Introduction

techUK’s Data Centres Technical Committee members collectively possess a wide spectrum of technical expertise relevant to the sector. While the core focus is on engineering and technology, some members specialise in business processes, others cover operational aspects and some are experts on market trends, policy or legislation. The Committee also includes external observers to ensure objectivity. Members are appointed on the basis of the specific areas of knowledge that they can contribute. Formal Terms of Reference provide governance for the group.

Objectives

The Committee was originally established to advise techUK’s Data Centres Council and provide expert technical input to policy responses, publications and other communications. However, the Committee’s expertise is increasingly being sought during dialogue between industry and external stakeholders (predominantly government) and as a result the Committee is providing objective advice about the technical and market characteristics of the sector on a regular basis to a range of stakeholders, both in the UK and further afield. Moreover, the Committee has recently agreed to develop external publications in the form of “Technical Briefs” and “Technical Committee Communications” in conjunction with techUK’s Data Centres Council.

Operation

The Technical Committee comprises 15 to 20 individuals, plus secretariat. The membership is not kept to a strict limit because there may be occasions where it is necessary to expand our expertise in order to handle a particular enquiry. The Committee works informally where possible and only meets physically when necessary. The Chairman is Professor Ian Bitterlin and the Vice Chair is Mark Acton.

Current members are:

<table>
<thead>
<tr>
<th>Name</th>
<th>Company/Role</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ian Bitterlin (Chairman)</td>
<td>Critical Facilities</td>
<td>Technical</td>
</tr>
<tr>
<td>Mark Acton (Vice Chair)</td>
<td>CBRE</td>
<td>Technical</td>
</tr>
<tr>
<td>Derek Allen / Nick Phillips</td>
<td>Global Switch</td>
<td>Technical (EU CoC)</td>
</tr>
<tr>
<td>Mark Bailey</td>
<td>Charles Russell Speechlys</td>
<td>Legal and regulatory</td>
</tr>
<tr>
<td>Matthew Baynes</td>
<td>Schneider Electric</td>
<td>Technical</td>
</tr>
<tr>
<td>Bob Crooks (Government Observer)</td>
<td>DEFRA</td>
<td>Technical (Government)</td>
</tr>
<tr>
<td>Paul Finch</td>
<td>KAO Data</td>
<td>Technical (ASHRAE)</td>
</tr>
<tr>
<td>Jason Liggins</td>
<td>Crown Hosting Data Centres</td>
<td>Technical</td>
</tr>
<tr>
<td>Billy McHallum/ Daniel Watts</td>
<td>Equinix</td>
<td>Technical</td>
</tr>
<tr>
<td>Liam Newcombe (External Observer)</td>
<td>Romonet</td>
<td>Technical</td>
</tr>
<tr>
<td>Mitul Patel</td>
<td>CBRE</td>
<td>Technical</td>
</tr>
<tr>
<td>Kam Singh / Ian Shaw</td>
<td>CBRE</td>
<td>Technical</td>
</tr>
<tr>
<td>Dave Smith</td>
<td>DataCentred</td>
<td>Technical</td>
</tr>
<tr>
<td>Pip Squire</td>
<td>Ark</td>
<td>Technical</td>
</tr>
<tr>
<td>Steve Strutt</td>
<td>IBM</td>
<td>Technical</td>
</tr>
<tr>
<td>Mark Taylor (External Observer)</td>
<td>Zircom</td>
<td>Technical</td>
</tr>
<tr>
<td>Robert Tozer / Sophia Flucker (External)</td>
<td>Operational Intelligence</td>
<td>Technical</td>
</tr>
<tr>
<td>James Wilman</td>
<td>Future-Tech</td>
<td>Technical</td>
</tr>
</tbody>
</table>
Ian is a UK Chartered Engineer with 25 years’ experience in data centre power and cooling, and a Visiting Professor at University of Leeds.

An active blogger, author of technical papers on critical power and cooling with presentations and keynote speeches made around the world, Ian is a Member of various Engineering Institutions, sits on data centre committees and international standards bodies. As well as Chairing this Technical Committee, he is Chair of the DCSG of the BCS and Chair of the TWG in EMEA for The Green Grid.

Ian was awarded ‘Outstanding Contribution to the Data Centre Industry’ at Data Centres Europe 2009 by Broadgroup.

Ian’s invaluable technical expertise was instrumental in delivering the CCA for data centres.

As Critical Services Director at CBRE Mark’s role is to provide Industry thought leadership to the business and ensure that the critical services offering continues to set the highest possible benchmark worldwide in the data centre arena. Mark joined CBRE with Norland, a hard engineering led provider of critical facilities management specialising in delivery to the data centre industry.

With over 25 years’ experience in the IT industry Mark has specialised in the field of Data Centre Operations for over 15 years, concentrating on the delivery of business critical services from highly reliable, world class 24x365 Data Centres. This has included consultancy and technical advice as well as senior management roles responsible for service delivery and both strategic and operational management within the industry. A Technical Operations Manager with extensive international experience and solid technical skills covering both Data Centre Facilities Design and IT Operational and Technical Management.

Mark is a regular public speaker and industry advisor on data centre technical issues, currently acting as consultant to a number of data centre operators and solutions developers.

Simon has worked in the data centre sector for over 20 years managing International teams supporting global data centre infrastructures.

Simon founded the UK Data Centre Interest Group in 2011 which now has over 400 members representing over 250 leading Data Centres with a focus on best practices, emerging standards, new technologies and methodologies and (working with techUK) how forthcoming legislation and regulations will impact the sector.
Mark Bailey, Partner, Charles Russell Speechlys

Mark is a highly experienced commercial, IP and technology lawyer, who provides advice on a variety of technology, infrastructure and commercial contract matters for clients ranging from growing businesses to public authorities, consultants and major suppliers and buyers of IT services. Mark combines in-depth commercial expertise, specialist technology know-how and a highly practical approach to advising clients on a range of matters including software licensing, internet and e-commerce issues, terms and conditions of business, IP protection, research and development and collaboration agreements, software developments and licensing. He also advises on supply chain contracting, agency distribution and supply agreements, data centre operation, outsourcing and facilities management and green IT and low carbon issues.

Mark works across a number of sectors but has particular expertise in advising within the financial services arena.

Matthew Baynes, Data Centre Strategy and Business Development Director, UKI, Schneider Electric

Matthew Baynes serves as the Datacentre Strategy & Business Development Director, UK&I for Schneider Electric. Matthew focuses on strategic customer & industry relationships and supports the development of Schneider Electric’s datacentre business.

Matthew also leads Schneider strategic datacentre projects and the development of new customer acquisition future business opportunities. Matthew also supports thought leadership in the market, and working with the Schneider solutions teams, helps shape the business strategy and alignment to market trends in the UK&I.

Matthew has over 15 years’ experience within the IT and manufacturing industries working within the hardware, software and services categories.

Andrew Brown, UK Head of Business Development, Sims Recycling solutions (SRS)

SRS is a globally recognised leader in IT asset disposition (ITAD), providing secure, sustainable and responsible data destruction alongside the responsible reuse and recycling of end-of-life electronics and computers. Using a consultative, innovative and solutions-orientated approach, Andrew oversees a business development team who partner with local, national and global businesses and governments to provide secure ITAD solutions that maximise value recovery. Andrew has worked closely with clients in the data centre community to develop a comprehensive understanding of the unique opportunities and challenges they face in regards to data security, sustainability and value recovery. He speaks regularly at data security, risk management and data centre conferences.

Previously he was the Business Development Manager, Financial & Professional Services Sector, at Iron Mountain, and held senior account management positions at Secure Data Management Limited and Online Security Services. A native of Christchurch, New Zealand, he holds a degree in Fine Art (BFA) from the University of Canterbury in New Zealand.
Bob Crooks, Sustainable ICT Lead, DEFRA (Government Observer)
Since obtaining his Masters with distinction in the Analysis and Design of Information Management Systems at the London School of Economics in 1981, Bob has been involved in all aspects of the IT profession including project management, software development, systems analysis and design, and training.

He is currently working for the UK’s Department for the Environment Food and Rural Affairs (Defra) where he is their lead for Sustainable and Innovative use of ICT. In this role he has led work with suppliers to reduce the department’s ICT footprint and is engaged in building an ICT SME (Small and Medium Enterprise) community for Defra and an innovation pipeline.

Bob is deputy chair of the UK Cabinet Office’s Green ICT Delivery Unit (GDU) where he leads work on Green ICT metrics and annual assessments of progress against them by all 17 central government departments. Bob chairs the British Computer Society’s (BCS) Green ICT Specialist Group which promotes Green ICT practices across its membership of some 1,400 ICT professionals. He is a member of the Association of Project Managers (APM) as well as a BCS Chartered ICT professional. He was awarded an MBE in 2010 for his work in leading a local charity for disadvantaged people in Guildford, which he helped set up in 1983

Paul Finch, Chief Technical Officer (CTO) at KAO Data Campus
Paul is responsible for operations, including data centre design, development, engineering, and product strategy. He has 28 years of progressive experience, with over 10 years operating at a senior management level, focussed on data centres, technical real estate and complex infrastructure. Prior to KAO Data Campus he was Senior Director at Digital Realty responsible for driving innovation, creating and executing the complex data centre development and infrastructure strategy across EMEA (and formerly APAC). Prior to this he was a Director at CBRE, leading their London engineering management business unit. He also spent 18 years in engineering, construction and project management in multiple sectors. He has been engaged at a policy level representing the data centre industry having made formal representation in both the US and EU on future data centre policy, standards and legislation.

He is a Chartered Engineer (CEng) registered with the UK Engineering Council, a Fellow of the Institution of Mechanical Engineers (FIMechE), Member of the American Society of Heating, Refrigeration and Air-conditioning Engineers (MASHRAE) and an active Voting Executive Committee Member of ASHRAE Technical Committee 9.9 (TC9.9) – Mission Critical Facilities, Data Centres, Technology Spaces and Electronic Equipment. Paul holds a BSc(Hons) in Building Services Engineering from London South Bank University, PgDip in Engineering Management from Brunel University and has completed the General Management Programme at the University of Cambridge, Judge Business School.

Sophia Flucker, Director, Operational Intelligence
Sophia is an award winning Young Mission Critical Engineer. She has worked as an engineering consultant on a variety of projects in several countries, delivering data centre design, commissioning and risk and energy assessments. She has worked alongside operations teams to help clients to manage their critical environments.

Her experience includes developing low energy data centre cooling solutions, creating analytical and reporting tools, leading teams and business development. Sophia won the prize for Young Mission Engineer of the Year at the Datacentre Awards 2007. She has been an active participant of various industry groups on data centre energy efficiency and has published and presented work in this area.
Jason Liggins, CIO, Crown Hosting Data Centres
Chief Information Officer to Crown Hosting Data Centres, Jason brings 15 years of experience guiding and advising central government departments, public sector arms-length bodies, national and multinational companies on how to undertake multi-sourced procurements. Specialising in the enterprise architecture of cloud and data centre infrastructure services, Jason formerly provided the technical leadership to the data centre and hosting towers of the Ministry of Justice, FITS procurement.

Crown Hosting Data Centres is a joint venture between the Cabinet Office and Ark Data Centres Ltd. Ark won the contract through an OJEU competition to form the joint venture company and provide, to the whole public sector, security assured data centre hosting, data centre connectivity and other services on demand, on a pay-as-you-use basis.

Billy McHallum, IEng, MIET, MILM, Infrastructure Analyst, Equinix
Equinix are the world’s largest IBX data centre and colocation provider across 32 strategic markets including the Americas, EMEA and Asia Pacific; connecting more than 4,500 companies directly to their customers and partners inside the world’s most networked data centres.

Equinix support the technical committee in its mission to foster a wider understanding of the technical and market characteristics of this sector. Equinix actively participate in the development of industry standards and related issues, including best practice data centre design operation and management and driving innovation.

Mitul Patel, Associate Director, CBRE Ltd
Mitul is an Associate Director within the EMEA Data Centres team, which forms part of the wider Global Corporate Services division based in London. CBRE’s EMEA Data Centres team is the world’s largest data centre real estate advisory group.

Mitul is responsible for research and consulting which includes producing CBRE’s quarterly European Data Centres Marketview as well as bespoke consulting projects for a range of clients. Mitul’s primary focus is colocation market trends and analysis.

Prior to joining CBRE Mitul led Asia-Pacific research operations for a global private equity intelligence firm from its regional hub in Singapore.

Mitul holds a Master’s degree in English Language and Linguistics.
**Ian Shaw, Head of Technical Energy Development, CBRE**

Ian is an accomplished Energy Manager and Building Services Engineer with considerable experience in the design, management and supervision of renewable & low carbon technologies, energy reduction measures and Electrical and Mechanical Building Services. He currently supports blue chip clients in the identification of savings through detailed energy surveys, audits (TM22, TM44 & DEC/AR, BS16274) and consumption analysis (HH and AMR data and utility invoices) from building fabric, HVAC services and BEMS optimisation, as appropriate for the type of building and operation. Production of specifications, tender action and contracting for the installation of BEMS upgrades/installations.

**Dave Smith, BEng (Hons) MBA CEng MIET MBCS CITP, Operations Director, DataCentred**

Dave is a Chartered Engineer and Chartered IT professional and has spent the last seventeen years in international data centre operations management. Dave has an Engineering Degree from Kingston University London and an MBA from Manchester Business School. In 1998 he joined TeleCity as Operations Manager. Among other tasks he oversaw the roll-out of data centres across Europe for TeleCity, managed the technical due diligence and integration of multiple acquisitions, and successfully implemented group wide integrated management systems incorporating ISOs 90001, 27001, 14001 and OHSAS 18001. In addition he implemented the group energy management system which was successful in achieving ISO 50001 across key European markets. In 2011 Dave took on the role of Energy & Sustainability Manager for the TeleCity Group.

Dave also sits on the techUK Data Centre Council and is part of the team who negotiated with Central Government on behalf of the industry over the introduction of the new Climate Change Agreement for UK Data centres. Energy management is a key part of his role at DataCentred, alongside quality management, site development and expansion, and recruitment.

**Kam Singh, Associate Director, International Energy Lead, CBRE**

Kam is a Director of Energy in the Global Workplace Solutions, Corporate Outsourcing service line, having overall responsibility for energy and sustainability deliverables for a portfolio of blue chip clients across the EMEA, APAC and LATAM regions. This includes managing account teams to take client portfolios (including critical facilities and data centres) from the transition process through to development of strategies, tactical plans and implementation of projects.

This work is underpinned by detailed data analysis and energy assessments and successful engagement within a multi-stakeholder environment.
Steve Strutt, CTO Cloud Computing, UK and Ireland, IBM
As Cloud CTO Steve advises clients of all sizes and industries in UK & Ireland on the adoption of cloud computing technologies and business models.
Focusing on the transformation of enterprise IT, he has a broad IT background in consulting, systems architecture and technical sales.
With over 27 years in IBM, Steve looks at how new developments can solve business challenges, engaging the breadth of IBM skills and technology to enable business growth.
As a technical leader he maintains a broad interest in technology, engineering and sustainability both at work and beyond.

Mark Taylor Director Data Centre Build & Acquisition EMEA, Zircom
Mark’s career spans 25 years’ within the ICT industry, mainly concentrated on EMEA. He has a multi-discipline background in electrical engineering, telecommunications, data centre design & build, data centre operations and colocation brokerage.
Prior to joining Zircom, now heading up their EMEA Data Centre Division, he has held senior roles with global blue chip organisations most recently with CenturyLink as Director Data Centre Operations EMEA. Supporting global engineering with a blueprint Data centre design and delivery of their flagship European data centre campus in Slough and London Docklands. Accountable for data centre operations EMEA focused on the delivery of business-critical services from highly reliable, world-class data centres. Responsible for achieving Carbon Trust Certification for UK based data centres together with CEEDA for London Docklands. Recognised for implementation of energy efficiency best practice and innovatively identifying improvement opportunities through technical due-diligence within the data centre sector. Although Mark’s skill set is vast, he is most happy demonstrating his greatest expertise which revolves around building data centres. Mark continues to support techUK and the ICT industry with his knowledge share and experience to create the most cost effective energy efficient data centre solutions for the industry in general, his clients and their audiences.

Dr. Robert Tozer, Managing Director, Operational Intelligence
Robert is one of the world’s most preeminent data centre cooling experts. His wide and extended experience in the Mission Critical Facilities industry working on design, reliability, energy efficiency and commissioning together with his academic achievements have provided him with the theoretical and practical tools to develop innovative solutions. These include free cooling designs, commissioning strategies, air management metrics and data centre energy assessment tools.
He is author of over 40 papers on reliability and energy efficiency and refrigeration, has authored several patents on data centre free cooling designs, has written many white papers (in English and Spanish) and speaks regularly at DatacenterDynamics conferences. He received the prize for Outstanding Contribution to Industry at the inaugural DCD LATAM awards in 2012. He is a Visiting Fellow at London South Bank University and has participated in many technical committees (ASHRAE, CIBSE, BREEAM, The Green Grid, and European Code of Conduct).
Daniel Watts, Operational Standards, Equinix
Daniel has over 15 years of high level experience in: Management system strategy, International standards and compliance, performing Group, Country and operational level business risk impact analysis and mitigation and implementation of business continuity measures, certification audit planning, budgeting and execution, including training and calibration. Daniel is a Certified Lead Auditor for ISO 9001 and a qualified Auditor for a number of standards including ISO18001, ISO 14001, ISO 50001 and ISO 22301.

James Wilman, CEO, Future-Tech
With extensive experience in all aspects relevant to technical data centre design and construction as well as expertise in performing technical due diligence within the data centre industry, James has worked on a broad variety of projects within the EMEA region, including countries such as Kenya, Nigeria, Ghana, Poland, Ireland, Germany, the Netherlands and the UK.

Currently working at Future-Tech, an industry leading and multi award winning data centre professional services organisation, James has worked on a broad variety of data centre projects within the EMEA region, including countries such as Kenya, Nigeria, Ghana, Poland, Ireland, Germany, the Netherlands and the UK.

With extensive experience in all aspects relevant to technical data centre design and construction as well as expertise in performing technical due diligence within the data centre industry, James is a highly regarded data centre consultant and a regular speaker at industry events, policy sessions and data centre related round tables.
Technical Committee Secretariat

Emma Fryer, Associate Director, techUK: E: emma.fryer@techuk.org

Emma has worked in and around the technology industry for the last 15 years in a range of non-technical roles that include research and report writing, policy work (from political liaison to detailed negotiations) and project management.

A committed technophobe, with a bitter and irrational hatred of digital gadgetry, the irony of her position managing the industry-government interface for the UK data centre sector is not lost on Emma. Although her ultimate ambition is to spend more time classifying tree species and examining earwigs, weevils and other garden low-life, she makes a vital contribution to the work of the technical committee. Her specific expertise is to repeat the phrase “I have no idea what you’re talking about” at frequent intervals in meetings, workshops and conference calls, thus forcing the industry cognoscenti to reconsider the language in which they communicate and reformulate their content into words of one syllable that can be understood outside the sector.

As a result, and despite her technical shortcomings, Emma has managed to produce a significant body of work including formal and informal policy responses, white papers, overviews, briefings, high level thought leadership papers and illustrated infographics explaining complex technologies in laymans’ terms - plus everything in between. Publications include “High Tech: Low Carbon”, “Evaluating the Carbon Impact of ICT: the Answer to Life, the Universe and Everything”, “Data Centres: Engines of Growth”, “Data Centres: a Day in YOUR Life”, “So What Have Data Centres Ever Done For Us?”, “Data Centre Business Models: The Sherry Trifle”, “Er, what IS a Data Centre?”, “Data Centre generator compliance roadmap: Cones of Pain” and “Silver Linings: the implications of Brexit for the UK Data Centre Sector”

Emma also manages the UK Council of Data Centre Operators, is a regular speaker at industry events, is a judge for both DCD and Broadgroup and has been the unexpected recipient of several awards including DCD Outstanding Contribution to the Industry in 2013 and TAF Effective Voice in 2014.

Emma lives in North Yorkshire and is married with a son. Her interests include dendrology, vexillology and Scottish country dancing. Her heroes include Ernest Shackleton, Patrick O’Brien and Harry Flashman. She is rumoured to be a closet fan of Johnny Cash

Lucas Banach, Programme Assistant, techUK

Logistical and administrative support
T: 020 7331 2006
Lucas.banach@techuk.org