



ESFRI

**European Strategy Forum
on Research Infrastructures**

European Research Infrastructures – the role of ESFRI and how it can be strengthened

Trieste, 24 September 2014

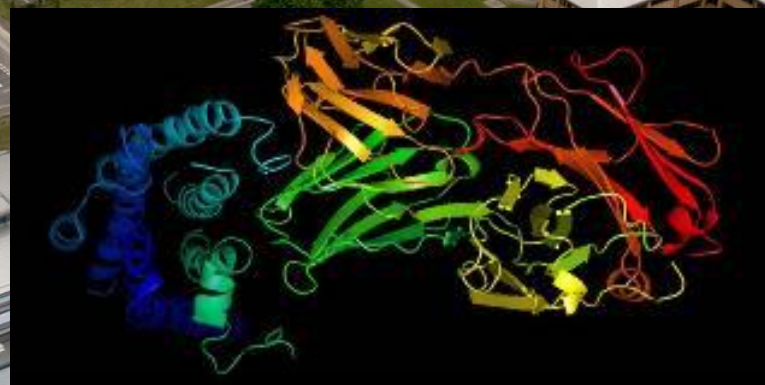
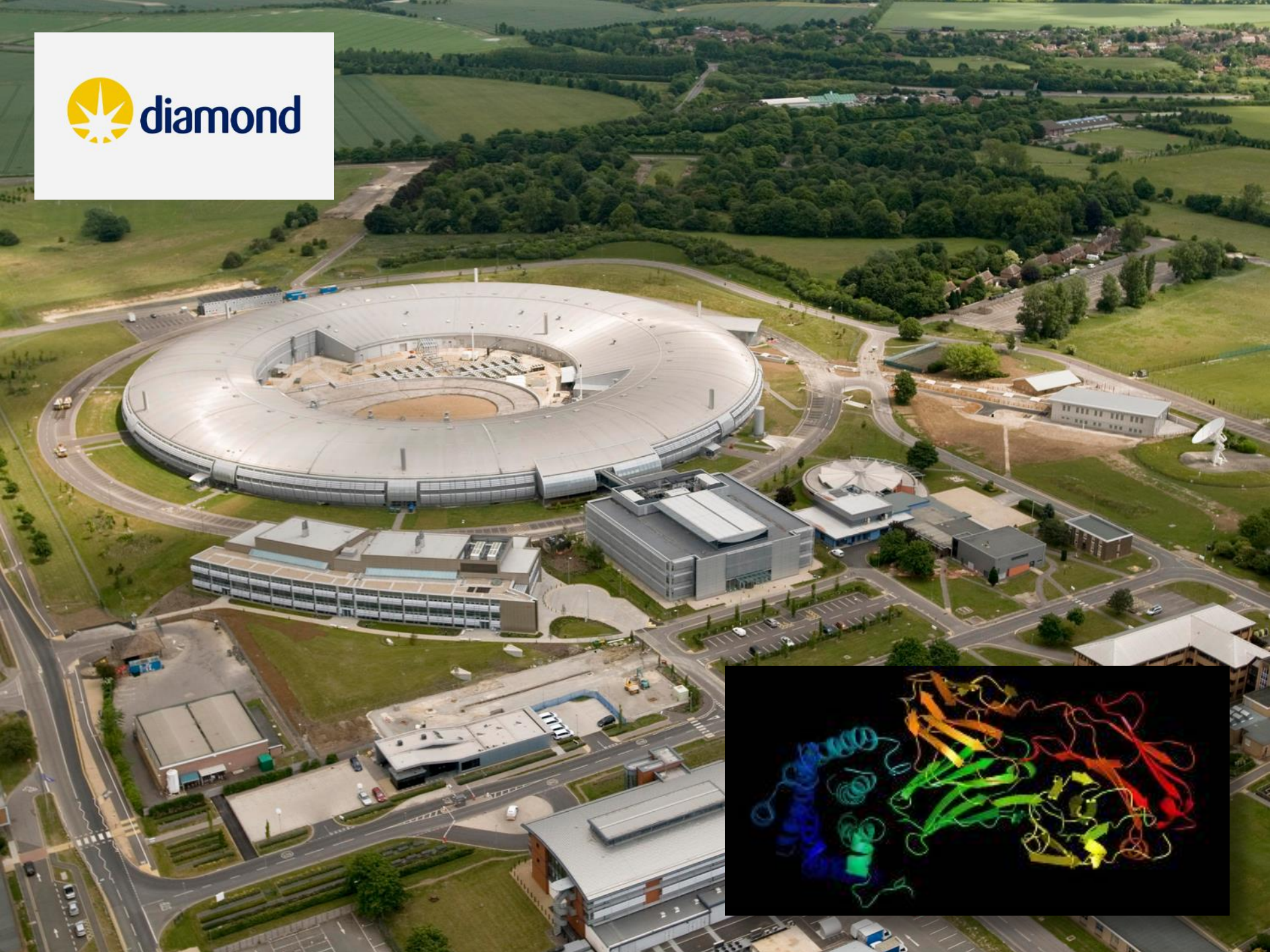
John Womersley

Chief Executive, Science and Technology Facilities Council (UK)

Chair of ESFRI

Importance of Research Infrastructures

- Broad consensus that future competitiveness in a globalising knowledge economy depends on research capability
- Requires
 - Investment in higher education and research institutions
 - Access to first class research infrastructures
- Coordination on European (and global) scale increasingly needed because
 - Limited investment funds available
 - Increasing level of infrastructure investments needed to remain at the cutting edge
 - Problems require broad data sharing and networking between national nodes – distributed RIs
- RIs are Innovation and skills hubs, not (just) big machines or big datasets



RESEARCH IS

GREAT

BRITAIN

Healthy Livestock
England

With the first safe, synthetic and non-infectious Foot-and-Mouth disease vaccine, British scientists could save the world's farmers over £3 billion per year. For world-class research facilities, choose the UK.

ukti.gov.uk

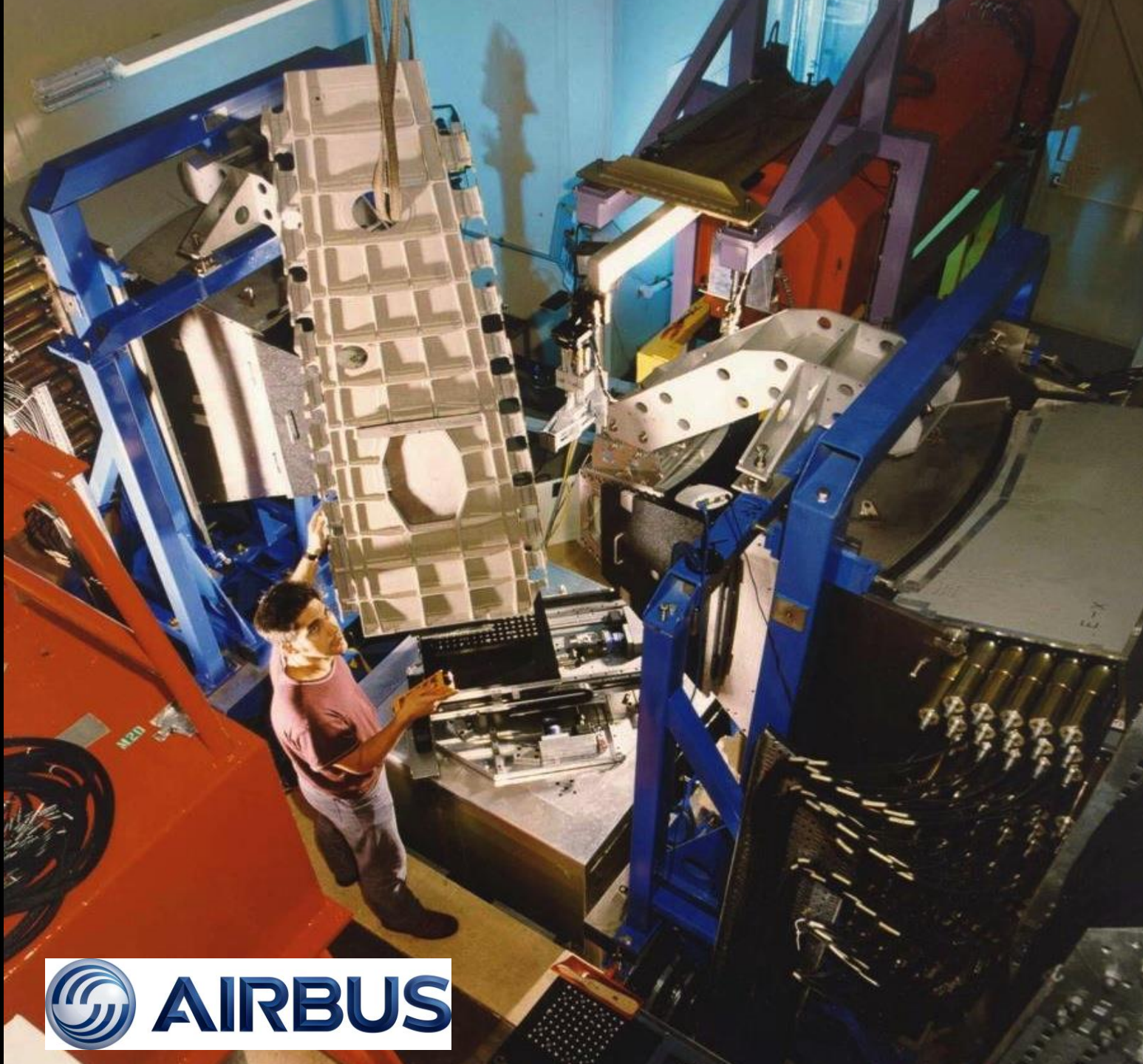


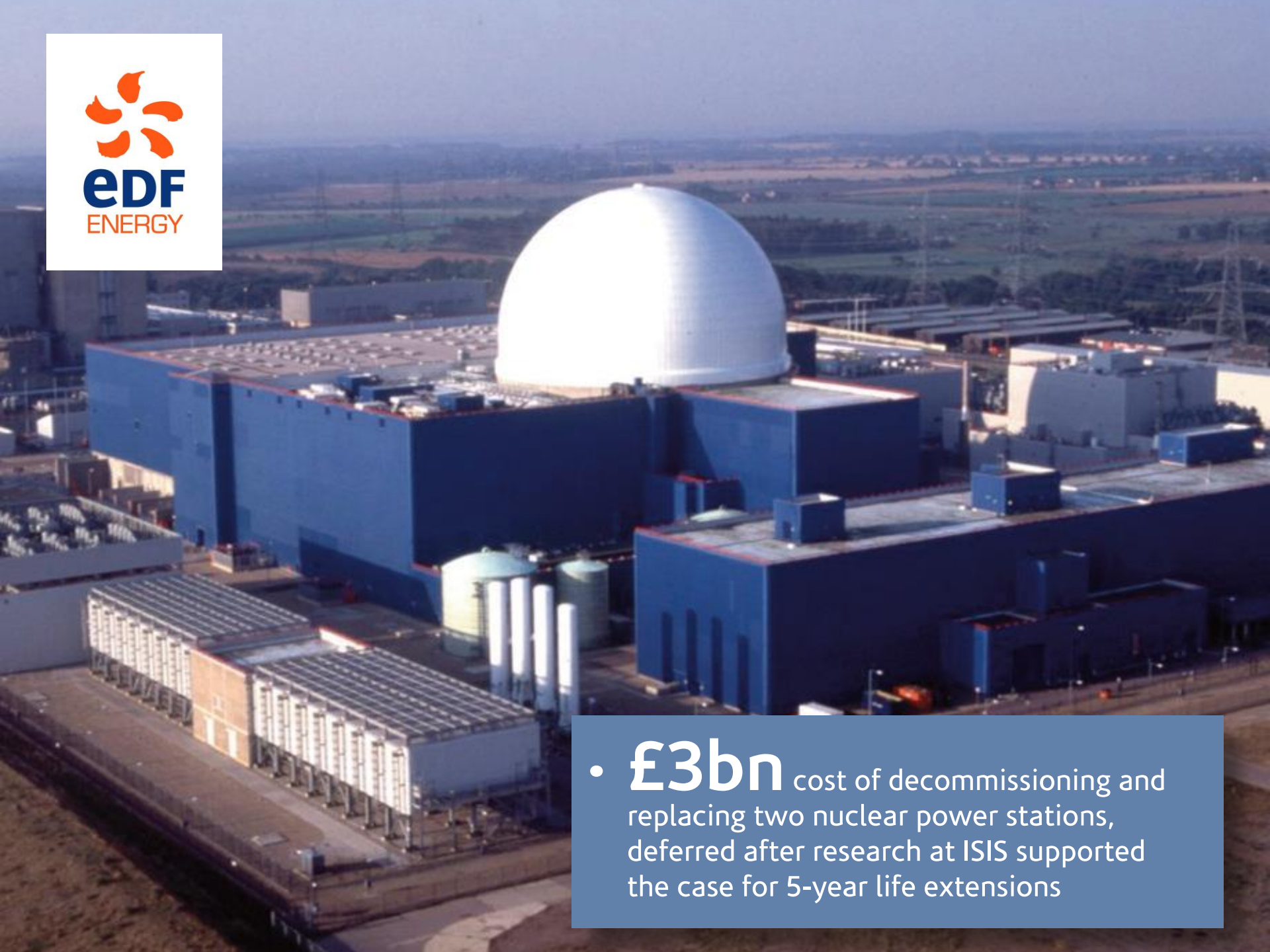


Science & Technology Facilities Council

ISIS







- **£3bn** cost of decommissioning and replacing two nuclear power stations, deferred after research at ISIS supported the case for 5-year life extensions



**EUROPEAN
SPALLATION
SOURCE**



Hartree Centre

Science & Technology Facilities Council



Centre
Council





Unilever



Victoria line
↑ Northbound platform 1
U3-2U-07

CATAPULT
Transport Systems

 **Transport
for London**



The SKA1 in Big Data Terms



Inspired by [Torre Wenaus](#) (2013) and [Wired's Infographic on Big Data](#) (2012)



Exploring the Universe with the world's largest radio telescope

Footer text

The SKA1 in Big Data Terms



Inspired by [Torre Wenaus](#) (2013) and [Wired's Infographic on Big Data](#) (2012)

SKA Project Engineering Consortium
members include



Basic science driving technology
innovation



Science & Technology
Facilities Council



- **8.3%** increase in applications to physics degree courses
- **46.5m** estimated total audience reached by STFC Public Engagement schemes since 2006

STFC Impact Report 2013

- Two million people reached face-to-face last year including 346,000 school children and 17,500 teachers
- How CERN technology benefits the UK economy
- New vaccine for foot and mouth disease
- New method for breast cancer biopsies
- Supporting UK space industry (worth £40 billion by 2030)
- Tenant companies at Sci-Tech Daresbury, delivered £35 million sales, £63 million of investment and 147 new products



Science and Innovation Campuses

An aerial photograph of a sprawling university campus. The foreground shows a large, modern building with a white and blue facade. The middle ground is filled with various academic and administrative buildings, interspersed with green lawns and trees. In the background, a large, circular stadium with a distinctive roof is visible. The horizon shows a mix of open fields and industrial structures under a blue sky with scattered clouds.

Connect our world leading science capabilities with business and society to drive innovation and economic growth

Our two Campuses now host 230 enterprises and 5,500 jobs

Why ESFRI?

- Set up by the EU Council of Research Ministers in 2002
- Brings together representatives of Ministers of the 27 Member States, 10 Associated States, and of the European Commission
- Supports a coherent and strategy-led approach to policy making on Research Infrastructures in Europe
- Mandate to develop a Roadmap and prioritise research infrastructures
- ESFRI provides a forum for coordination, information sharing, help and best practice, but **Member States must be the major source of funding, in variable geometry**
- Strong support for these principles

ESFRI Roadmap

- Roadmap identifies new pan-European Research Infrastructures or major upgrades to existing ones, to meet the needs of European research communities in the next 10 to 20 years, in all fields of research
- First Roadmap published in 2006
 - Followed by two updates in 2008 and 2010
 - Now contains 48 projects
 - Requires major financial investment (~20 B€) and long term commitment for operation (~2 b€/year)



Strengthening ESFRI

Build on success:

- Show we can go further in setting priorities
- A much more focused, shorter roadmap for 2016
- Look much more broadly at the research infrastructure landscape across Europe
 - Landscape Analysis in 2016 roadmap
 - Neutron scattering working group
 - Activities to promote coordination in specific areas e.g. PRACE, working with e-IRG

ESFRI Setting Priorities

As approved at the Competitiveness Council of Ministers Meeting 16/5/14

Three Priority Projects for implementation

- **EPOS**: European Plate Observing System, **ELIXIR**: The European Life-Science Infrastructure for Biological Information, and **ESS**: The European Spallation Source

Implementation Support for

- **ECCSEL**: European Carbon dioxide Capture and Storage Laboratory Infrastructure; **EISCAT-3D**: The next generation incoherent scatter radar system; **EMSO**: European Multidisciplinary Seafloor & Water column Observatory; **BBMRI**: Biobanking and Biomolecular Resources Research Infrastructure; **ELI**: Extreme Light Infrastructure; **CTA**: Cherenkov Telescope Array; **SKA**: Square Kilometre Array; **CLARIN**: Common Language Resources and Technology Infrastructure; **DARIAH**: Digital Research Infrastructure for the Arts and Humanities

Support for Sustainability and European Coverage

- **CESSDA**: Council of European Social Science Data Archives; **SHARE**: Survey on Health, Ageing and Retirement in Europe; and **ESS ERIC**: European Social Survey

New ESFRI Roadmap 2016

ESFRI mandate updated at Informal Competitiveness Council in Milano (July 2014) to complete a new Roadmap for 2016 with new criteria of selection and format

New Roadmap will contain fewer, more mature projects

It will also be more of a strategy document that analyses:

- the landscape of RIs in EU and internationally
- gaps in the EU RI ecosystem
- pan-European projects
- synergies with the national/regional projects
- synergies with existing RIs and strategies for optimal use, continuous upgrade, sustainability and end of life perspectives
- global research infrastructure opportunities

Rules for new Roadmap

- Much shorter – **only ~25 Projects** on the new Roadmap
- Projects that have been on the roadmap and not implemented will automatically roll off after 10 years
 - Any project that wants to be considered again after 10 years must reapply, either in a different form or with bottlenecks resolved
- **Room for 8-10 new projects** on the 2016 roadmap
- Entry level projects will be at a more mature level
 - conceptual design and feasibility done
 - supported by at least three MS
- Every 2-3 years audit of the project by ESFRI Implementation WG
- Opportunities to add more projects in 2018, 2020 as others roll off

Proposing projects for new roadmap

The proposal process will be on-line (reserved to National Delegations and EIRO forum). Key questions will include:

- What is the value for science? for innovation?
- Cost and Schedule?
- What is the strategy for siting? What is the governance model?
What is the data management plan?
- How it is planned to be financed?
- Does it replace existing facilities?
- Is the project included on one or more national roadmaps?
- What is the intended user community? Will it be open access?
- What preparatory work has been done?
- Design Studies? Business case? Investment plan?
- Is it intended to apply for H2020 preparatory phase?

Key dates

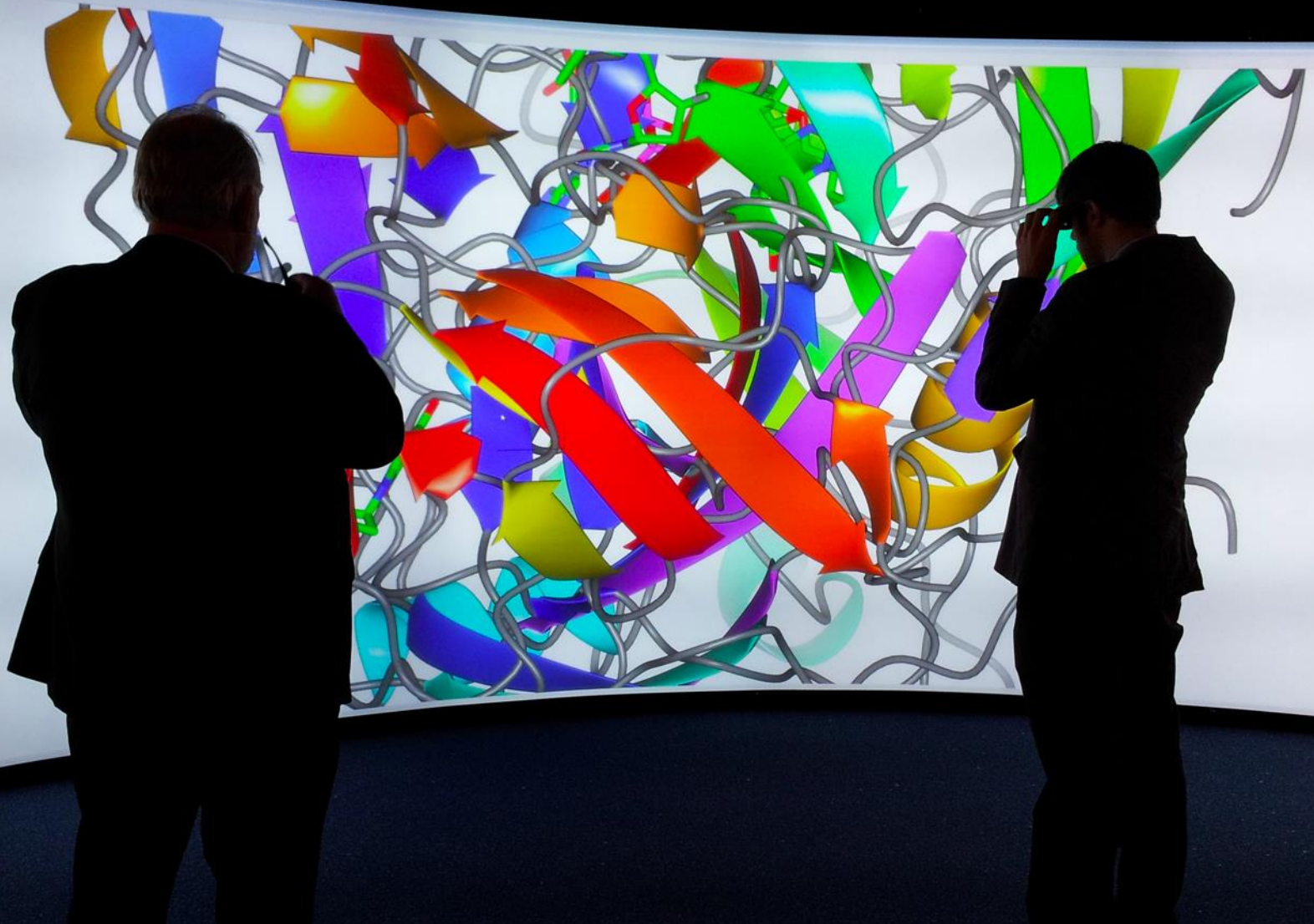
- September 25th: Roadmap update launch meeting in Trieste
Streaming video at www.europa.eu/research/esfri
- March 2015:
Deadline for new project proposals
- January 2016:
New roadmap published



Thank you!

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Backups

today: ESFRI Roadmap 2010

Social and Cultural Innovation (5)	Health and Food (13)		Environmental Sciences (9)		Energy (7)	Analytical Facilities (6)	Physics Science and Engineering (10)		e-Infra-structures (1)
SHARE	BBMRI	ELIXIR	ICOS	EURO-ARGO	ECCSEL	Euro-FEL	ELI	TIARA*	PRACE
European Social Survey	ECRIN	INFRAFRONTIER	LIFEWATCH	IAGOS	Wind-scanner	EMFL	SPIRAL2	CTA	
CESSDA	INSTRUCT	EATRIS	EMSO	EPOS	EU-SOLARIS	European XFEL	E-ELT**	SKA	
CLARIN	EU-OPEN-SCREEN	EMBRC	SIAEOS	EISCAT_3D	JHR	ESRF Upgrade	KM3NeT	FAIR	
DARIAH	Euro Bio-Imaging	ERINHA		COPAL	IFMIF	NEUTRON ESS	SLHC-PP*	ILC-HIGRADE*	
	ISBE	MIRRI			HIPER	ILL20/20 Upgrade			
	ANAEE				MYRRHA				

*Projects from CERN's European Strategy for Particle Physics

Distributed research infrastructures

Single sited research infrastructures

The "10-years rule"

Green: implemented, Red: 10-years expire on 2015, Black: stay on

The new ESFRI Roadmap 2016

Method of evaluation and assessment



Assessing the projects on the ESFRI roadmap

A high level expert group report



The ESFRI Indicators of Pan-European relevance

ANNEX 2
Table of Indicators for the ex-ante evaluation of the “pan-European relevance” of a research infrastructure

Objective	Indicator	Comment on interpretation of the indicator	Data source
0 Background of new RI or Upgrade Project			
EC			
	Previous Design Study Project	Successfully completed DS	EC (FP6, FP7)
	Previous Preparatory Phase Project	Successfully completed PP	EC (FP7)
	Well established I3 or equivalent networking in the science community that needs the RI	number / size of I3 networks in the field	EC Statistics of I3s and proposals for suggested topics
Other			
	Addressing new scientific challenges with unique / innovative approach strengthening European leadership	Expectation of new knowledge by the international science community	International Science press, evidence of international competition
	Upgrade of an existing operational RI to pan-European or Global RI	Background of RI	Project Management, EC, MS, GSO
	Re-orientation of existing science sites to host new RI	Background of RI	MS-AS, Project Management
	Landscape analysis of RI in the field and the territorial distribution of service points in Europe	Background of RI	ESFRI
1 Membership INDICATOR High, Medium, Low			
1.1	No. of MS/AC and global partners engaged with	Fraction of total funding which has been	Project management