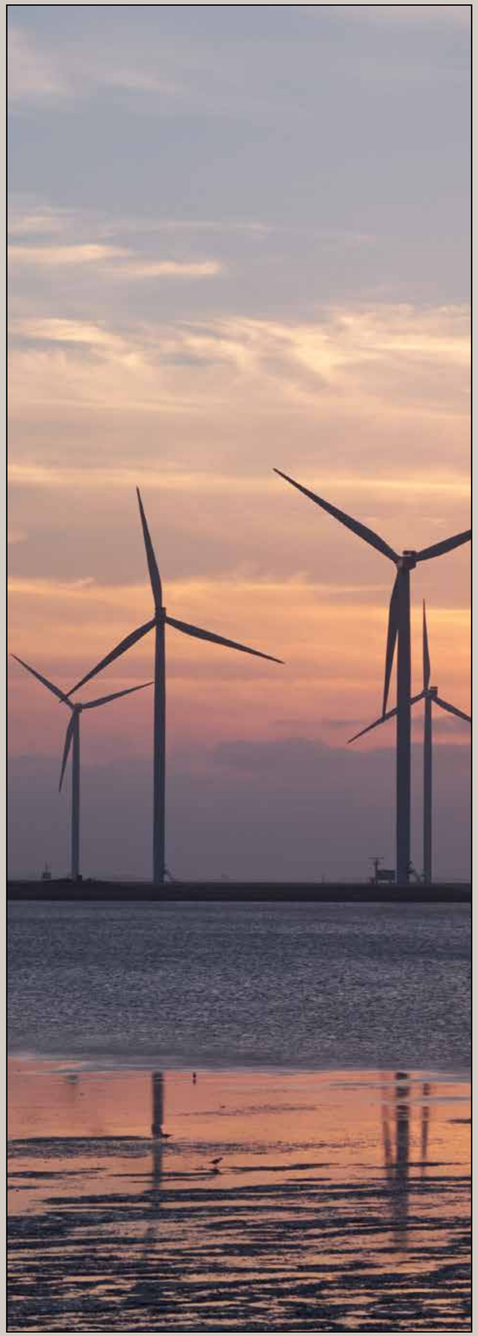
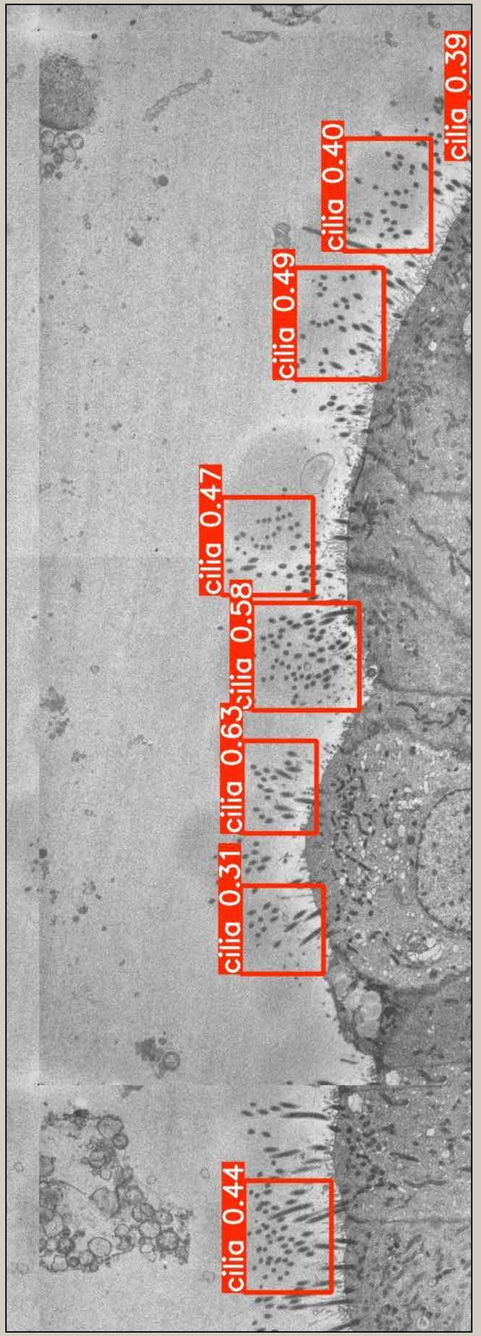
Review of 2024

Research Software Engineering at the University of Southampton

The Southampton Research Software Group (SRSG) is based in Electronics and Computer Science (ECS). We provide researchers from across the University with access to our Research Software Engineers (RSEs) who build the software needed to advance research and enterprise.





Research Software Group

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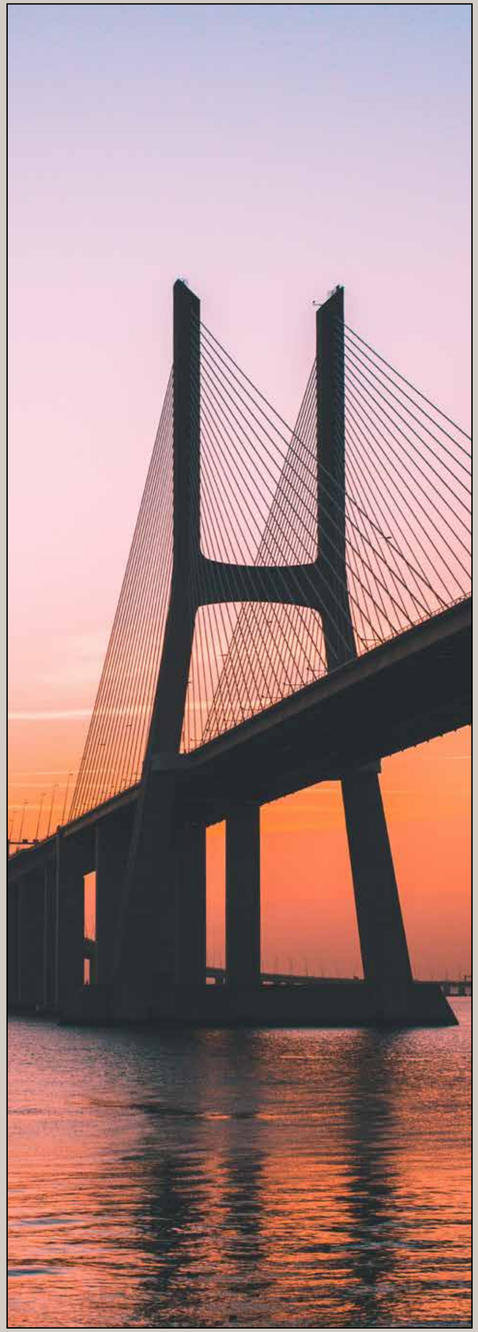
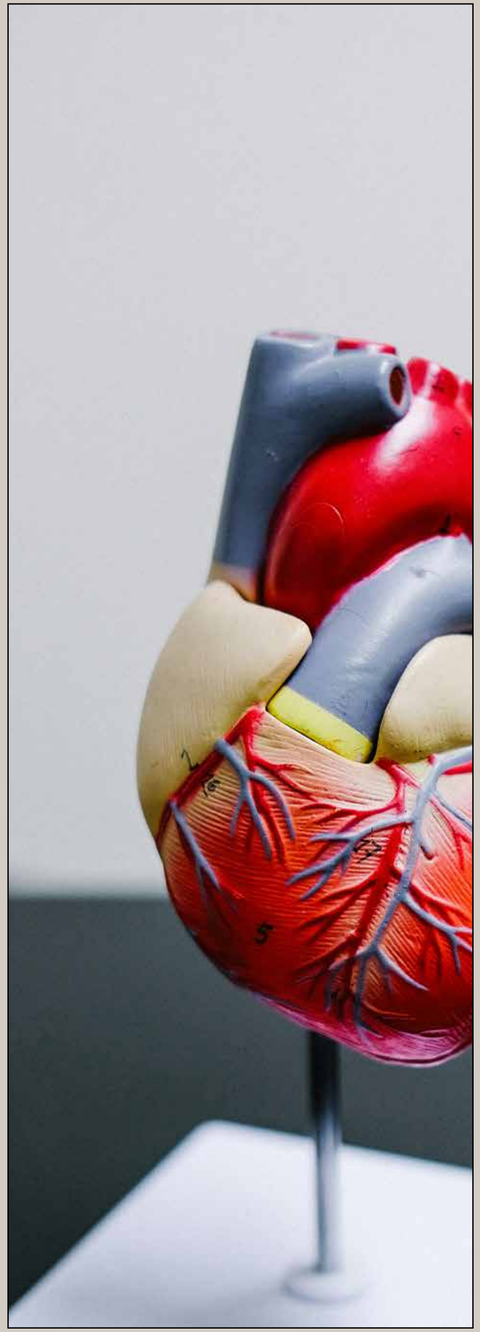
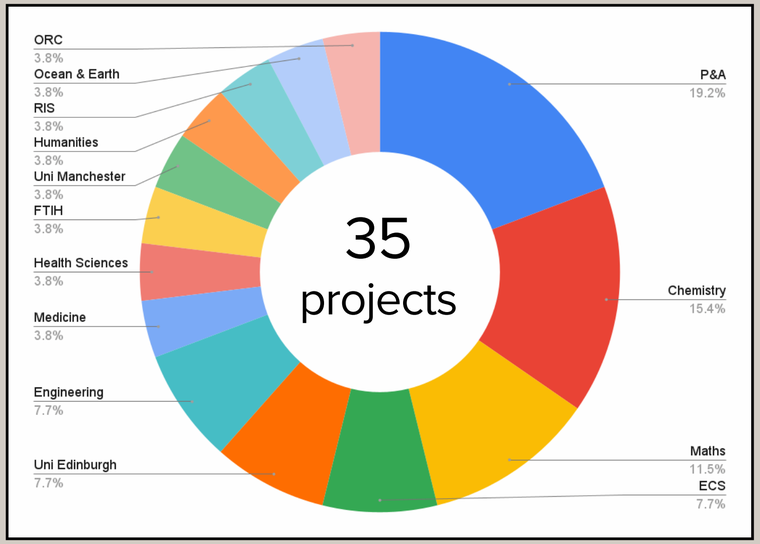
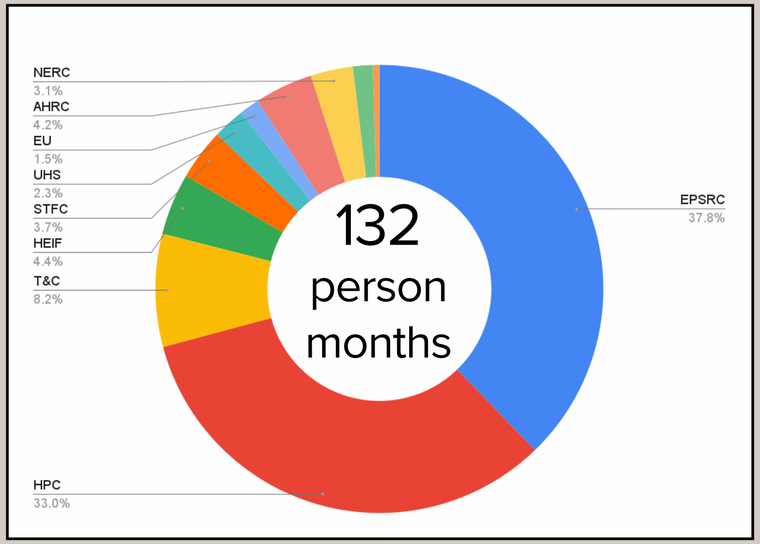




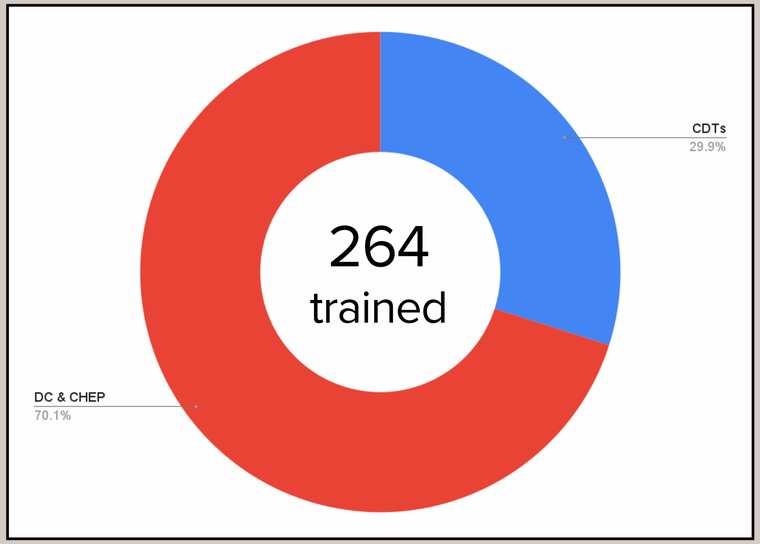
2024 in numbers



In 2024, our 11 Research Software Engineers conducted 35 projects across 14 schools and organisations.



We conducted 132 person months of research software engineering, which was funded by 11 funding organisations.



We trained 264 staff and PhD students across the University in software and data engineering.

Review of 2024

In 2024, the SRSG conducted 27 research projects and 7 enterprise projects in collaboration with 14 schools and organisations.

We trained 264 staff and students across the University in the fundamental software and data engineering skills needed to conduct reliable and reproducible research in partnership with CDTs, DTPs and the Centre for Higher Education Practice.

We support KEE activities. We began development of a new CPD course, completed 2 IAA projects (bringing our total to 17), and conducted a study on industry software engineering skills across 14 companies, from multinationals to SMEs.

Our specialist HPC RSE programme entered its second year. Over 2024, these RSEs continued to develop novel codes to solve research problems in academic domains that don't typically use HPC, and to optimise or extend existing codes to improve performance and reduce environmental impact.

We ran two research software community events attracting more than 150 staff to build awareness and skills in research software and to develop new cross-university collaborations.

Plans for 2025

We have two clear targets for 2025: understanding how our staff can be provided with time for skills development, and how we can fund a project manager to allow the Group to grow to meet demand.

The SRSG operates at 100% cost recovery, which constrains our ability to undertake staff development. We will investigate options for reducing cost recovery to 80% to allow time for building critical skills in areas like AI, HPC and machine learning.

Our 11 RSEs are currently project managed by 1 person which limits future growth of the Group. In 2025, we will investigate options for adding a second project manager, which will allow the Group to recruit more RSEs.

We will deliver two new training courses in 2025. Software engineering skills for industry will be developed into a CPD course, and Agile for RSE will teach how to incorporate Agile delivery mechanisms into research projects.

Training & CPD

We train researchers from across the University in the fundamental software and data engineering skills needed to make research more effective, reliable and reproducible.

In 2024, we delivered over 100 hours of training to 185 staff and students through our partnership with CHEP and 79 PhD students through our partnerships with CDTs and DTPs, including MINDS, MRC DTP, QTE CDT and the SoCoBio DTP. 195 survey responses rated our training at 4.2 out of 5.

In 2024, we conducted an Industry Skills Study, which took the views of 27 employers, recent graduates, and industry stakeholders on the software engineering skills gap. Based on this study, we began developing a new, industry skills training course, which will be piloted in June 2025. We will develop it further into a CPD course, which will be aimed at newly hired employees of SMEs.

Events

Our six-monthly Research Software Community events bring together hundreds of staff and students with industry technology leaders for networking, building skills and forming new collaborations.

In 2024 we welcomed more than 150 attendees across the two Community events. Representatives from NVIDIA presented advances in AI hardware and the software tools available to researchers. We discussed topics including “Scaling up Your Research” and “GPU Computing”, and hosted talks on advancing research with software from Ocean and Earth Sciences, Physics and Astronomy, and the Optoelectronics Research Centre.

Our HPC RSEs took part in the launch of IRIDIS 6, the University’s new HPC facility, and presented 8 talks on research software and the SRSG across different Schools and University-wide events.

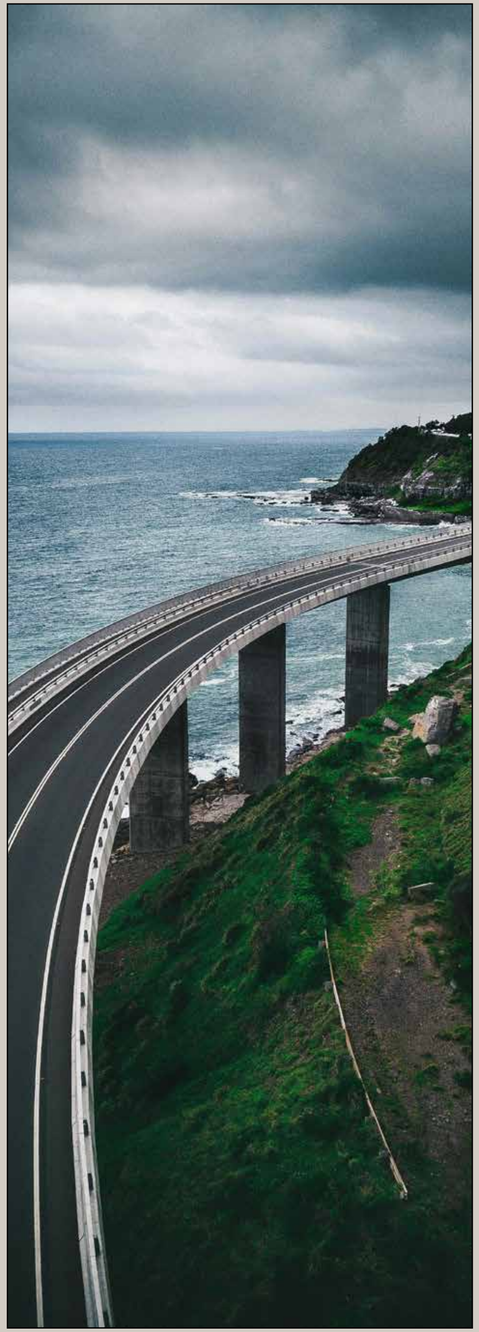
Projects

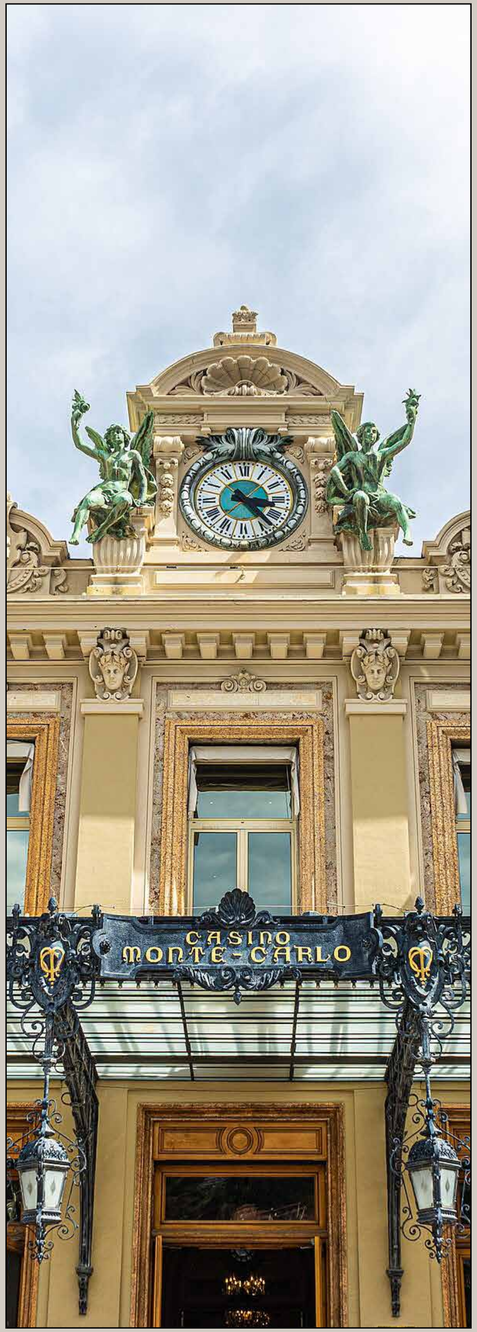
Since 2015, we've worked on 150 projects lasting from a few days to several years. The following pages cover some of 2024's projects.

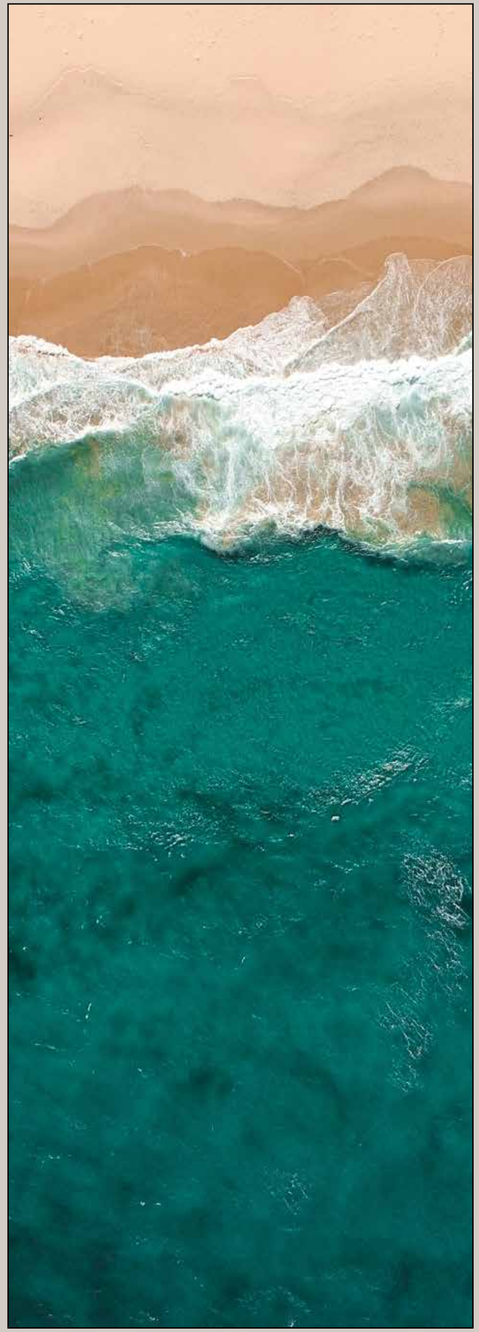
Our RSEs work with researchers from all disciplines from across the University. We understand the research process - not just the technology - which means we can help researchers capture their technical requirements and deliver the software they need.

Our expertise covers a broad range of technologies – from High Performance Computing to Web, and from databases to the cloud.

We bring a structured approach to software development, employing Agile processes to ensure flexibility, fast delivery and clear communication. Software developed by our RSEs is well architected, developed sustainably, tested, reproducible, well-documented and interoperable.







Web Apps for Engineers

01

Web Apps For Engineers is a collection of geotechnical engineering calculation tools which are developed for research dissemination and teaching. In this IAA-funded project, we collaborated with Professor Susan Gourvenec and researchers from the Intelligent & Resilient Ocean Engineering group to develop apps that allow users to engage directly with published methods and frameworks. These apps facilitate initial sizing calculations and enable users to explore how variations in design inputs (such as geotechnical properties and loads) affect design outputs (such as foundation or anchor geometry and resistance). Over three phases of work, we modernised and expanded Web Apps For Engineers. We updated the code framework to improve the reliability and robustness and added five new apps. We added server-side functionality to allow for user account creation and login, and to enable more complex calculations to be executed, including neural networks.

Client

“Collaborating with the RSG has been enabling and a fantastic experience. The RSEs are professional, highly skilled, engaged, and friendly. They deliver the agreed-upon scope of work and offer valuable suggestions for improvements based on their extensive domain knowledge.”

Professor Susan Gourvenec
Civil, Maritime & Environmental Engineering

RSE

Philippa Broadbent

Department
School of Engineering

Effort
195 days

Funder
Impact Acceleration Account (IAA) - EPSRC

Sirocco: optimising MCRT

02

Sirocco is a Monte Carlo Radiative Transfer (MCRT) software package for modelling the ionisation state of astrophysical outflows from compact accreting objects. It has been in active development for over 20 years, and represents the current state-of-the-art in its field. MCRT is a computationally expensive numerical technique that requires an HPC facility to execute in a reasonable amount of time.
We introduced GPU parallelism to accelerate matrix operations, which drastically reduced the time for these calculations. We profiled the code to identify performance bottlenecks which prevented scaling beyond 32 CPUs.
We performed code refactoring and optimisation, and developed solutions to improve parallel scaling.

Client

“This project has been outstandingly successful... Ed has completely solved this problem, with our code now scaling near perfectly to hundreds of cores. This will open up entirely new research directions for us.”

Professor Christian Knigge
Southampton Theory Astrophysics and Gravity

RSE

Edward Parkinson

Department
School of Physics & Astronomy

Effort
44 days

Funder
HPC Fund

OCR Optimiser

A Doctoral Partnership between the University of Southampton and the Imperial War Museum is working to catalogue and analyse 17,000 propaganda images created by Islamic State.

There were several challenges. A large portion of the images contained extreme violence posing a risk to researcher wellbeing, and the embedded text was not accessible to researchers who were not native Arabic speakers.

We developed software to allow researchers with no HPC experience to employ the Iridis cluster to automatically extract and translate text within the image archive, which also minimised researchers' exposure to graphic content.

03

Client

"Without the HPC facilities and Conn's considerable efforts, the Islamic State collection would have very likely remained uncatalogued for the foreseeable future, so this project has been tremendously successful"

Hirah Azhar
Postgraduate researcher
Department of History

RSE

Conn O'Rourke

Department

School of Humanities

Effort

45 days

Funder

HPC Fund

UNIVERSE-HPC

04

UNIVERSE-HPC will define a training curriculum framework – spanning from undergraduate to continuing professional development level - for Research Software Engineers (RSEs) specialising in high performance computing (HPC).

The project leverages the significant training expertise of the SRSG and partners from Oxford and Imperial to adapt, develop, and pilot the curriculum and course materials, which will underpin a professional training programme. Southampton and Imperial have also developed a highly popular series of training events, called Byte-sized RSE, with over 500 learners trained on a wide range of practical RSE topics and practices. The format has already been franchised and adopted by external training providers.

Client

Professor Neil Chue Hong
EPCC, University of Edinburgh

RSEs

Philippa Broadbent

Steve Crouch

Mehtap Özbey Arabacı

Edward Parkinson

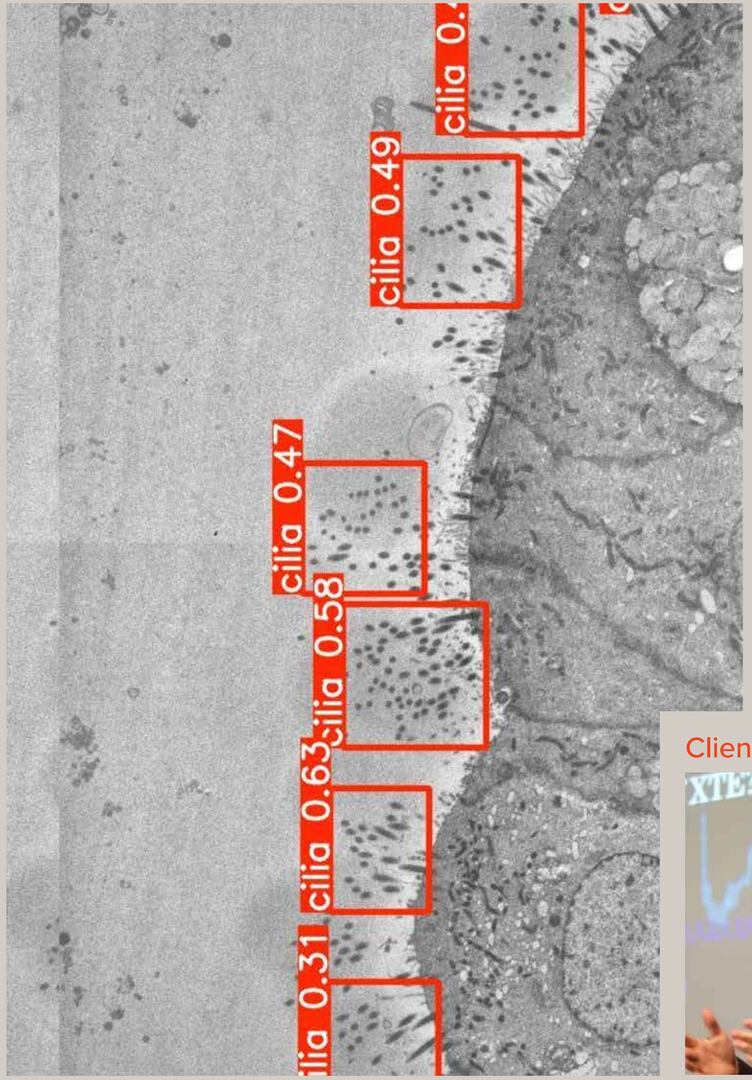
Location
University of Edinburgh

Effort
276 days

Funder
EPSRC

From astronomy to respiratory cilia

05



We are working with the School of Physics and Astronomy, in collaboration with clinicians and researchers from the UCL Institute of Ophthalmology and University Hospitals Southampton to improve the detection of cilia features in Transmission Electron Microscopy (TEM) images.

We have developed software that uses Deep Neural Networks and Machine Learning to automatically detect cilia regions. This automation improves the accuracy of detecting abnormalities in cilia, which plays a critical role in diagnosing Primary Ciliary Dyskinesia, and also saves time and reduces the cost of the process.

The deep learning tool is adaptable to other TEM-based feature detection research, which will increase its impact across medical and scientific fields.

Client

“Working with SRSG, and especially with Mehtap on this project, has been indispensable for running multi-disciplinary projects that would have otherwise been impossible.”

Professor Diego Altamirano
Southampton Theory Astrophysics and Gravity

RSE

Mehtap Özbey Arabacı

Department
School of Physics & Astronomy

Effort
21 days

Funder
IAA - STFC

GENIE

06

GENIE is a tool which connects people with chronic conditions, such as Diabetes and COPD, to health and well-being activities in their community, and allows healthcare professionals to monitor changes to personal social networks over time.

Devised by Dr Ivo Vassilev in the School of Health Sciences and developed over a number of iterations by our RSEs, GENIE has been deployed commercially in the UK, Canada and Australia and is one of SRSG's most impactful projects to date.

Client

Dr Ivo Vassilev
Health Sciences

RSE

James Court

Department
School of Engineering

Effort
40 days

Funder
Enterprise

QuantumBox

07

QuantumBox is an ambitious project that brings together the software tools that are required to perform modern small-molecule crystallographic analyses in an accessible way. Historically, these tools have been difficult for non-experts to install and use - with often obscure and conflicting dependencies.

QuantumBox packages quantum crystallographic tools into an significantly more accessible, extensible, and scalable cloud-based environment, which enables the construction of reproducible complex analytical workflows.

The software is architected and developed by our RSEs in collaboration with chemists from the National Crystallography Service in Southampton and the University of Durham.

Client

Professor Simon Coles
Structural Chemistry

RSEs

Max Albert

Philippa Broadbent

Steve Pooley

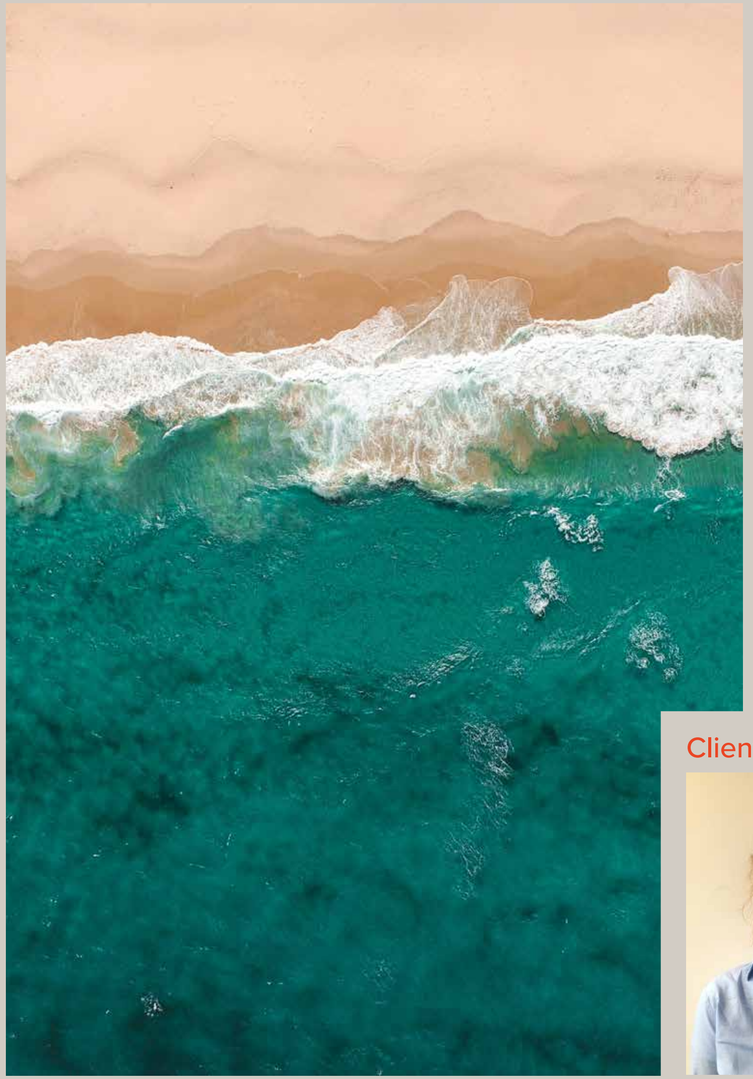
Department
School of Chemistry and Chemical Engineering

Effort
725 days

Funder
EPSRC

Seismic Oceanographic Toolset

08



Seismic reflection profiling is a oceanographic technique used to understand the oceans' ability to store heat and carbon by analysing spatial and temporal changes in ocean circulation. It is a research field in its infancy and suffers from several practical challenges to its widespread use, including the lack of standardised computational packages.

The aim of this project was to bring together analysis tools into a coherent package that could be deployed on HPC systems, and optimise the analysis code for performance.

The key benefits of this project are the development of a single software package for seismic reflection profiling, less computationally expensive analysis and reduced overhead on Iridis.

Client

"Conn has significantly enhanced the basic code that I provided him with. First, he has optimised various techniques for speed and customisability. Second, he has ensured that these techniques and the overall process are compatible with the HPC system"

Dr Kathryn Gunn
Southampton Marine and Maritime Institute

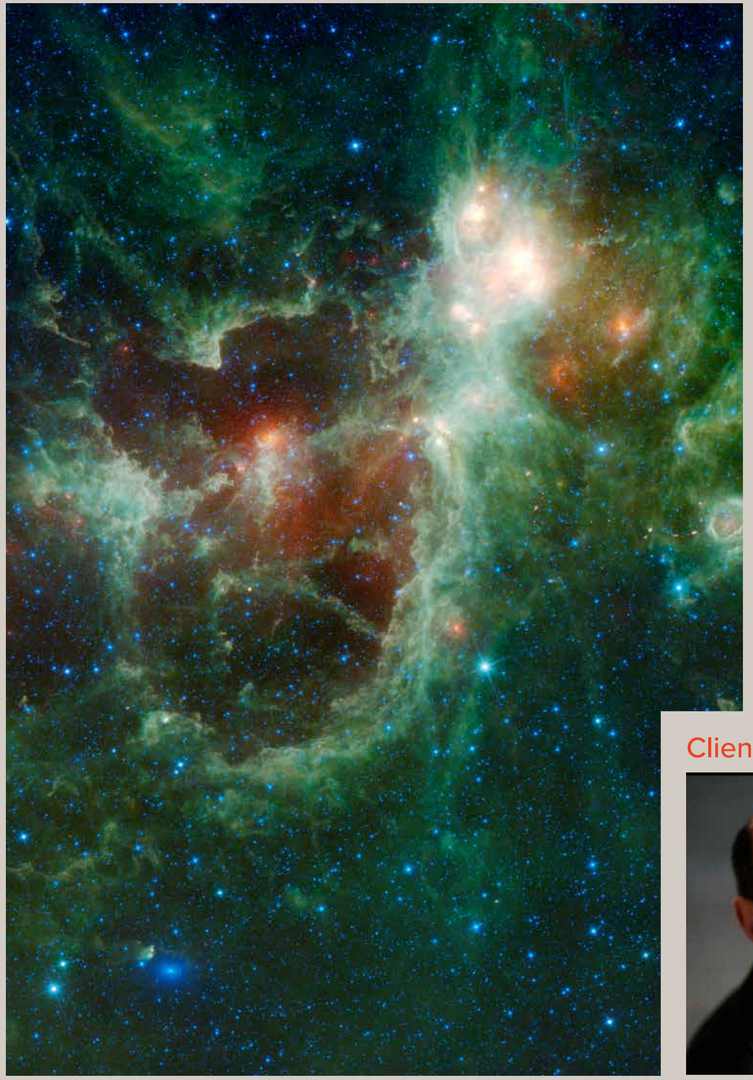
RSE

Conn O'Rourke

Department
School of Ocean and Earth Sciences

Effort
25 days

Funder
HPC Fund



New Frontiers

09

New Frontiers in Particle Physics, Cosmology and Gravity is a new approach for the SRSG, and involves providing ongoing RSE support across a variety of projects in a domain with intensive computational needs.

For example, we worked on the High Energy Physics Model Database, which is hosted at Southampton and is a key resource for simulation and modelling used at CERN and beyond.

Originally developed a decade ago, changing security requirements have meant the database could no longer be fully supported. We architected a security upgrade meeting the needs of the community and the requirements of the institution, which will help Southampton retain its world-leading position in supporting high-energy physics.

Client

Professor Kostas Skenderis
Southampton Theory Astrophysics and Gravity

RSE

Sam Mangham

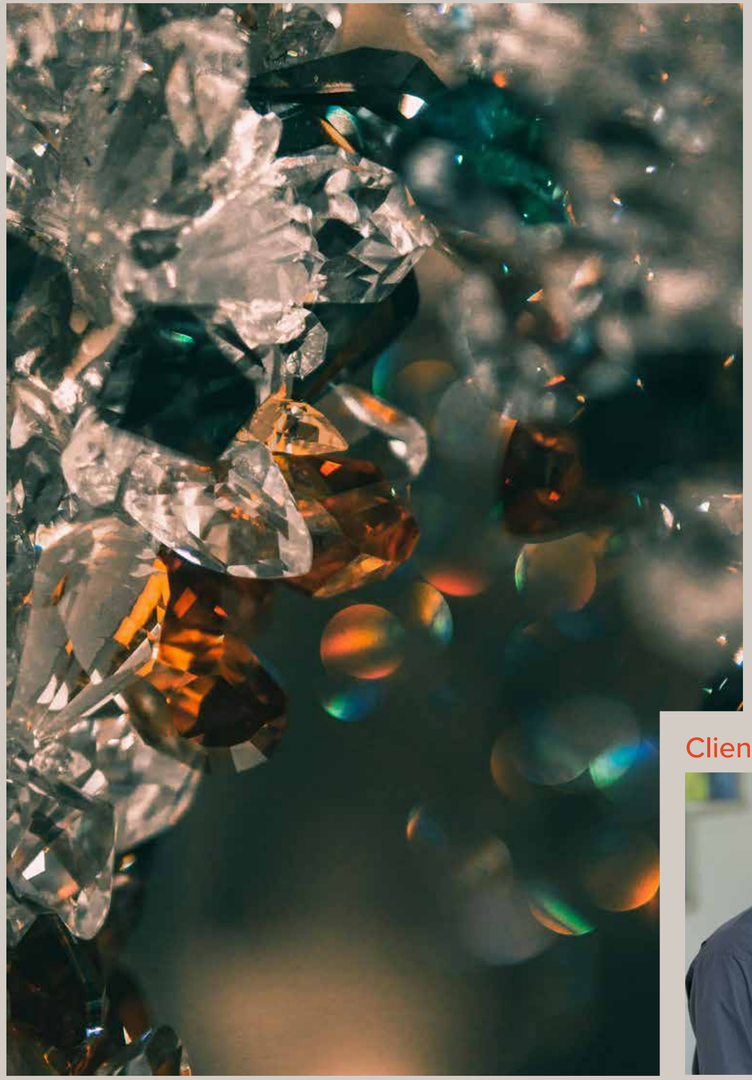
Department
School of Physics & Astronomy

Effort
300 days

Funder
STFC

Crystal Structure Prediction Database

10



Professor Graeme Day's group in Chemistry develops computational methods for modelling the organic molecular solid state. A key focus of this work is the prediction of crystal structures from first principles. These methods are applied in a range of applications, including pharmaceutical solid form screening, NMR crystallography and computer-guided discovery of functional materials.

Over a series of collaborations we have: designed an information model and developed a database to aggregate and collate the numerous complex outputs of these predictions into a Crystal Structure Prediction Database (CSPDB). We improved CSPDB's performance, enhanced the information model, and defined a Curator Business Process to ingest data and add GraphQL and REST API examples. As a result, a Database Curator can ingest data into CSPDB using a defined Business Process.

This work is an important step towards CSPDB being used to enable the automatic discovery of new materials.

Client

"The RSE's time has been a considerable saving versus the number of person-hours we expect would be required to deliver the same results from our research team members"

Professor Graeme Day
Computational Systems Chemistry

RSEs

Chiedozie Okorie

Steve Pooley

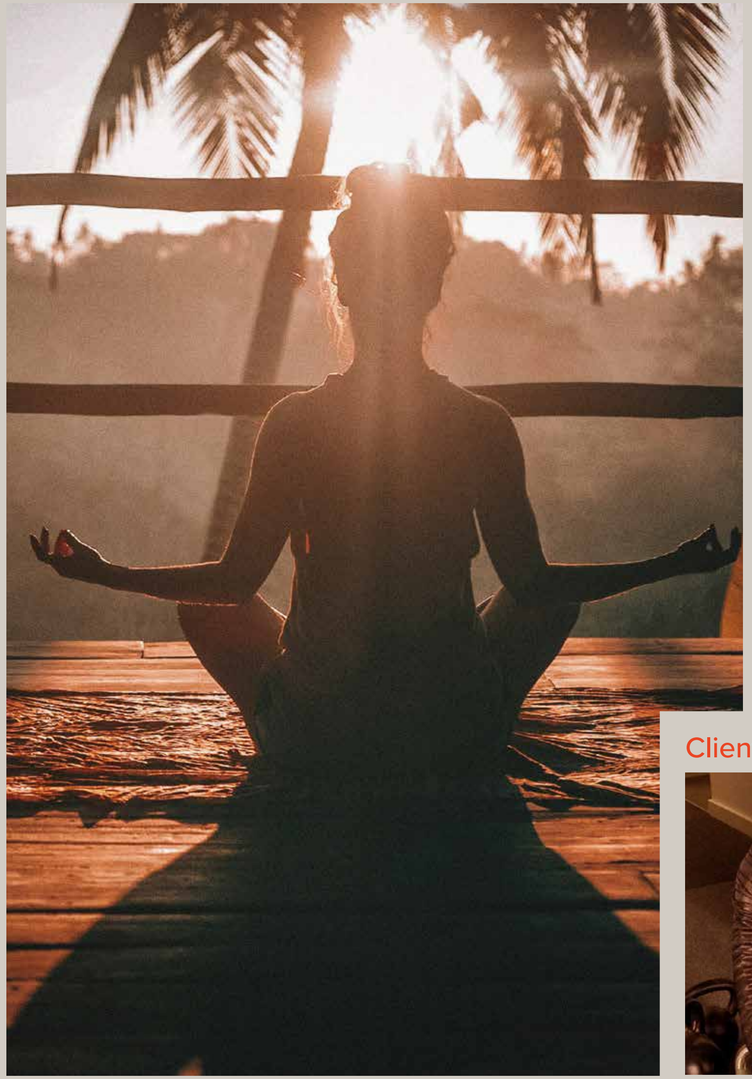
Department
School of Chemistry and Chemical Engineering

Effort
53 days

Funder
EU

Experiment in a Box

11



Experiment in a Box (XB) allows its users to learn how best to improve their own wellbeing. It is a mobile app which proposes wellness experiments to its users (such as modifying sleep patterns, eating habits or exercise regimes) and allows them to record the impact of these activities on their overall wellbeing.

The project was devised by Professor m.c. schraefel of the School of Electronics and Computer Science, and has been designed, built and modified by members of the SRSG over a number of phases.

The latest iteration of XB introduced several significant updates, including structural and layout changes to the app and enhancements to how users interact with experiments. It also involved preparing the app for deployment in Spanish for users in the United States.

Client

Professor m.c. schraefel
Electronics and Computer Science

RSEs

James Court

Chiedozie Okorie

Department
School of Electronics and Computer Science

Effort
200 days

Funder
IAA - EPSRC & EPSRC

Physical Sciences Data Infrastructure

12

The PSDI is an EPSRC-funded National Research Facility provided by the University of Southampton, and Science and Technology Facilities Council. Its purpose is to provide a common access point to data resources within the Physical Sciences to all staff, students and other members of UK academic institutions.

By providing a common point of access, free at the point of use, the service benefits the research community by maximising the use of resources via common academic licensing, and adding value as a common hub for aggregating and integrating data resources for the Physical Sciences.

The online platform currently provides access to a number of state-of-the-art chemistry databases and tools for the benefit of the research community. The SRSG integrated tools for file-format conversion to enable researchers to quickly and easily transform data without the need to install the software locally.

Client

“I’ve worked with [commercial] software engineers, and when you have to spend half a day explaining what a molecule is, it’s quite tough. With the SRSG I’m able to dip into a pool of expertise. I can just say ‘Can we add this new functionality, to make it do this new thing?”

Professor Simon Coles
Structural Chemistry

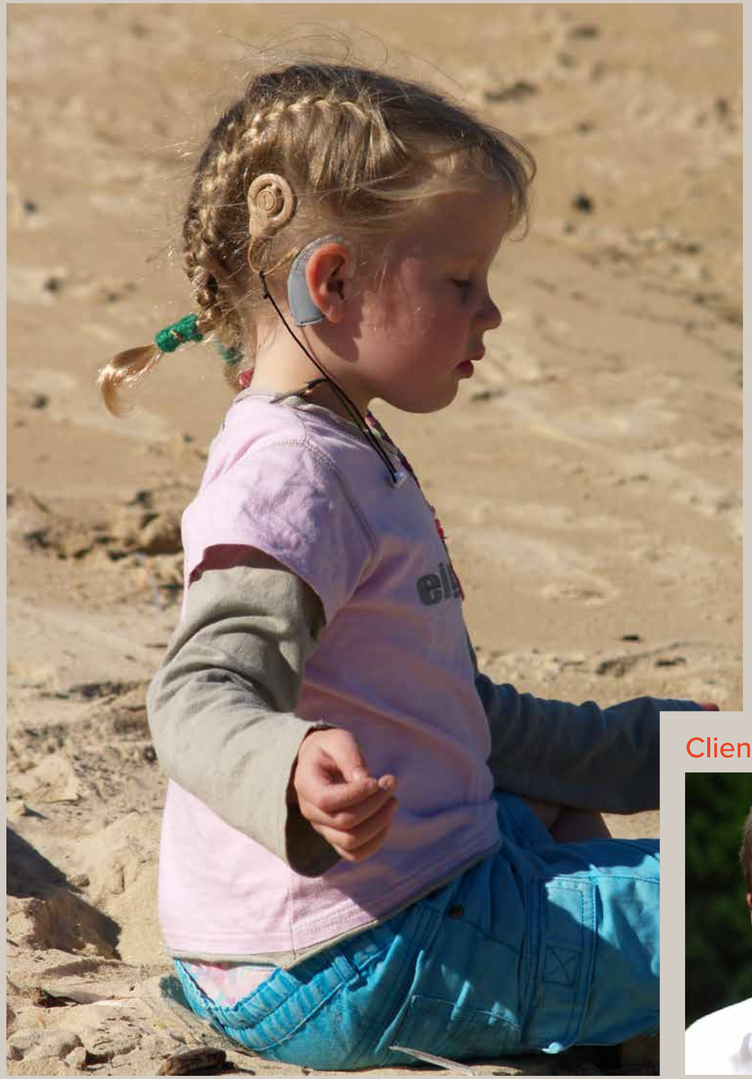
RSE

Bryan Gillis

Department
School of Chemistry and Chemical Engineering

Effort
121 days

Funder
EPSRC



Audilog

13

Deafness in early and later life has high health and economic costs. Cochlear implants are a cost-effective solution, but referral rates are low. Clinical capacity and low patient and practitioner awareness are barriers to uptake.

AudiLog is the University of Southampton's Auditory Implant Service longitudinal research database. We worked with Professor Tracey Newman from Medicine, Dr Mary Grasmeder, Clinical Scientist at the University of Southampton Auditory Implant Service, and Mr Callum Findlay, a Specialist Registrar in ENT surgery at UHS to develop data-driven patient stratification to increase clinical capacity and improve patient outcomes.

We have developed a data model, tools for extracting and anonymising data from legacy formats and a queryable database for researchers. Future work includes developing a secure, intuitive web UI to AudiLog, lowering the barrier to entry for researchers.

Client

Professor Tracey Newman
Centre for Human Development

RSEs

Sam Mangham

Mehtap Özbey Arabacı

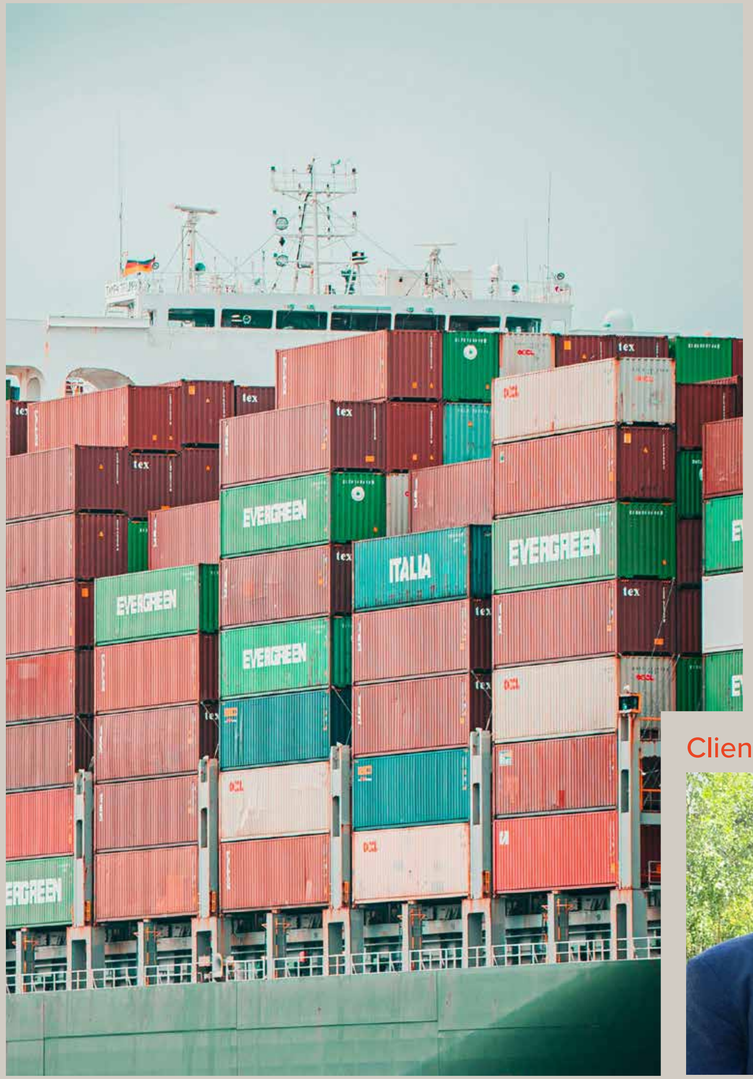
Department
School of Medicine

Effort
53 days

Funder
Southampton University Hospitals NHS Trust

AI to reduce emissions from shipping

14



The natural accumulation of biological material on the hulls of marine vessels can negatively impact fuel efficiency and lead to increased emissions. Working with local shipping company Carisbrooke Shipping, Professor Alain Zemkoho's group in Mathematics have developed mathematical models, based on historical voyage data, to predict growth and optimise vessel cleaning strategies.

SRSG RSEs developed a robust, secure and scalable web application - SeaFlInt (Sea FLeet Intelligence) that enables commercial partners to take advantage of the predictive power of Prof. Zemkoho's model and visualise voyages and ship performance through an intuitive user interface.

Client

Professor Alain Zemkoho
Mathematical Optimisation

RSEs

Jamie Court

Mehtap Özbey Arabacı

Steve Pooley

Department
School of Mathematical Sciences

Effort
143 days

Funder
IAA - EPSRC

NERC Digital Solutions

15

The NERC Digital Solutions Hub is developing a gateway to a broad set of interconnected tools that enable improved access and better use of the Natural Environment Research Council's many peta-bytes of environmental data. The SRSG provides the project with high-level RSE consultancy, advising on aspects of agile development process adoption, training, technical strategy and also conducts software sustainability evaluations to assess and recommend improvements to developed software outputs.

Providing easier access to NERC's environmental data offers opportunities to improve peoples' health and better understand the impacts of climate change on people, land and property across the UK.

Client

Professor Richard Kingston
Urban Planning and GISc,
University of Manchester

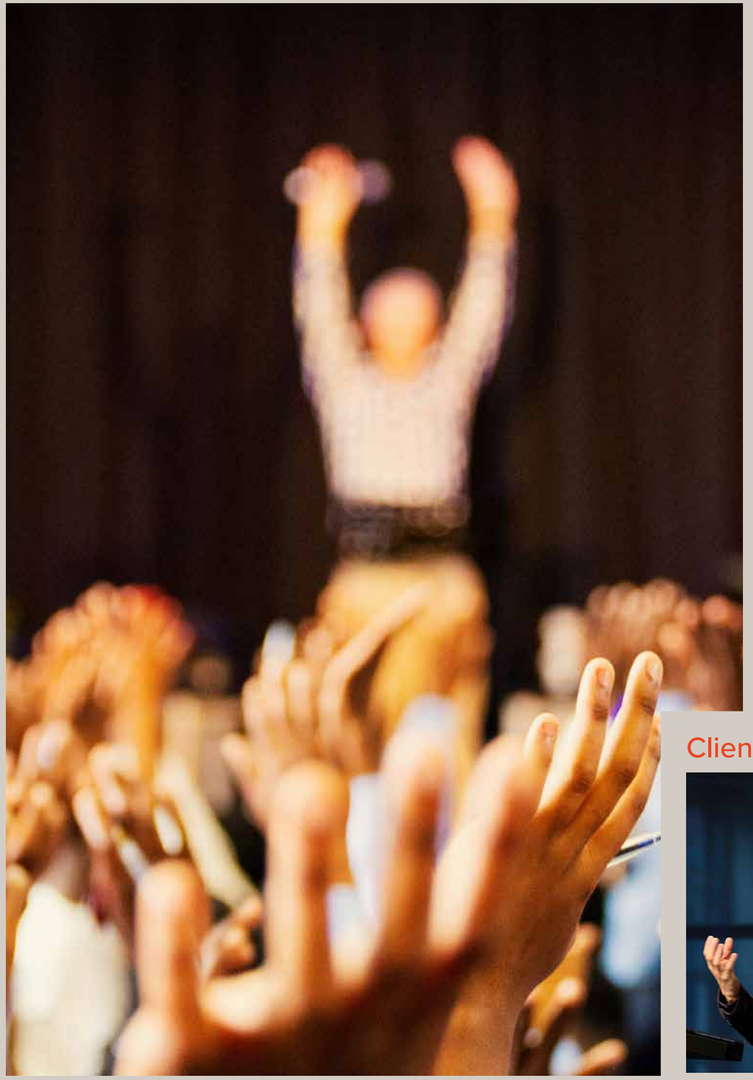
RSE

Steve Crouch

Location
University of Manchester

Effort
553 days

Funder
NERC



uCONFLY

16

New research collaborations drive innovation by connecting experts across disciplines. These events foster knowledge exchange, constructive feedback, and new research partnerships. Networking in this way is the lifeblood of research and can lead to funding opportunities and interdisciplinary solutions to complex problems.

uCONFLY is a web app that provides document templates for a range of resource types as a means to facilitate real-time collaboration for both remote and in-person conference participants. This web app was developed in collaboration with the SSI and has been used at the SSI's collaborations workshops.

Client

Professor Neil Chue Hong
EPCC, University of Edinburgh

RSE

Philippa Broadbent

Location
University of Manchester

Effort
52 days

Funder
UKRI - DRI (via AHRC)

Deep-ICD

17

Implantable Cardioverter Defibrillators (ICDs) can help prevent cardiac arrest in patients with irregular heart rhythms, but only if they have suitable heart rhythms. Irregular heart rhythms, or arrhythmias, can lead to serious health complications, including stroke, heart failure, and sudden cardiac arrest, making accurate assessment and timely intervention crucial.

Evaluating a 24-hour ECG trace for suitability is time-consuming and complex, requiring expertise and significant manual effort. To address this, Prof. Alain Zemkoho's group in the the School of Mathematics has developed advanced machine learning techniques in collaboration with cardiologists from the University Hospital Southampton.

The SRSG took the initial research code and expanded it into a well-documented, modular library, ensuring greater accessibility and usability for medical professionals. Additionally, we developed a front-end interface for use in an exploratory trial of the technology in a clinical setting. This work streamlines the evaluation process, reduces workload and improves diagnostic accuracy, ultimately leading to better patient outcomes.

Client

Professor Alain Zemkoho
Mathematical Optimisation

RSE

Sam Mangham

Department
School of Mathematical Sciences

Effort
79 days

Funder
HEIF

LowFAT

18

The lowFAT software is a web application used to administer the Software Sustainability Institute's (SSI) Fellowship programme. The fellowship is now entering its 13th year and comprises more than 160 Fellows including influential staff from across academia and even boasts a Chief Scientific Officer in its ranks.

This significant and complex software suite is used by over 200 fellows and finance and management staff at the SSI. It tracks fellows' funding requests, expense claims, and blog posts.

RSEs from the SRSG have maintained and continually improved this software for over five years. Maintenance has included keeping all packages updated to prevent security issues, and improvements include the addition of a tool that generates summaries of all fellows' activities, which is used to report to funders about the impact of the fellowship.

Client

"[Philly] kept development moving forward while maintaining system stability and training new team members. Beyond technical skills, her collaborative approach and attention for mentoring new team members have been very valuable"

Giacomo Peru
EPCC, University of Edinburgh

RSEs

Philippa Broadbent

Mehtap Özbey Arabacı

Location

University of Edinburgh

Effort

64 days

Funder

UK DRI (via AHRC)

Astro Impact

19

As part of the preparation for the 2029 REF, the Astronomy group requested ongoing support from the SRSG for developing impact case studies. Astronomy generates a vast amount of data, but much is not conveyed to the public. The SRSG has helped the Astronomy & Astrophysics group explore sonifying astronomy data.

One project has tested how the Galaxy Zoo citizen science platform could help with the identification of periodic signals in sonifications of noisy data. Another has developed an outreach website based on surveys from the European Space Agency's GAIA mission. The site sonifies the satellite's measurements of the distance and motion of billions of stars in our galaxy, and is aimed to be the basis of a grant application for further funding.

The SRSG has also helped train the department in tooling and techniques to help maximise their impact.

Client

Professor Poshak Gandhi
Southampton Theory Astrophysics and Gravity

RSE

Sam Mangham

Department
School of Physics & Astronomy

Effort
111 days

Funder
STFC

Researchfishing

Universities use Researchfish to track the outcomes of research and evaluate and articulate the impact of their research portfolio. The Researchfish analysis project saw the ground-up development of a web-based data analysis and visualisation tool to explore Researchfish data.

The Researchfishing tool has been built from the ground up by the SRSG. The project was commissioned by Dr Gemma Fitzsimmons, Head of Research Information and Systems, and Professor Mark Sullivan, the Associate Dean for Research in FEPS. The project will unlock the potential of the Researchfish data for identifying impactful research which may be submitted to the REF or KEF exercises.

20

Client

Dr Gemma Fitzsimmons
Research & Innovation Services

RSE

James Court

Department
Research & Innovation Services

Effort
28 days

Funder
FEPS

LATENT

21

Heat pumps are becoming more prevalent due to their energy efficiency and environmental benefits. As countries work toward reducing carbon emissions, heat pumps offer a sustainable alternative to traditional heating systems by using electricity to transfer heat rather than generating it through combustion.

To better understand heat pump use, the LATENT project was developed to provide an accessible analysis interface for a database repository on heat pump data.

The data are provided by an industry collaborator. This is combined with metadata on the household where the heat pump is installed and data on the weather. The software ports the data into a Postgres database which has been designed for easy access via R-Studio, which is the preferred tool for analysis.

Client

Dr Tom Rushby
Sustainable Energy Research Group

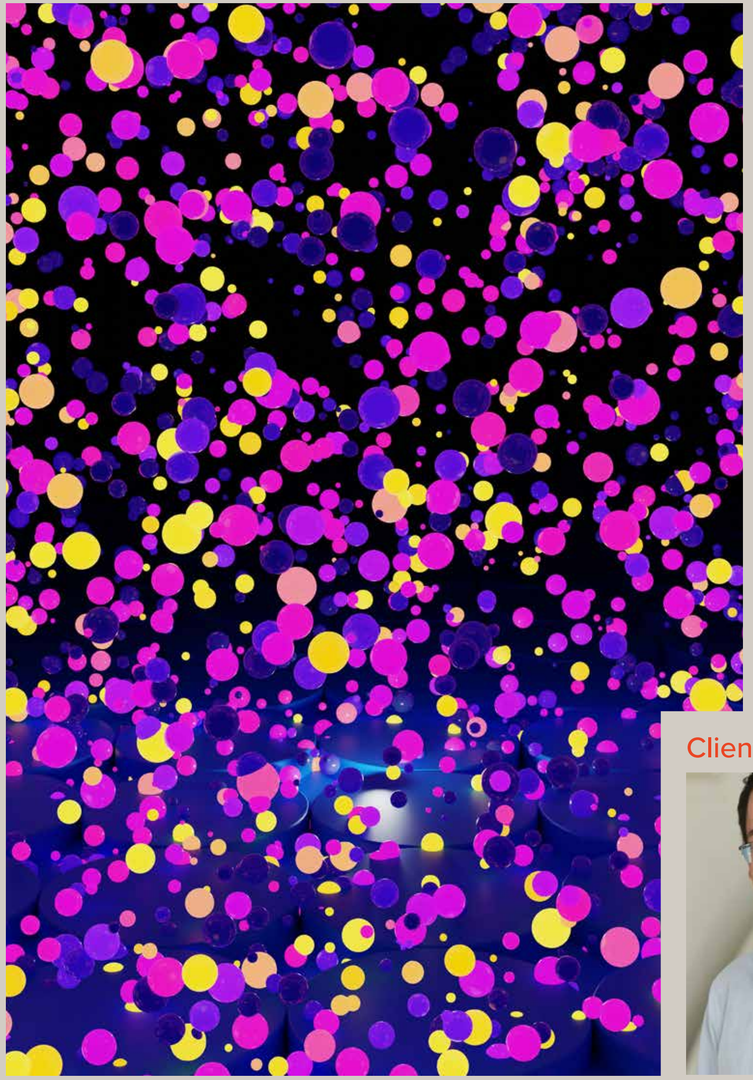
RSE

Steve Pooley

Department
Sustainable Energy Research Group

Effort
18 days

Funder
EPSRC



ONETEP

22

ONETEP is a software program for large-scale quantum chemistry simulations which provides solutions to challenging chemistry problems such as the development of new materials, catalysis and drug design.

We enabled ONETEP to use the Modern Fortran interface to the FFTW library, allowing it to be used on emergent HPC platforms and allowing the developers to more easily take advantage of GPU technologies. The key benefit of the project was a refactored codebase, allowing the Modern Fortran interface to the FFTW library to be used, improving maintainability by allowing the size and complexity of the code to be reduced and future-proofing it against deprecation of the old interface.

Client

“This will reduce computational resources required for electronic structure calculations performed with ONETEP, reducing time to solution and increasing science per watt of energy spent”

Professor Chris Skylaris
Computational Chemistry

RSEs

Edward Parkinson

Steve Pooley

Department

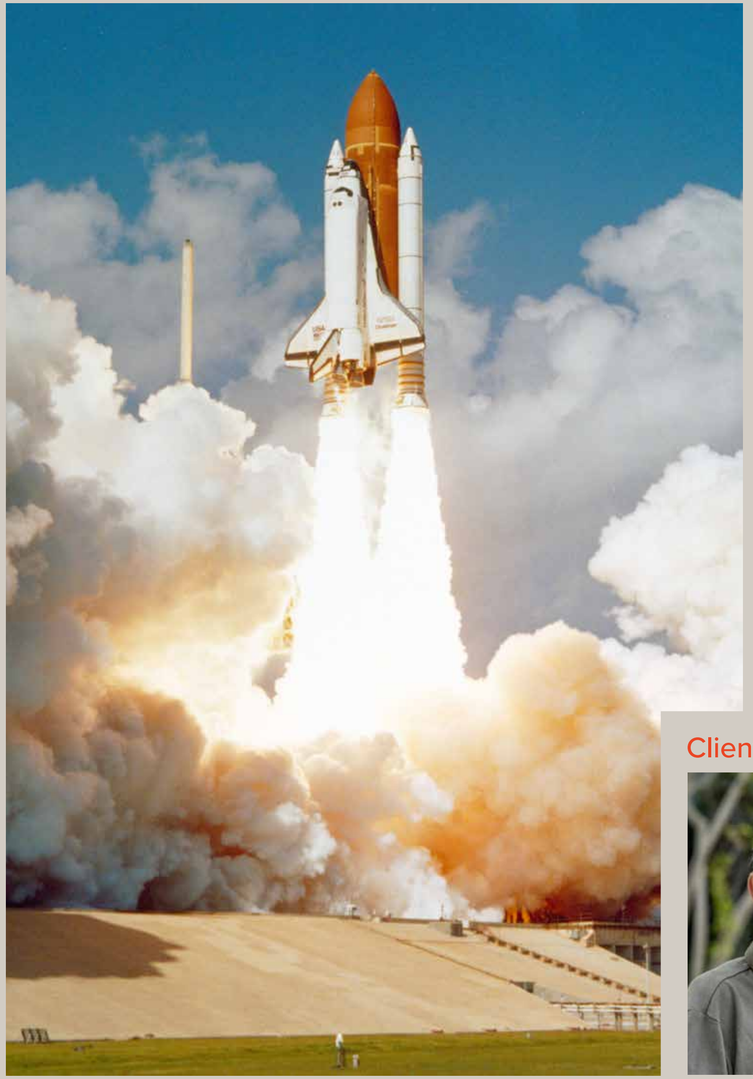
School of Chemistry and Chemical Engineering

Effort

42 days

Funder

HPC Fund



OpenSBLI

OpenSBLI is a Python-based modelling framework that expands a set of differential equations written in Einstein notation and automatically generating C code to obtain a solution. OpenSBLI depends on a number of external dependencies, which are often difficult to configure correctly and lacked automated testing to confirm correct installation and prevent against regression.

We developed an integration test framework to improve the installation process for the code. We also improved usability by updating documentation on both the testing framework and the installation process.

23

Client

“With Ed, we have been able to tackle some of the wider issues that will make it easier to install and maintain the software in the future. His software engineering skills were useful in devising a strategy towards a continuous integration testing approach”

Professor Neil Sandham
Aerodynamics and Flight Mechanics Group

RSE

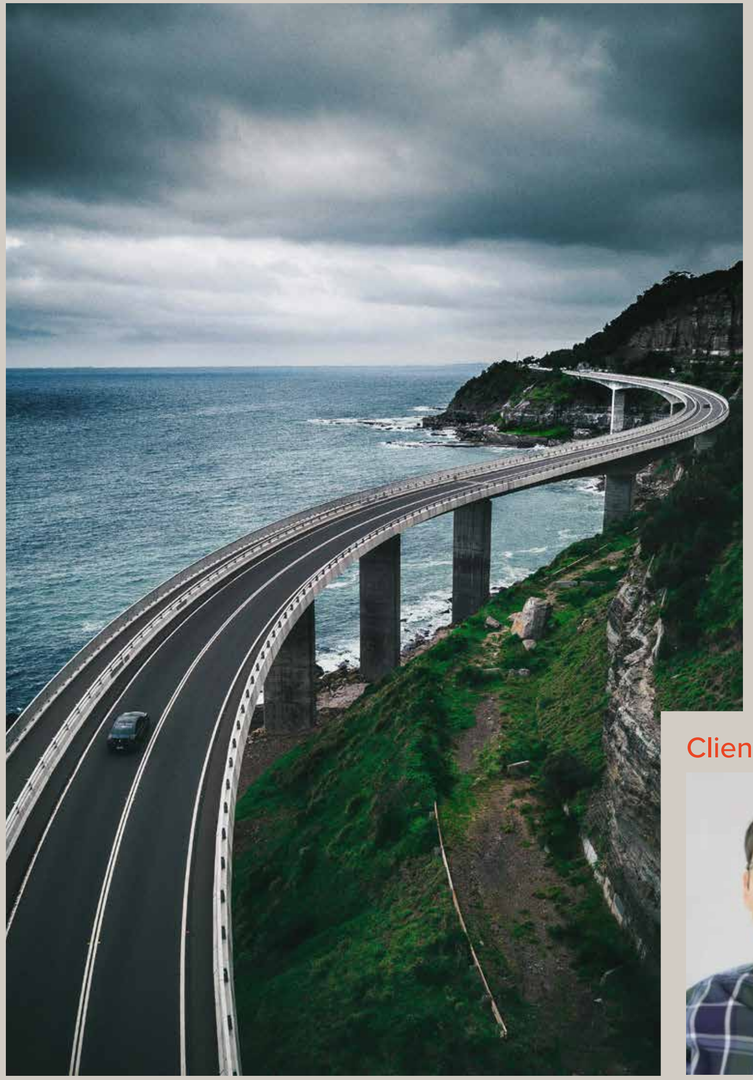
Edward Parkinson

Department
School of Engineering

Effort
73 days

Funder
HPC Fund

Distributed Optical Fibre Sensing



Distributed Optical Fibre Sensors use optical fibres as sensing elements to map physical parameters such as temperature and vibrations over a distance. These sensors offer real-time, continuous monitoring capabilities in diverse fields such as structural health monitoring, environmental sensing, and industrial process control. The data is collected at a rate of gigasamples per second for real time processing on GigaHertz processors, which leads to extreme limitations in available processing capabilities.

The SRSG developed the use of parallel processing techniques to enable a high volume of complex calculations to be performed in real time. The project established the current throughput of the solution and developed a prototype with the potential to be infinitely scalable by making use of CPU, AVX and GPU technologies.

24

Client

Dr Ali Masoudi
Optoelectronics Research Centre

RSEs

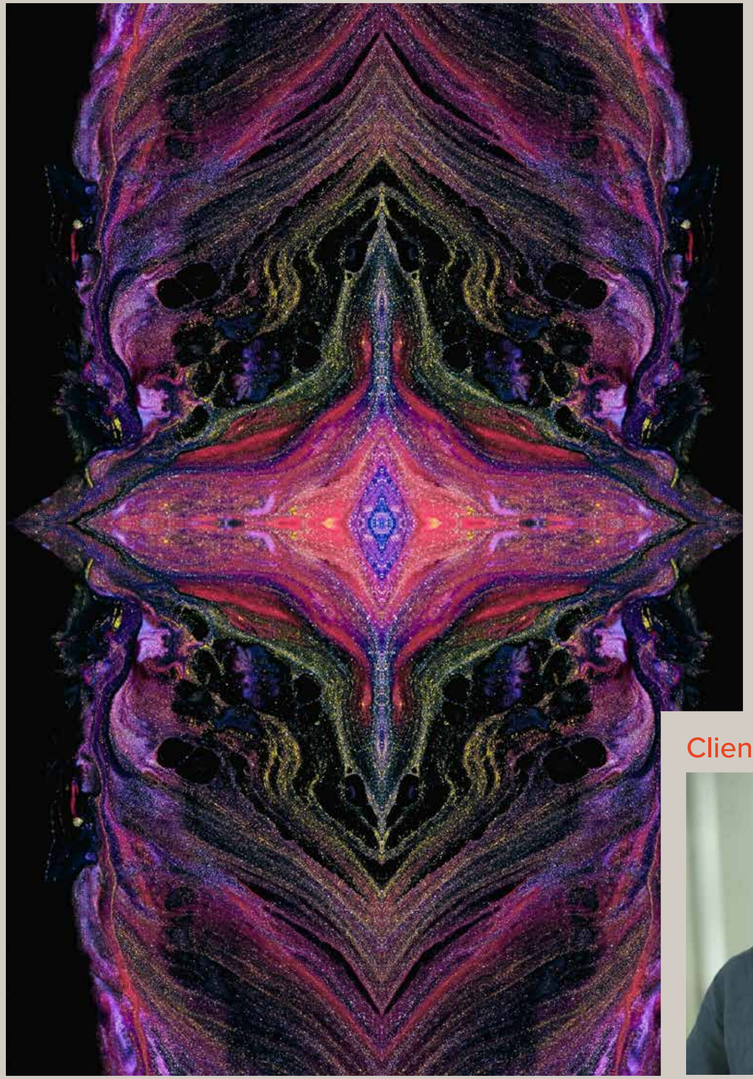
Sam Mangham

Steve Pooley

Department
Optoelectronics Research Centre

Effort
62 days

Funder
HPC Fund



OMPA

25

The Optical Multi-Parameter Analyser (OMPA) is used to characterise liquid crystals.

The SRSG enhanced the existing OMPA MATLAB application by implementing a database and user interface for managing liquid crystal parameters. The database stores parameters including Liquid Crystal identification and the temperature at which the parameters were characterised. The parameters include the dielectric permittivity tensor, the bend, splay and twist elastic constants, the Lesley viscosity coefficients, and the refractive indices at different wavelengths along with sources for any cited data.

The software also makes the data more accessible via a database user interface in MATLAB.

Client

Emeritus Professor Giampaolo D'Alessandro

RSE

Alex Pooley

Department
School of Mathematical Sciences

Effort
39 days

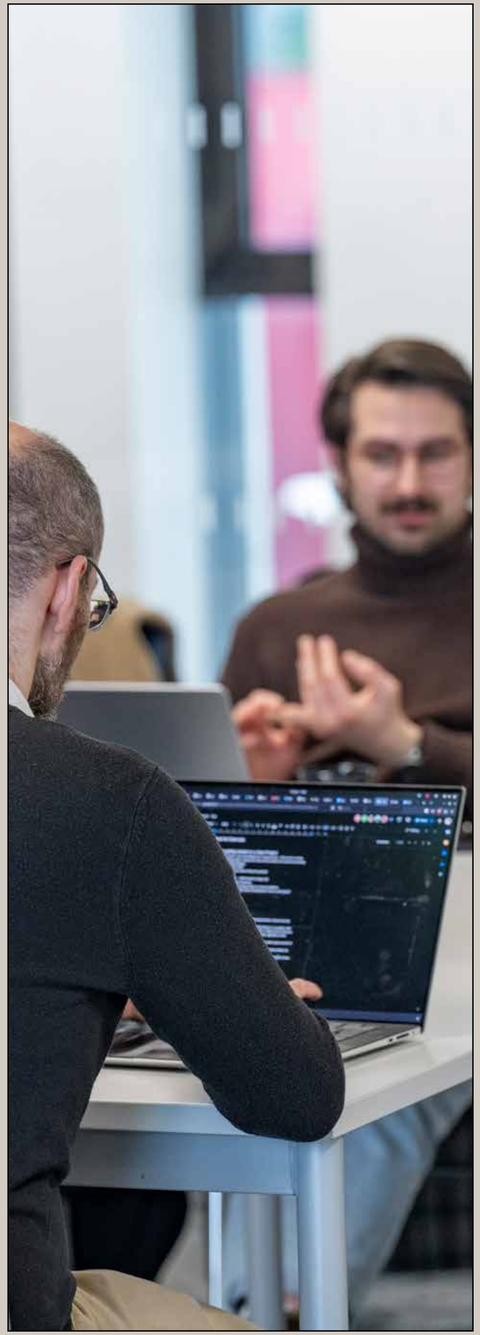
Funder
IAA - EPSRC

The Team

The Southampton RSE Group consists of 15 people. This includes 10 RSEs and Senior RSEs, a Software Architect, a Community Manager, a Policy Researcher and 2 Directors. In 2024, we also recruited an intern RSE over the summer.

Our team is funded directly by research grants apart from our 3 HPC RSEs who are funded by the University.

Our staff boast a range of skills in computational research, derive from a range of backgrounds and disciplines and are recruited from both research and industry.



Prof Simon Hettrick

Director

Research policy, community building & landscape studies

Lyndsey Ballantyne

Community Manager

Community building, project management & event management

Dr Jamie Court

RSE

Software engineering, web development & project management

Prof John Robinson

Director

Software architecture, project management, Java, SQL & Linux systems

Dr Philippa Broadbent

Senior RSE

Training, data analysis & web development

Dr Stephen Crouch

Software Architect

Training, software architecture, project management, software engineering & sustainability

Dr Bryan Gillis

Senior RSE

Research and data analysis, software engineering, project management & public outreach

Chiedozie Okorie

RSE

Software engineering & data analysis

Dr Mehtap Özbey Arabacı

RSE

Software engineering, data analysis, project management & training

Dr Sam Mangham

Senior RSE

Simulation and Modelling, Data Science & Training

Dr Conn O’Rourke

Senior RSE

Software engineering & code optimisation for High Performance Computing

Dr Edward Parkinson

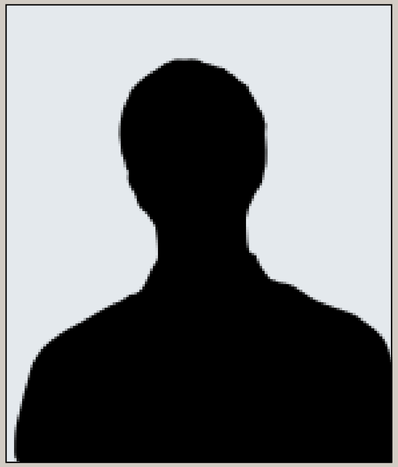
Senior RSE

Scalable software development, performance analysis and optimisation & parallel programming

Dr Stephen Pooley

Senior RSE

Engineering Project Management, Full Lifecycle Systems & Software Engineering



Dr Max Albert

RSE

Software engineering & data analysis

Dr Ben Thomas

Policy Researcher

Qualitative research & project management

Alex Pooley

Intern RSE

Software engineering

Further information

Contact

You can find out more about our work at rsg.soton.ac.uk.

If you would like to discuss a bid, project or training, please contact us at: rsg-info@soton.ac.uk.

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