UK Fluids Network: Previous Track Record

Matthew Juniper (University of Cambridge)

Matthew Juniper (MPJ) is Professor of Thermofluid Dynamics in the Department of Engineering at the University of Cambridge and head of the Energy Group. In 2008, he set up and ran the Advanced Instability Methods (AIM) Network to disseminate new analysis methods in Flow Instability (http://www2.eng.cam.ac.uk/~mpj1001/AIM_home.html). The AIM Network was funded by EPSRC (EP/G033803/1) from January 2009 to September 2011, during which time there were 15 workshops on special interests within Flow Instability. Since 2011 the network has continued with other sources of funding, with 5 further workshops funded by ERCOFTAC, NORDITA, the EU, and other institutional contributions. The AIM Network website contains template Matlab codes that can be downloaded and run alongside video tutorials. This was cited by Luchini and Bottaro in their review of Flow Instability in the Annual Review of Fluid Mechanics, the most prestigious review journal in the field. These resources have become increasingly popular worldwide as an introduction to the field. For example, one of the AIM Network's first talks has been downloaded 1411 times to 52 countries, enhancing the UK's international reputation as a hub for Fluid Mechanics. For undergraduate education, MPJ created www.learnfluidmechanics.org, using web-based resources that won him a 2009 Pilkington Prize from Cambridge University. The most popular video, on boundary layer separation (https://www.youtube.com/watch?v=zZqBfj1p4x4), has been viewed over 16,000 times since May 2014.

Anne Juel (University of Manchester)

Anne Juel (AJ) is Professor of Fluid Mechanics in the School of Physics & Astronomy at the University of Manchester. She is director of the Manchester Centre for Nonlinear Dynamics (MCND), an inter-disciplinary research centre between the Schools of Physics & Astronomy and Mathematics at Manchester, where complex behaviour in fluids, soft matter and granular materials is addressed, using a multi-pronged approach that allies cutting edge mathematical and computational modelling with detailed quantitative experimental investigations. AJ has led 5 EPSRC Mathematics Project Grants as PI (including an Advanced Research fellowship), and her research often addresses industrially-relevant phenomena (funded projects with BP Exploration Ltd, Cambridge Display Technology Ltd, Mondelez Ltd). She is regularly invited to deliver research lectures in the UK and abroad, including keynote lectures (e.g. ANZIAM, Gold Coast, Australia, Feb. 2015; FACM, NJIT, June 2015) and plenary lectures (e.g. Dynamics at Interfaces, OIST, Okinawa, Japan, June 2014; Frontiers of Science organised by the Royal Society, Khandala, India, Oct. 2014; FLOW Conference, KTH, Sweden, Jan. 2015). She is associate editor of Fluid Dynamics Research (IOP, European editor from Jan. 2016). She was recently appointed to the Strategic Advisory Team for EPSRC Mathematics (2015).

Paul Linden (University of Cambridge)

Paul Linden (PFL) is the GI Taylor Professor of Fluid Mechanics in the Department of Applied Mathematics and Theoretical Physics and the Blasker Distinguished Professor Emeritus of Environmental Science and Engineering in the Department of Mechanical and Aerospace Engineering at UC San Diego, where he was department chair (2004-2009). He was the Director of the Environment and Sustainability Initiative (2007-2009) and the founding Director of the Sustainability Solutions Institute (2009-2010) at UC San Diego. His research is concerned with fluid flow in the environment and in industry with over 130 refereed publications. In particular, he is interested in flow and turbulence in stratified and two-phase fluids, the fluid dynamics of advanced, naturally ventilated buildings, and flows on large scales where the rotation of the Earth is important. He is currently PI on an EPRSC Programme Grant on the Mathematical Underpinnings of Stratified Turbulence, the PI of the EPRSC Grand Challenge on future cities on the Management of Air for Green Inner Cities and co-I on the Leverhulme Programme Grant on Innovation for Sustainable Living. He is a Deputy Editor of the Journal of Fluid Mechanics and the Editor of JFM Perspectives and was the founding Editor of JFM Rapids. He is a Fellow of the American Physical Society, the Royal Meteorological Society, Academia Europaea, and the Royal Society.

Neil Sandham (University of Southampton)

Neil Sandham (NS) is Professor of Aerospace Engineering at the University of Southampton, where he has been since 1999 having previously been at Stanford University (PhD 1989), DLR Göttingen and Queen Mary, University of London. He is currently the Head of Aeronautics, Astronautics and Computational Engineering, within the Faculty of Engineering and the Environment at Southampton. His particular area of expertise is Direct Numerical Simulation (DNS) and Large-Eddy simulation (LES) of transitional and turbulent flows over the full range of speeds from incompressible to hypersonic. He has given invited talks at the European Turbulence Conference, Direct and Large Eddy Simulation and at Turbulence and Shear Flow Phenomena and has also served as the Engineering representative on the PRACE access panel. He was a co-organiser of the 1999 INI Programme on Turbulence and was the founding PI of the UK Turbulence Consortium (UKTC). The consortium facilitates access to high-performance computers in the UK and has continually grown since its inception to a current 30-investigator 5-year project. The consortium hosts an annual 2-day meeting, with a number of invited international keynote speakers, which serves as a review of recent progress and an opportunity for PhD students to present their work. Prof Sandham returned as the PI of the UKTC in 2015.

Steven Tobias (University of Leeds)

Steve Tobias (ST) is Professor of Applied Mathematics (and Head of Department) at the University of Leeds. He has utilised both numerical and analytical techniques in order to understand a wide range of problems in astrophysical fluid dynamics, involving stellar dynamos, magnetic instabilities and magnetohydrodynamic turbulence. He has supervised the research of 10 PDRAs. He was the co-organiser in 2014 of the Programme on Wave Mean Flow Interaction and of the 2008 programme on Dynamo Theory both at the KITP in Santa Barbara, California. He was an invited participant at the KITP in Santa Barbara for their programmes on Astrophysical Turbulence (in 2000) and on Solar Magnetism and Related Astrophysics (in 2002) as well as an invited lecturer at the 2002 Durham Symposium on Astrophysical Fluid Dynamics. In addition, he was a Senior Fellow, invited lecturer and long-term participant at the 2004 INI programme on Magnetohydrodynamics of Stellar Interiors, and a Senior Fellow at the INI programme on the Mathematics of Planet Earth. He was an Invited Keynote speaker at the biennial European Turbulence Conference (Delft 2015). He is an Editor of Proceedings of the Royal Society of London A, and the Editor of the forthcoming "Perspectives in Astrophysical and Geophysical Fluid Dynamics" published by the Royal Society. In 2005 he was awarded a Leverhulme Prize for his research into astrophysical fluid dynamics.

Berend van Wachem (Imperial College London)

Berend van Wachem (BvW) is Professor of Fluid Mechanics at Imperial College London. The main research areas of Berend van Wachem are Multiphase Flow, Numerical Methods, Computational Fluid Dynamcs, and Turbulence Modelling. The goal of his research is to develop a holistic research approach across the scales for understanding complex flows and to disseminate this approach and its results to society and industry. This consists of the development and application of theoretical, numerical and computational research. He is the author of the “Best Practice Guidelines for Multiphase Flows” handbook published by the European Research Community on Flow, Turbulence and Combustion (ERCOFTAC) and gives courses and lectures to industry and academia throughout Europe on this about two times per year on this subject. He has also co-authored a number of specialized books on Computational Fluid Dynamics and Multiphase Flow Modelling. He has a wide group of collaboration partners in industry and academia. He is author of the computational code www.multiflow.org, which is used by five academic collaborators as well as two large industrial collaborators. Berend van Wachem is one of the investigators of the EPSRC CDT “Fluid Mechanics Across the Scales” hosted at Imperial College, and currently serves on its management and research committees as well as teaches a number of classes and projects within this CDT.

UK Fluids Network (UKFN): Proposed activities and their context

Summary

Fluid mechanics underpins many established and emerging UK industries as well as critical societal issues such as climate science and energy consumption. Fluid mechanics research in the UK remains world-class across several dozen institutions. However, with the recent concentration of research council funding in a few universities, a network across institutions is needed to ensure that academic and industrial researchers can access the widest pool of expertise and resources, and can continue to innovate in critical emerging areas. The strategic mission of the UK Fluids Network is to keep the UK an international focal point for innovative, relevant, and impactful fluid mechanics, to engage as a group with industry, and to build leadership within the community.

1. Scientific and Technological basis

1.1 The importance of fluid mechanics on a national and international level

Early developments in fluid mechanics research were motivated by aerodynamics and this remains an important branch of the subject; Rolls-Royce, Airbus, and BAE Systems are 3 of the 6 most named partners in the Dowling review of Business-University Research Collaborations [1]. As the subject has matured, however, many inter-disciplinary applications have emerged within research council priority areas. Examples include complex fluids and rheology, carbon capture and storage, and many aspects of the Energy challenge theme and Manufacturing the Future initiative. Fluid mechanics is now a multi-faceted subject, so an inclusive network is required in order to encompass current and future emerging areas, which current funding models may fail to capture. Although the network is broad, its activities are clearly-defined and the objectives are focused.

Fluid mechanics research in the UK remains world-class across many groups. In EPSRC's 2010 International Review of Mathematical Sciences, UK fluid mechanics research was described as ahead of Asian countries and the rest of Europe, behind only the US. However, there are on-going challenges to identify and fund critical emerging areas, to attract international investment against increasingly well-funded competition, to engage companies that have never participated in collaborations [1], and to respond to changing research council funding models. The aim of the network is to enable the UK fluid mechanics community to meet these challenges.

1.2 How the UK Fluids Network fits into the UK's current portfolio of networks and investments

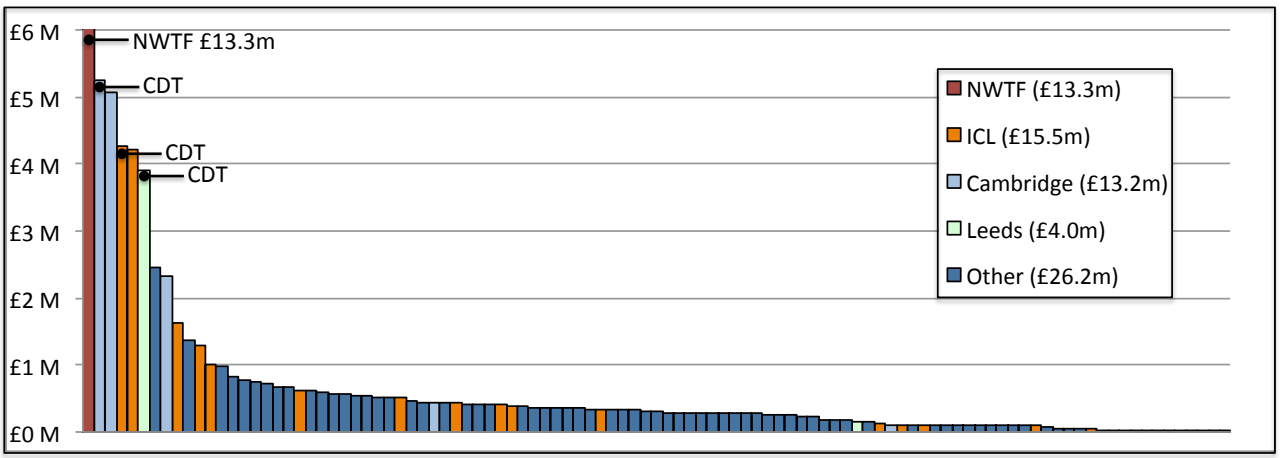

Fig.1: EPSRC current grants in Fluid Dynamics and Aerodynamics, by PI's institution (snapshot on 29/7/15)

In 2014, EPSRC invested £8.2m in two Fluid Mechanics centres for doctoral training (CDTs) (ICL and Leeds), and £5.2m in a Gas Turbine Aerodynamics CDT (Cambridge / Oxford / Loughborough). In 2015, EPSRC invested £13.3m in the National Wind Tunnel Facility, which encompasses 17 wind tunnels across 7 institutions. However, the majority (58%) of EPSRC's remaining £45.5m investment in Fluid Dynamics and Aerodynamics is at institutions without a Fluid Dynamics and Aerodynamics CDT (Fig. 1). The 40 institutions that are involved in this proposal contain, in fluid mechanics, over 500 PIs, 500 PDRAs and 1500 PhD students and therefore the

UK community needs the UKFN in order to ensure that maximum use is made of all institutions' experienced researchers and facilities. This is recognized in EPSRC's Fluid Dynamics and Aerodynamics Strategy [2], which identifies collaborations within the community as increasingly important.

There are around 20 joint efforts in the UK fluid mechanics community, many supported by research councils or InnovateUK. These are discipline-specific, such as the UK Turbulence consortium, the UK Applied Aerodynamics consortium, and the Industrial Mathematics KTN, or application-specific, such as the Aerospace Technology Institute, the Energy Generation and Supply KTN, and the Transport KTN. These focus on a limited set of established areas and therefore cover only a fraction of UK fluid mechanics activity. Many emerging areas, which have the biggest potential to create major step changes, fall between the cracks. The UKFN will complement these joint efforts, facilitating inter-disciplinary research and engagement with industry, and also support 40 Special Interest Groups (SIGs) that address industrial, scientific, and societal challenges outside existing joint efforts.

The UKFN draws inspiration from existing overseas networks. The Dutch Burgerscentrum (www.jmburgerscentrum.nl) enhances international visibility and national influence for Dutch fluid mechanics research. The European Research Community on Flow, Turbulence, and Combustion (ERCOFTAC www.ercoftac.org) organises SIGs, best practice guidelines, and industry events. The European Mechanics Society (www.euromech.org) organises conferences and colloquia. The American Physical Society Division of Fluid Dynamics (APS-DFD) coordinates the US fluid mechanics community in advocacy to funding agencies. There are similar organisations in India and China. The activities proposed for the UKFN are designed to have similar impact for the UK.

1.3 The added value that EPSRC funding for the UKFN will bring

The added value of the UKFN falls into three categories: accelerating impact, balancing capability, and building leadership. Accelerating impact requires academics to work with industry on challenge-led problems. The inclusion of impact in the REF has stimulated a positive attitude among academics towards collaboration with business [1]. However, significant barriers remain, such as the difficulty of identifying industrial/academic partners and a lack of mutual understanding [1]. Furthermore, collaborations that revolve around single researchers are inherently vulnerable: "scaling up of collaborations so that they evolve into a critical mass of activity, with multiple points of contact, a clear framework and a longer-term horizon, is key" [1]. The aim of the UKFN is to overcome these barriers, to help business to identify academic partners and to provide the mechanism to build up trust over time between multiple points of contact.

Under balancing capability, the network will create and develop emerging research opportunities at the interfaces between disciplines and report these back to research councils. The network will set the agenda for the future by having an early presence in critical new areas and identifying and stimulating important new activities that are not well represented in the UK. It will bring UK academic and industrial researchers together to make the case for funding these emerging areas of fluid mechanics, which fall outside the remit of established networks.

Under building leadership, the network will attract the brightest researchers to the UK by reinforcing the UK as a focal point for innovative, relevant, and impactful fluid mechanics research. It will enable early career researchers to develop relationships with other UK researchers at the outset of their career [1], increasing their likelihood of remaining in the UK long term. It will support researchers dealing with complex scientific, industrial, and societal challenges, which require a networked approach. It will identify and invest in inspirational research leaders by fostering ambition and creating opportunities for researchers at all levels to lead SIGs, develop graduate resources, engage with industry, and advocate to funding agencies, government and the public.

2. Objectives

The strategic mission of the UK Fluids Network (UKFN) is to keep the UK an international focal point for innovative, relevant, and impactful fluid mechanics, to engage as a group with industry, and to build leadership within the community.

2.1: Initiate novel and creative fluid mechanics research, within and across discipline boundaries

The UKFN will achieve this by: (i) creating opportunities for researchers and users to interact both in person and online §3.1 §3.2 §3.3; (ii) helping researchers in adjacent fields to identify the most relevant fluid mechanics researchers and resources in the UK §3.1 (iii) providing a mechanism for initiating research that is only possible by cross-institutional collaborations that use the best facilities §3.2 §3.3; (iv) identifying key areas for new research that are relevant to users in other disciplines and in industry §3.2.

2.2: Maximize the utility and value of applied projects by engaging as a group with UK industry

Industry and other external organisations often require assistance in locating researchers who can define and solve problems using appropriate combinations of theory, experiments, and numerical methods [1]. The UKFN will maximize the value of applied projects by: (i) providing a directory of UK fluid mechanics expertise §3.1; (ii) providing resources for industrial and academic researchers §3.4; (iii) exposing groups of academic researchers to industry's most pressing problems §3.2 §3.6; (iv) enabling cooperation between academic researchers in order to gain industrial research funds §3.2; (v) exposing PhD students to industrial problems and job opportunities and acting as a facilitator for Knowledge Transfer Partnerships §3.2; (vi) providing an accessible route for SMEs to engage with leading fluid mechanics research §3.2; (vii) exposing industry to areas of fluid mechanics that are advancing quickly in academia §3.2 §3.4; (viii) providing continual professional development (CPD), where desired, to industrial researchers §3.2.

2.3: Provide a forum for the UK fluids community to speak collectively to research councils

Future research council funding is likely to follow the large grant model, for which coordinated research communities are more effective. Templates exist for successful leveraging of funding when fluid mechanics researchers join forces across institutions (e.g. the National Wind Tunnel Facility). The UKFN will coordinate: (i) compiling a list of capital facilities, equipment, and infrastructure required for the community's long term sustainability §3.2 §3.6; (ii) compiling a list of Grand Challenges and strategic research objectives on issues of national importance in order to add to the existing list of aerodynamics grand challenges §3.2 §3.6 (iii) helping to coordinate the community's response to large capital funding or challenge-driven calls.

2.4: Maximize the impact of EPSRC's recent investment in fluid mechanics

The UKFN will achieve this by: (i) facilitating the sharing of expertise, facilities, equipment, and resources across the UK, for example by creating a SIG on access to the NWTF §3.1 §3.2 §3.3; (ii) sharing graduate-level resources, hints, tips, and best practice §3.4; (iii) raising the profile of fluid mechanics through public engagement §3.5; (iv) attracting PhD students and PDRAs to fluid mechanics in the UK §3.1 §3.4 §3.6; (viii) addressing the identified industrial need for fluid mechanics researchers who are able to integrate theory, experiments, and numerical methods to solve challenging industrial, scientific, and societal problems §3.2.

2.5: Keep the UK an international focal point for creative, innovative, and relevant fluids research

The UKFN will achieve this by: (i) creating a well-publicised resource for fluid mechanics researchers worldwide §3.4; (ii) streaming UK research seminars §3.1; (iii) developing UKFN SIGs into UK-led ERCOFTAC SIGs §3.2; (iv) hosting Euromech and ERCOFTAC colloquia and summer schools, based on UKFN SIGs §3.2; (v) supporting its members to take leading positions in research organisations, such as IUTAM, ERCOFTAC, Euromech, and the APS-DFD; (vi) providing a lasting legacy to fluids education by pursuing the making of fluids educational films §3.5.

2.6: Make the UK Fluids Network self-sufficient in the long run

The UKFN will become self-sufficient by: (i) compiling feedback and improving in order to make itself indispensable §3.1 §3.2 §3.4; (ii) requiring subscriptions in line with a desired level of support, noting that the website, researcher resources, and coordination role, once set up, require only moderate funding; (iii) leveraging other funding for the UK fluids community's benefit, such as ERCOFTAC SIGs, Euromech colloquia, and European network funding §3.2; (iv) developing Continuing Professional Development (CPD) if there is industrial demand §3.2; (v) exploring international cooperation with other networks such as the Burgerscentrum.

3. Activities

		Activities					
		Performed by network		Facilitated and funded by network			done by CDTs
		3.1 website	3.4 resources	3.2 SIGs	3.3 visits	3.5 outreach	3.6 conference
Objectives	2.1 initiate novel research	✓		✓	✓		
	2.2 engage with industry	✓	✓	✓	✓		✓
	2.3 speak collectively			✓			✓
	2.4 maximize funding impact	✓	✓	✓	✓	✓	✓
	2.5 keep UK a focal point	✓	✓	✓		✓	
	2.6 become self-sufficient	✓	✓	✓			
	Disseminate research	✓	✓			✓	✓
	Collaborate			✓	✓		✓
Benefits	Academic	✓	✓	✓	✓	✓	✓
	Industrial	✓	✓	✓	✓	✓	✓
	Public	✓				✓	
	Societal	✓	✓	✓	✓	✓	

3.1 UKFN Website, and Communication & Dissemination Strategy

The UKFN website will address the need for brokerage between external organisations and academia identified in [1]. It will contain a sign-up page, whose input will build into a searchable UK directory of fluid mechanics researchers, users, and SIGs. For facilities and equipment, the website will link to http://equipment.data.ac.uk/ and the UKFN will help to coordinate entries to this. The website will contain a discussion board (modelled on http://stackoverflow.com/ and the Met Office collaboration twiki). The facilitator will advertise the discussion board, solicit input, and prompt researchers to reply. Significant research achievements of public interest will be announced on the website, via Facebook and Twitter, and through press offices. The website and YouTube channel will host the researcher resources described in §3.4. The website will stream UK fluid mechanics seminars and will also host webinars to enhance exchanges between Fluids network members.

Targets and performance indicators are (i) website specification (before start); (ii) website, YouTube channel, Facebook site, and Twitter feed created (month 3); (iii) discussion board active (month 6); (iv) usage monitored and feedback obtained (month 18); (v) comprehensive directory of UK fluid mechanics researchers and users (month 24); (vi) fluid mechanics seminars regularly streamed (month 36); (vii) a target of 1 news item per month from the UKFN in steady state.

3.2 Special Interest Groups (SIGs)

The SIGs will be the primary interaction mechanism for researchers in the UKFN. Each SIG will be focused on an industrial or societal challenge, an interdisciplinary problem, or a theoretical, experimental or numerical method. SIGs will compile a list of capital facilities, equipment, and infrastructure that is required for long-term sustainability and build up a list of fluid mechanics grand challenges. Each SIG will typically meet once or twice a year. PDRAs and PhD students will be encouraged to play an active role in organising SIG meetings to foster leadership. Compared with ERCOFTAC SIGs, the UKFN SIGs will be smaller, UK-focused, and meet for a shorter time. Some UKFN SIGs will develop into UK-led ERCOFTAC SIGs.

A particular aim is to expose academic researchers to industry's most pressing needs and to expose industry to rapidly-advancing areas that may lead to new business opportunities. These needs will be identified by industry through the UKFN and ERCOFTAC. This will allow industry to engage with the most appropriate academics and encourage cooperation between academic researchers, in order to obtain and optimise the use of industrial funds. The UKFN will provide an accessible route for SMEs to engage with leading fluid mechanics research and facilitate proposals to InnovateUK's Small Business Research Initiative (sbri.innovateuk.org).

Targets and performance indicators are: (i) SIGs and SIG leaders in place (month 3); (ii) prepare first SIG meetings (months 3-5); (iii) expenditure rate monitored to ensure a healthy profile; (iv) best practice shared (month 15); (v) Grand Challenges identified (month 16); (vi) areas for large capital investment identified (month 16); (vii) demand assessed for CPD run through the UKFN (month 33) (viii) UKFN researchers to lead 25% of ERCOFTAC SIGs (month 36); (ix) several on-going collaborations between universities and industry started via UKFN (month 36).

3.3 Short research visits within the UK

The network will fund week-long research visits within the UK, particularly for projects that cross discipline boundaries. The aims are: (i) to remove financial barriers to research collaborations between UK researchers; (ii) to maximize the impact of EPSRC's investments by facilitating sharing of expertise and facilities within the UK; (iii) to encourage initial engagement with industry that could build into an RAEng Industrial Secondment or Industrial Fellowship.

Targets and performance indicators are (i) expenditure rate monitored to ensure a healthy profile; (ii) each research visit summarized, for grant reporting; (iii) on average at least one output per visit (e.g. further long visit, joint research projects, papers, proposals, or summer school).

3.4 Researcher Resources (part of the UK Fluids Network website)

The website will contain two types of researcher resource, both of which are aimed at academic and industrial researchers. The first will be courses requiring several days' work. The second will be hints, tips, and snippets of software. Both types of course will teach numerical methods, data collection, experimental protocols, and analysis, recognising that software is a primary mechanism for passing practical knowledge between researchers. UKFN members will migrate existing and new resources to the UKFN website. The facilitator will create an index, searchable by subject, author, and application, and provide technical summaries of these for Wikipedia and links to the UKFN website from Wikipedia.

Targets and performance indicators are (i) existing resources migrated to UKFN (month 9) (ii) required new resources identified (month 9) (iii) user feedback obtained (months 9 and 18) (iv) new resources online (18 months); (v) resources adapted after feedback (month 30).

3.5 Public engagement and outreach

In 1961, US researchers created 39 films that revolutionised fluid mechanics tuition [3]. These, and other fluid mechanics videos, are still widely watched online but are somewhat dated. The facilitator will link to existing videos and post new videos on the UKFN website, including an accurate description from a UKFN member. As well as engaging with the public, undergraduates, and other researchers, this will encourage the media to use UK rather than overseas expert opinion. The UKFN will endeavour to secure funding for updated versions of the 1961 films, to include numerical and computational advances. There will be a fund to encourage network members to write articles for the public.

Targets and performance indicators are: (i) films identified, descriptions written, films linked to from UKFN website (month 6); (ii) UKFN members who will write articles identified, and guidelines from media teams obtained (month 6) (iii) new films created and put on UKFN website (month 9); (iv) funding secured to make updated films (month 24) (v) 3 articles published by UKFN members (by month 36) (vi) significant engagement with UK media through the UKFN.

3.6 Activities outside the scope of the UK Fluids Network

The UKFN will join the UK Fluids Conference, which will be led by the ICL and Leeds Fluid Dynamics CDTs. The UKFN will not fund summer schools or workshops because many schemes already exist for this. The UKFN will, however, help to coordinate applications to institutions such as EROFTAC, Euromech, CISM, and the Isaac Newton Institute to host summer schools, summer programs, and workshops in the UK with participants from Europe and overseas.

4. Management Structure and Initial Membership

4.1 Overall management

The management structure will be based on the Burgerscentrum, with an advisory board, an executive committee, a facilitator, points of contact at each organisation, and SIG leaders. The advisory board, consisting of Dr Simon Bittleston (Schlumberger Gould Research), Dr Ton van den Bremer (University of Edinburgh), Prof Gert Jan van Heijst (Burgerscentrum), Prof Ann Karagozian (APS-DFD), and Dr David Standingford (ERCOFTAC), will have strategic oversight of the UKFN. The advisory board will be tasked with drawing up a set of values, taking advice from network members, to ensure that the network is run impartially and transparently, in the interests of and with the support of the entire UK fluid mechanics community. The advisory board will maintain

oversight of the allocation of SIGs and short research visits, ensuring a healthy coverage of scientific, societal, and industrial challenges and a healthy distribution of SIGs across the UK community. The executive committee will report to the advisory board. It will consist of Matthew Juniper (PI, Eng., Cambridge), Anne Juel (Physics, Manchester), Paul Linden (Maths, Cambridge), Neil Sandham (Aero., Southampton), Steve Tobias (Maths, Leeds), and Berend van Wachem (Mech. Eng., ICL). Each member will be responsible for one activity and the PI will have overall responsibility for delivery of the network.

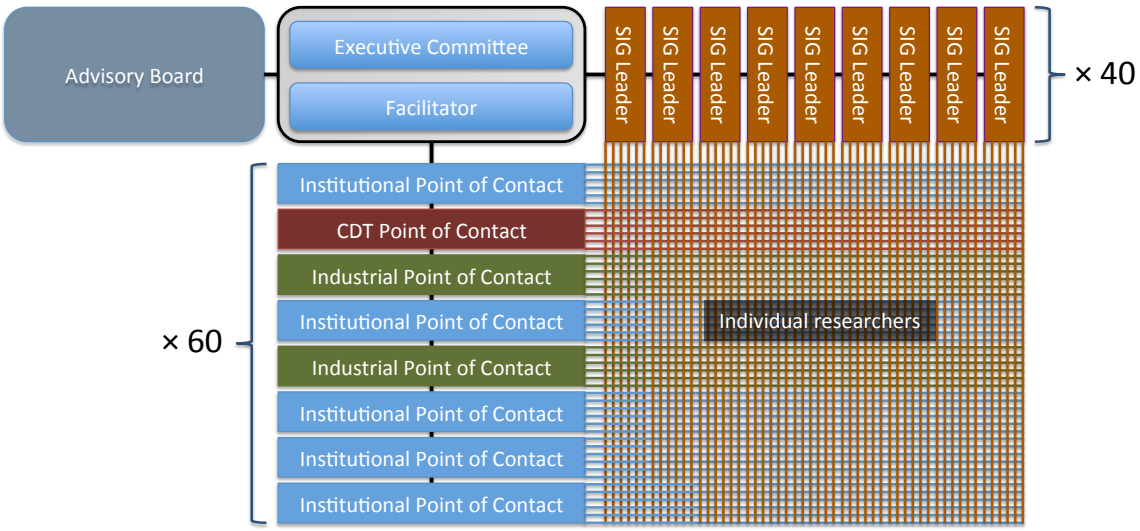

Fig. 2: Management structure of the UK Fluids Network

4.2 Membership and communication

The initial membership of the network will comprise 40 institutions and 10 non-academic stakeholders covering a range of sizes and backgrounds. The network will remain open to new academic members and we will increase non-academic membership rapidly. Each organisation and SIG will nominate a single point of contact, leading to a total of 100 or more contacts who will liaise with the facilitator. Minutes from the advisory board and executive committee meetings will be published rapidly on a central web page and a link emailed to all UKFN members. Email habits will be consistent (e.g. comprehensive cc lists, with every e-mail copied to a central address).

4.3 Management of activities

So far, over 100 SIGs have been proposed, sometimes in overlapping areas. The first task of the executive committee, overseen by the advisory board, will be to build consortia where there are overlaps, identify SIGs that best complement existing networks, and prioritize SIGs that have the highest potential to achieve the aims of the network. The SIG activities will be organised by SIG leaders, with a budget allocated in line with their size, and with best practice shared via the facilitator. Funding for short research visits will be allocated by the executive committee, overseen by the advisory board, based on peer-reviewed proposals.

[1] Dowling Review (http://www.raeng.org.uk/policy/dowling-review)
[2] EPSRC website (https://www.epsrc.ac.uk/research/ourportfolio/researchareas/fluiddyn/)
[3] US National Committee for Fluid Mechanics Films (http://web.mit.edu/hml/ncfmf.html)