



How STFC communicates the impact of its large-scale facilities

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Public Awareness of Research Infrastructures

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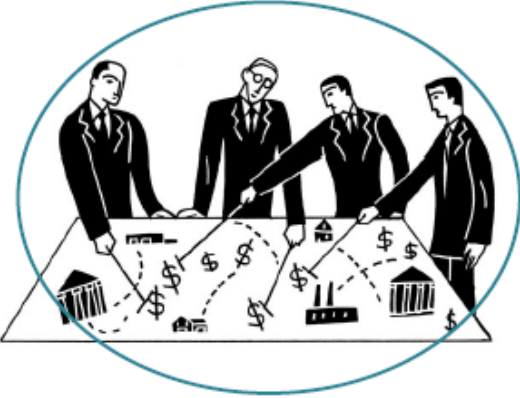
Context

- Science and Technology Facilities Council
 - Grant funding, RIs, Campuses
- UK Government focus on impact
- Impact at heart of STFC strategy
 - Demonstrating impact is key
- Dedicated impact evaluation team
- Projects to demonstrate impact
 - Metrics, methodology development, studies, case studies, reports



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Audience



Primary audience

Secondary audiences



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Key messages

- Demonstrate the case for science
- Connect research to the growth agenda
 - Demonstrate creating jobs, companies, supporting industry
 - UK Government policy - Science & Innovation Strategy
- Demonstrate improvement
 - Annual measures and trends



To do this we need strong publications with simple messages backed up with credible numbers

Study decisions

- Purpose
 - Influencing, comms, £
 - Audience, messages
- Level of assessment
 - Example, project, facility, programme
- Kinds of impact
 - Research, innovation, skills, clustering, industrial
- Timescales
 - Recent, long-term past, future
- Format
 - Case study, slide, 1-liner, brochure, leaflet, in depth study
- Data
 - Qualitative & quantitative



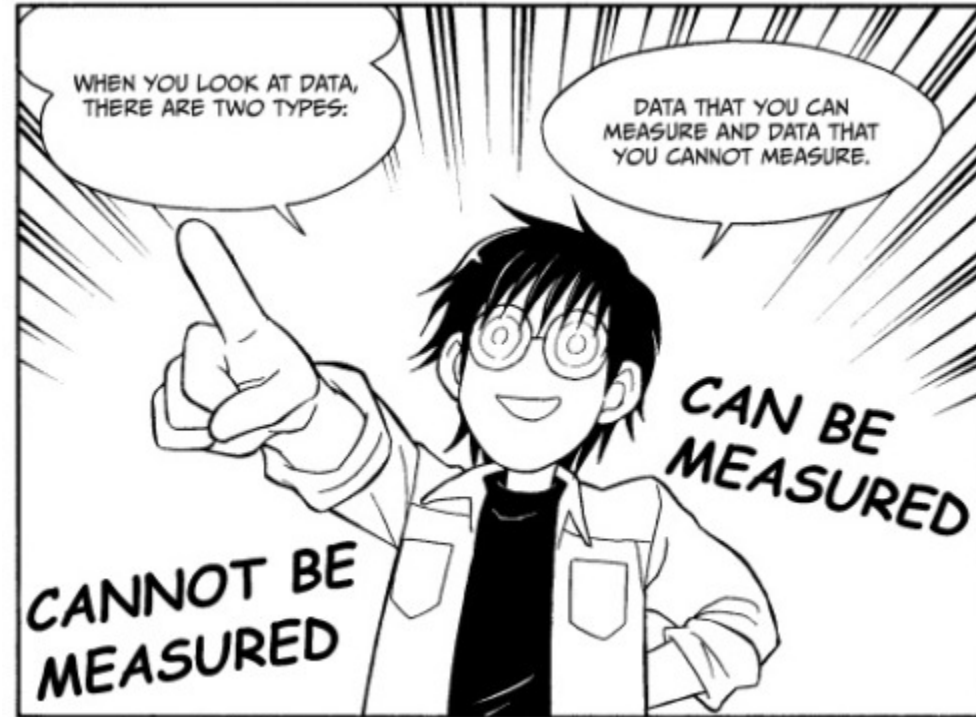
Qualitative approach

- Case studies (stand alone/in a study)
 - Answers the ‘so what?’ question
 - A clear story in simple language
 - Brings out excitement, potential, relates to real life
 - Up to date (topical but no elephant traps)
 - Numbers if possible
- Interviews, surveys



Quantitative data

- Methodology
 - Surveys etc
- Broad use of analytical techniques
- Direct impact
 - Jobs & supplier spend, leverage
- Wider impact analysis
 - Counterfactual analysis, CBA, ROI
- Market data as a proxy
- Convincing/credible



Examples of impact publications



Infographics

UK IMPACT OF CRYOGENICS

Annual employment and GVA impacts generated by UK-wide cryogenic activities



118
ASSOCIATED
COMPANIES



1,487
PEOPLE
EMPLOYED



£170m
TOTAL DIRECT
GVA



£324m
TOTAL DIRECT &
INDIRECT GVA

STFC's cryogenic teams also contribute an estimated £11 million per annum to the UK economy through operational impacts i.e. their employment (direct economic impact) and spending of their salaries within the economy.

**10 Years
ahead**

Projecting direct impact forward for next 10 years indicates cryogenics-related activities could contribute between £1.6 billion and £3.3 billion to the UK economy¹ with STFC, its university partners and industry all being key players in delivering this growth.

Sectors broadly associated with cryogenics represent 17% of the UK economy, these sectors collectively generate £1 in every £10 GVA in the UK economy.

Source: UK Annual Business Survey, 2013



Energy



Manufacturing &
materials



Defence &
Security



Space Science &
Astronomy



Research



Food



Healthcare



Transport




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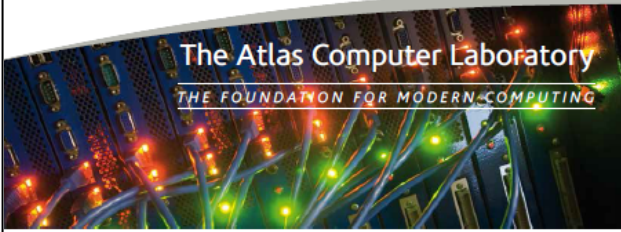
Case studies

Reducing engineering stress

- Rolls-Royce generates annual sales of £5.7 billion and supports 1 in every 300 UK job
- STFC's neutron and synchrotron facilities help aerospace companies, such as Rolls Royce, characterise their products
 - improving safety and driving profitability
- Rolls Royce has worked with STFC for decades to address engineering challenges, e.g.
 - Addressing foreign object damage, which cost the industry ~£4 billion a year
 - Mapping stress within engine welds to improve reliability and safety



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The Atlas Computer Laboratory

THE FOUNDATION FOR MODERN COMPUTING

Executive Summary

The 1960s was an important time in the early development of computing technology and its commercialisation. The Atlas Computer Laboratory, which was based on STFC's Rutherford Appleton Laboratory, was at the forefront of this computer science revolution. The Atlas Computer Laboratory was a major facility supporting computationally intensive science and engineering research in the UK, and work here formed the basis of many computer technologies used today. Many current operating systems, networking capabilities, database and graphics systems owe

their development to the ATLAS-1 supercomputer which was based at the Laboratory. This technology underpins the modern computing industry worth approximately £1 trillion annually worldwide¹. In addition, basic software in the areas of statistics, mathematics, linguistics, chemistry and many other areas were developed. The facility also supported early, fundamental research in subjects such as weather forecasting and medical research.

The Laboratory set the foundations for the delivery of world-class computational science at the Rutherford Appleton Laboratory and also the Daresbury Laboratory, which have both been at the forefront of

computer science for over 50 years. This report demonstrates how on-going Government funding of fundamental research facilities can provide a variety of long term impacts in science and technology, benefiting the UK and its people.

Introduction

The Atlas Computer Laboratory was opened in 1963 at the Rutherford Appleton Laboratory. This Laboratory was the first ever dedicated computer laboratory and housed the world's most powerful super-computer at the time, the ATLAS-1². This computer was built by Government funded scientists in collaboration with Ferranti Ltd, directly developed from the world's very first computer, the Manchester Mark 1³. World-class computational science continues to be carried out on the site to this day and is now home to STFC's Scientific Computing Department.

Run by 100 staff at the time, the Laboratory's role was to provide a national computing facility for research and engineering. It was in high demand and had an active user community comprising UK universities and government agencies. For much of its life it was the most powerful computer available for civilian work in the world. It was so powerful that if ATLAS-1 went down, the computing capacity available for UK research was halved.

KEY IMPACT STATISTICS

The Atlas Computer Laboratory produced, simply from the operation of the Laboratory and the staff it employed, a net benefit to the UK economy of £45.6 million over its lifetime⁴.

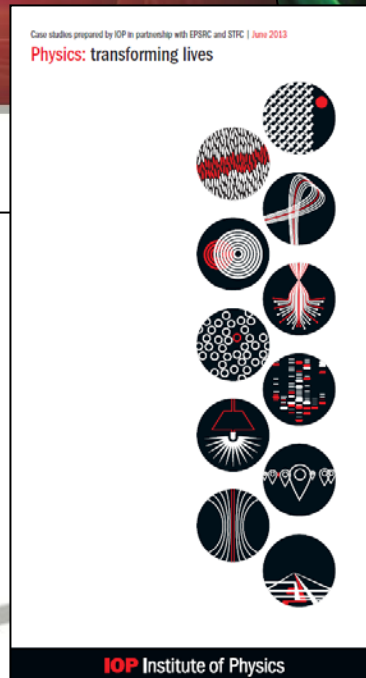
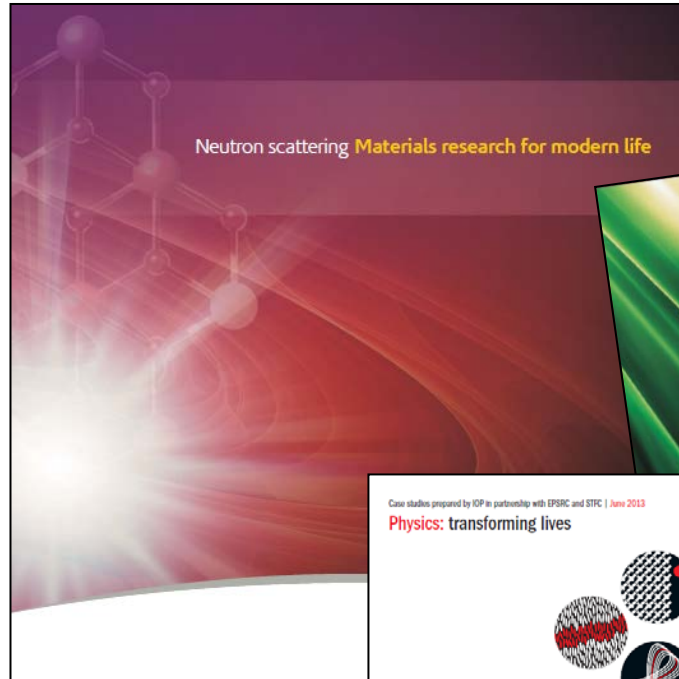
The value of the technology generated by the Atlas Computer Laboratory is extremely challenging to calculate. However, technology developed on ATLAS-1, including the invention of Virtual Memory, underpins the global computing industry, worth £1 trillion per annum. By way of illustrating the value of these advances, even if its historic contribution were to account for a conservative tenth of 1% towards the success of this industry, this would value the contribution at £1 billion per annum⁵.

It is impossible to calculate the benefits that the Atlas Computer Laboratory made to research but early research in fundamental areas such as weather forecasting, crystallography and cancer research have been a building block in the advancement of these fields and their socio-economic impact.

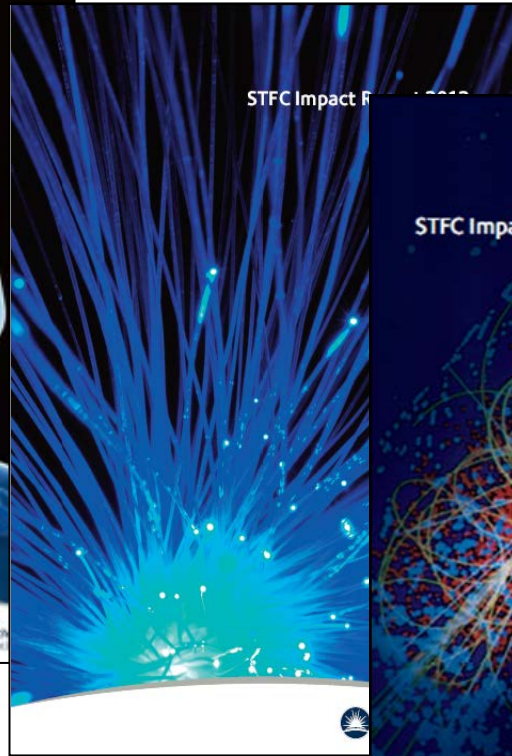
1. ATLAS-1 cost £5.9 million in today's prices, but the charge for computer time alone was worth £67.5 million over its lifetime.
2. ATLAS-1 was the world's first super-computer.
3. ATLAS-1 was the world's first super-computer.
4. ATLAS-1 was the world's first super-computer.
5. ATLAS-1 was the world's first super-computer.



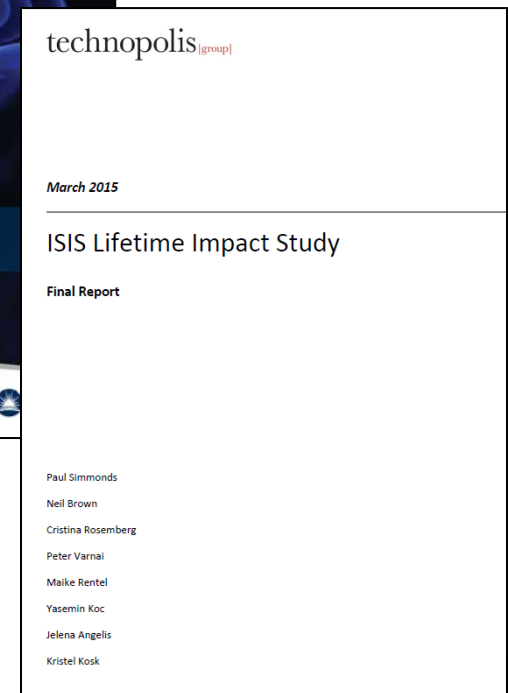
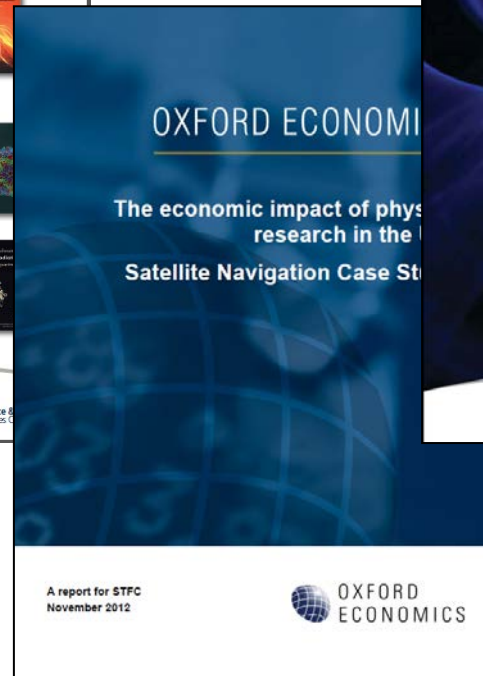
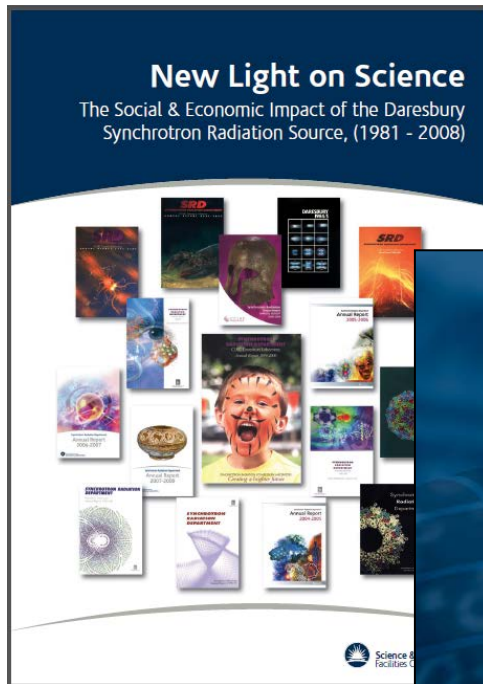
Impact brochures



Annual Impact Reports



In-depth studies



Top tips

- Be clear on purpose
- Consider your audience
- What are the key messages?
- Think about structure
 - What, how, why?
 - Prepare different formats
- Credible figures & analysis
- Pictures, quotes, infographics
- Timing – in vogue issues/topics
- Involve correct people



And finally....





Thanks



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