are being built are: **Health Science**, **Advanced Manufacturing**, **Creative Industries** and **Energy.** So, you are interested in helping to shape and inspire the next generation of technical personnel, this represents a great opportunity

You can see some information about the new Gallery on the Science Museum's website.

If you need any more information, please let us know (office@istonline.org.uk).

The image above is: An Architect's sketch of Technicians: The David Sainsbury Gallery © JAC Studio and courtesy of the Science Museum.

Science Council CEO appointed first woman President of the University of Reading

Helen Gordon
Image Source: Science Council

Helen Gordon has been appointed as President of the Council, University of Reading's governing body. Helen will take over from Paul Preston, who completes his term on 31st July 2022. Helen has strong leadership experience in the healthcare and professional body sectors.

Helen joined the University of Reading Council over four years ago, and has been one of the Vice-Presidents since August 2020. She will be the Council's first woman President.

The Council is responsible for ensuring proper governance at the University and that all legal and regulatory requirements are met. It has 27 members, including 15 members external to the University.

Helen said: "I am both delighted and humbled to be appointed to this important role at a time of great change and also opportunity for the University. I look forward to working closely with members of Council and the Vice Chancellor to support the delivery of the University's strategy that will benefit students, staff and the wider community.

"There are many synergies in our work at the Science Council with Higher Education, not least through the Technician Commitment and our own Employer Champion Scheme, plus our collective interest in supporting science and research through developing a vibrant, diverse and well supported science workforce."

Adam Donnan, Science Council Chair, congratulated Helen on behalf of the board.
"This appointment recognises the many talents that Helen has in governance, finance and strategy. I'm sure the Science Council members will join me in congratulating Helen."

Benefits of Professional Registration

Professional registration with the Science Council provides independent recognition of your skills, meeting the standards required to join the global community of professional scientists.

There are many benefits of professional registration:
- Get recognised - Registration recognises your knowledge and experience in addition any other qualifications you may have. Professional registration captures on-the-job experience and shows the level of competence you have as a practising scientist. It also demonstrates your commitment to integrity, regard for public interest and responsibility for others
- Reflect and shine - Applying for professional registration supports and encourages you to reflect on what you have achieved in your career so far.

- Demonstrate your ethical credentials - Registration tells others that you are committed to working to high ethical standards and gives them trust and confidence in you as a professional scientist.
- Be the one that stands out - Registration is a mark of quality and competence that is sought after by employers. It commits you to standards of integrity and professional development that help you stand out from the crowd.
- Become a leader within your field - Each of the Science Council's registers reflects stages in your career as a scientist, encouraging you to work towards high standards of professionalism, skills and knowledge.
- Join a worldwide community of cross-disciplinary scientists and technicians

NTDC / HEaTED Updates

NTDC

There has been lots of support for organisations in the sector and the team is grateful for the steer of our Director Mel Leith and Caleb Wright; Deputy director.

Technician Survey - After the launch of the first Survey Benchmarking report at the end of 2021, the second benchmarking report will be released shortly. The focus of the report will be looking at training and development requests from technical staff across institutions that have run the NTDC Technician Survey to date.

Project work
We are working on several areas including a Technicians Perceptions project looking at answering the questions; What are opinions of technical carriers and perceived barriers to a technical career? and What can we do to attract more young people into technical roles

Technician Development Fund update
Russell Wilson from Edinburgh Napier was recently awarded funding from the NTDC in order to promote technical careers to the next generation – and his project needs your help! See here

Dr Tosin Famakinwa from Western Sydney! Tosin is a Cluster Manager and his idea involves developing a visual dashboard for technical equipment monitoring that can be accessed remotely in order to check equipment maintenance requirements and usages.

Dr Karen Bailey-Smith, Technical Development Manager at Sheffield Hallam University will be working on a project with local career advisers in schools to gather evidence on the perceptions of technician career paths.

Partner Forum Event - We are excited to be running our Partner forum event on Thursday 8th September at the University of Sheffield with details on the programme and sessions themed around career development to be announced soon.

Photo competition and Awards- link to website

The NTDC is holding its third annual Photo Competition – sponsored by Henry Royce Institute and Scientific Laboratory Supplies (SLS)
This year we want to celebrate the hard work of Technicians by showcasing some of their greatest achievements.

Apprenticeship tips and support - through the offer of part 1 and part 2 sessions led by Caleb Wright and Karen Bailey-Smith

Following on from Employing an Apprentice in a Technical Role (part 1), the second workshop deep dives into the process of running an apprenticeship scheme for a technical role. Register here

Our core team, with support from our Specialist Advisers, were are able to support Technician events at Universities across the country including; Glasgow, Newcastle, Southampton, QUB, Huddersfield, Exeter, MMU as well as attending events such as the SLS show, Technician Partnership Conference, IST conference and others.

National Technician Development Centre for HE
CREATING A SUSTAINABLE FUTURE FOR TECHNICAL STAFF AND SERVICES

HEaTED

HEaTED Arts Network ran its first event virtually on Wednesday March 23rd. The event was well attended and focussed mainly on how the network can best support arts technicians across the sector.

HEaTED offers a wide variety of CPD Courses, bespoke to the technical community. Over the last year HEaTED has delivered 5-star rated courses and has listened to participants feedback which has informed a brand new selection of courses.

There are currently over 50 courses available for Technical Services staff, via our CPD Hub with dates scheduled through to the end of 2022

Click here to see all available courses.

HEaTED

Registered Practitioners Scheme

As the professional body for specialist, technical and managerial staff, here at the IST we actively encourage and support the professional registration of technical staff in all sectors and fields, including the creative industries.

Professional registration can:

- **Showcase your range of knowledge and skills**
- **Demonstrate your commitment to professional and personal development**
- **Identify opportunities and pathways for improvement**
- **Connect you to professional and support networks**

Criteria for registration include:

- Full Membership of the IST
- A HNC, Diploma, or equivalent
- Appropriate professional experience

There is also a route for mature applicants who have a high standard of professional competence, who may not have the formal academic qualifications.

We recognise technical staff across all disciplines, including the creative industries, with our Registered Practitioner Scheme, which designates MIScT(Reg) or FIScT(Reg) status to members who meet the criteria.

In Progress!

The IST is currently working closely with creative industries professionals to develop a future novel framework which will recognise your skills and knowledge, in a way similar to the science and engineering sectors.

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