ENGINEERING AND PHYSICAL SCIENCES RESEARCH COUNCIL

Physical Sciences Theme Visit

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18/19 February 2013

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Meet the Team

- Andrew Bourne
- Alex Berry
- Simon Crook
- Amanda Howes

http://www.epsrc.ac.uk/ourportfolio/themes/physicalsciences/Pages/contacts.aspx

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What do we want from today?

- Build on/strengthen our relationship with the physical sciences community
- Extend our knowledge further on the physical sciences landscape and understand more about the research and people priorities that are important to you
- Move forward within the current strategic framework
- Enjoyable discussions
- See/hear some outcomes from science that we've funded
- Respect that some issues are specific therefore the team are available for 1:1 discussions

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Some questions for you? (1)

- Looking at the EPSRC physical sciences portfolio, what are your observations on the relative level and spread of funding for the research areas you can comment on?
- How does the UK landscape align or differ with international endeavours for this research area? e.g. uniqueness, complementarity, etc.
- Which key reports / reviews can you identify that support the your views?
- How do your priorities align with the identified Physical Sciences Grand Challenges or how do they differ?

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Some more questions for you? (2)

- What is the potential importance of your research priorities (where relevant) on:
  - Current or future success of the UK economy
  - Key emerging industries
  - Key societal challenges facing the UK
  - Health of other research disciplines e.g. potential to lead to transformative or disruptive research
- What are the specific strengths and weaknesses of your research priorities and any particularly critical inter-relationships between other research areas?

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THEME PRIORITIES

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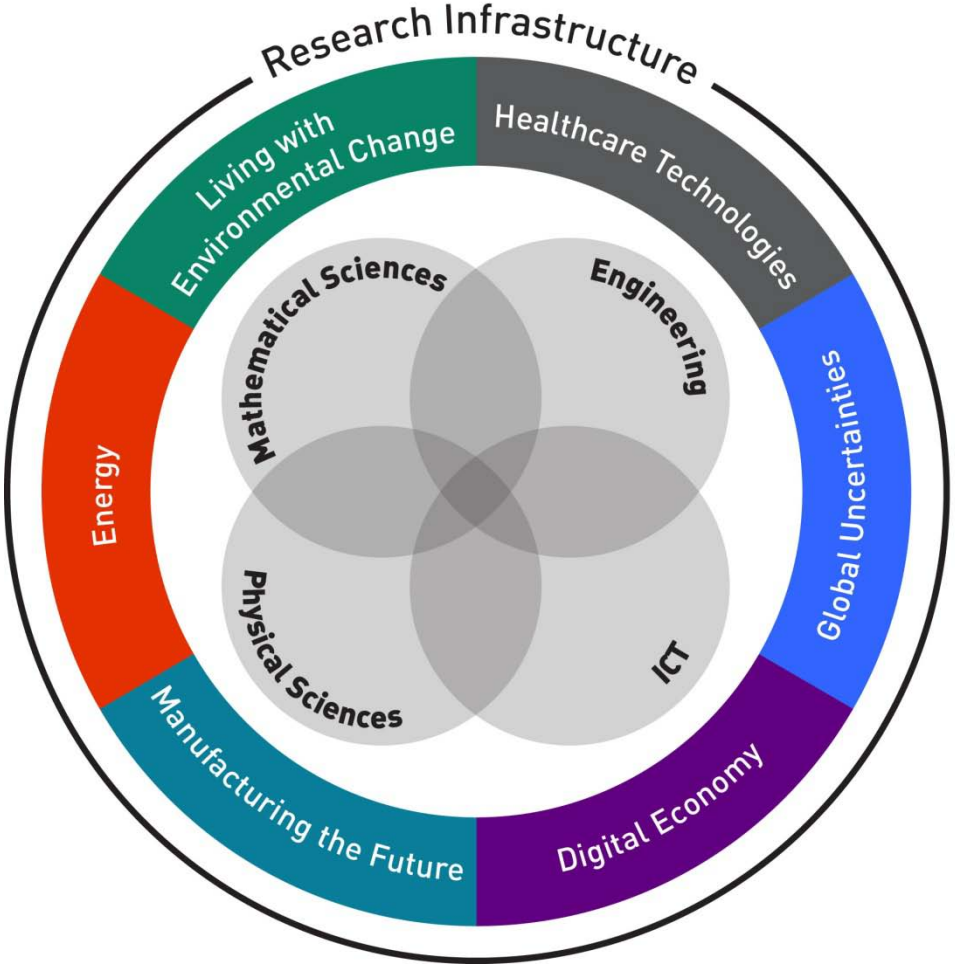
EPSRC's portfolio



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Key integration foci for the theme

Leaders

- Developing inspirational scientific leadership
- Balancing creativity with capability
- Focussing the training portfolio aligned with strategic needs

Shaping

- Linking effectively to other capability & challenge themes and building on other external funding sources
- Managing multiple strategies
- Influencing current portfolio of investments

Physical Sciences Capability

Impact

- Making impact a smarter rather than a serendipitous process
- Enhancing capability at the Cross-Council interface (the wider importance of Physical Sciences capability)

Infrastructure

- Developing a national strategy
- Implementation of approach to support rather hinder science

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Physical Sciences – National Capability/Challenge

- £140M Approximate commitment for 2012-13
- Strategy for the theme:
  - Focus on ground-breaking physical sciences research
  - Shape and integrate portfolio to meet societal and economic challenges that rely on fundamental science for solutions
  - Maintain flow of people to sustain capability at all career stages
  - Identify and help develop current and future research leaders

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Shaping Capability – what it means in practice

- No area is to be stopped altogether
- EPSRC is providing a sense of direction i.e. no funding targets
- Maintain = Reduce in real terms
- Grow = Significant investment
- New adventurous/innovative ideas are encouraged in all areas
- Changes to peer-review will help to make it happen but it will take time
- Physical Sciences supported via many of EPSRC's themes – many opportunities available

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Shaping Capability: Changes to Peer-review

- March 2012 – EPSRC Council agreed proposed changes to peer-review process:
  - Principles of peer-review staying the same
  - ‘National Importance’ to continue as a secondary criterion (introduced 11/2011)
  - Panels to receive contextual briefing
  - Panel scores to be received well before meeting – to enable discussion in context of shaping capability
  - 3 speakers (not 2) to maximise quality of the discussion on each proposal

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Developing Leaders – Focus on People

- Focus on investing in current and developing future leaders (tailored support for people)
- New Fellowship framework:
  - Merger of previous schemes
  - Priority areas (reviewed annually)
  - Example: New Directions for Supporting Leaders
- Dream Fellowships
- Mentoring
- Leadership Workshop for Early Careers inc. Diversity

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Physical Sciences – People

- Fellowships welcome in a number of areas:
  - Catalysis, Quantum, Cold Atom, Theoretical Physics
  - Grand Challenges
  - Adding Materials for Energy (Early Career)
  - (see website for more details)

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Developing Leaders – PhDs

- Review of Centres for Doctoral Training (CDTs)
- New call for CDTs in 2013
  - Maintain balance with Doctoral Training Grants (DTGs)
  - Selected areas only – Engagement with HEIs
  - No automatic renewals
- DTGs
  - Statement of expectation
  - Engagement with HEIs to shape their future
  - New DTGs process from 2015-16

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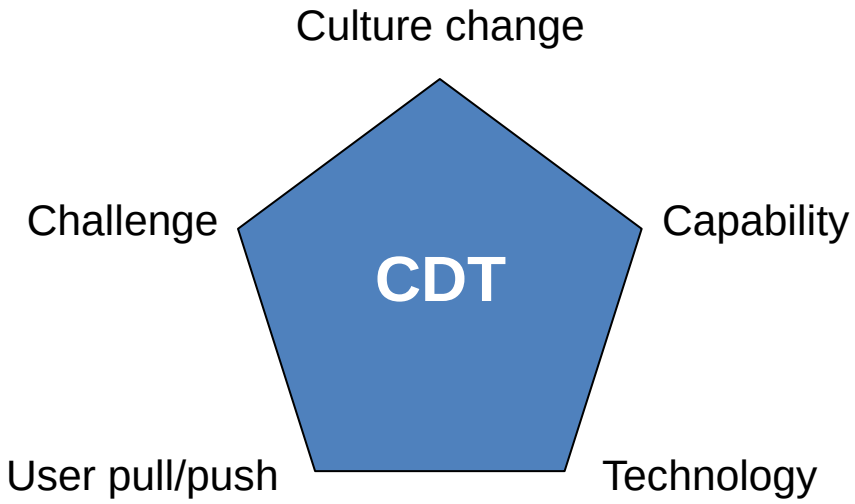
CDTs – Things to think about:

What is the purpose for a given centre?



What is the footprint?

What skills should a graduate have?

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Physical Sciences ‘Proto-Priorities’

- Catalysis
- Computational and Theoretical Physical Sciences
- Condensed Matter
- Functional Materials
- Materials Characterisation
- Measurement and Sensing
- New physical sciences for biology & healthcare
- Novel and Efficient Chemical Synthesis
- Photonic Materials
- Plasma & High Energy Physics
- Polymer, Soft Matter and Colloid Science
- Sustainable Chemistry
- Towards Quantum Technologies

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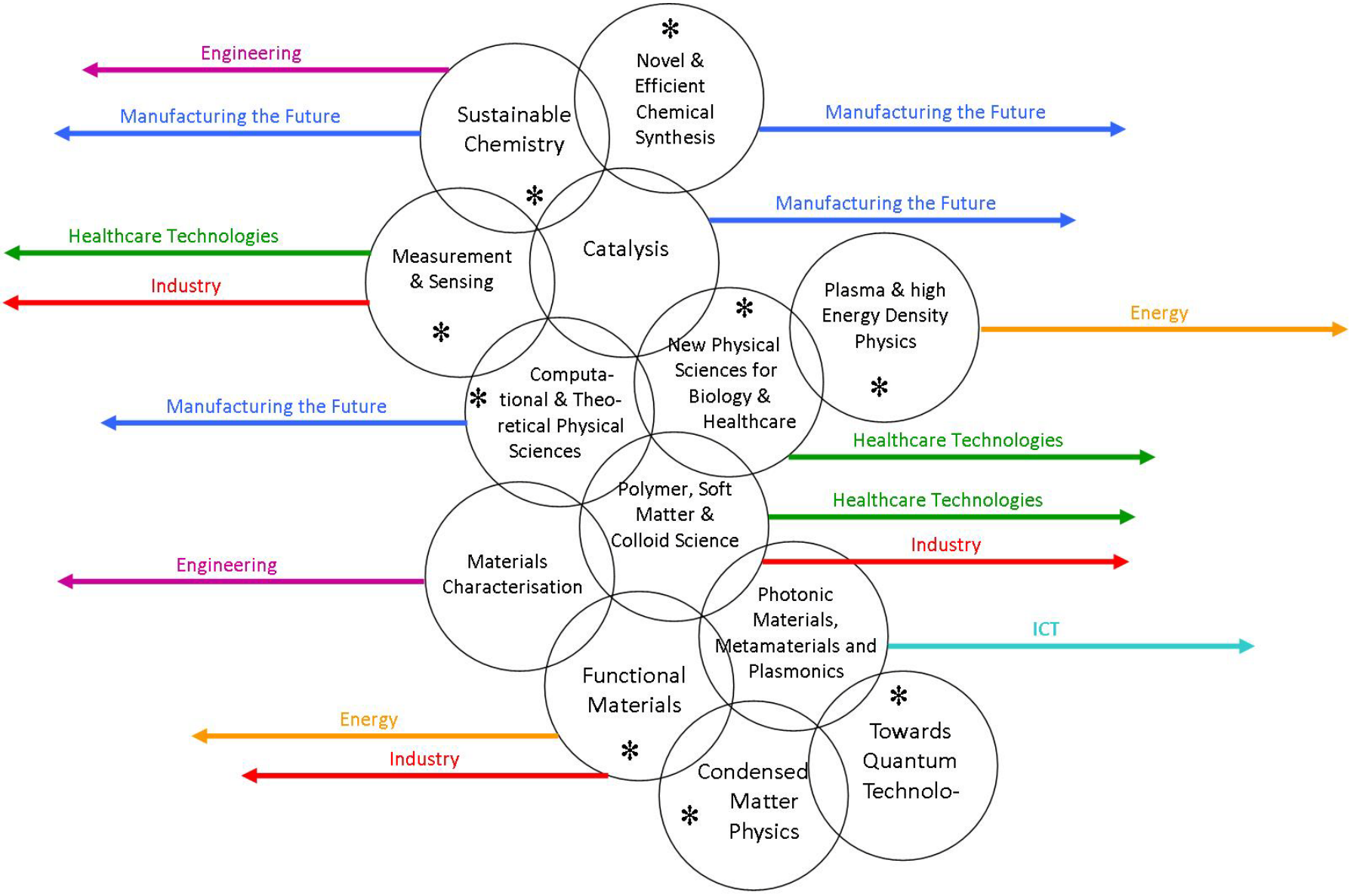
Engineering
Manufacturing the Future
Sustainable Chemistry
Novel & Efficient Chemical Synthesis
Manufacturing the Future
Manufacturing the Future
Healthcare Technologies
Industry
Measurement & Sensing
Catalysis
Plasma & high Energy Density Physics
Energy
New Physical Sciences for Biology & Healthcare
Computa-tional & Theo-retical Physical Sciences
Manufacturing the Future
Healthcare Technologies
Polymer, Soft Matter & Colloid Science
Healthcare Technologies
Industry
Engineering
Materials Characterisation
Photonic Materials, Metamaterials and Plasmonics
ICT
Functional Materials
Energy
Industry
Condensed Matter Physics
Towards Quantum Technolo-
✻ - Current Centre

Nuances

- Not Themed – read across
- Centres may address one or more priorities
- Collaboration and ownership
- Leverage, linkage and critical mass
- User engagement - real collaboration
- Universities need to manage expectations

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Timetable

Activity	Dates
Engagement about scope	March – August 2012
Sub group of Council/SAN	24th October 2012
Publish outcomes from engagement	November/December 2012
Issue call	6 February 2013
Closing date for outlines	4 April 2013
Closing date for full proposals	July 2013
Announce grants	November 2013
New CDT cohort starts	October 2014

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Delivering Impact – Next Steps

- Impact Acceleration Accounts
  - Have replaced KTAs and KTS
  - Provide greater flexibility for HEIs to accelerate impact from previous investments
  - Support mobility between academia and industry
  - Require leverage from Users –
    de-risking of early stage innovation prior to industry uptake or TSB funding

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UPCOMING ACTIVITIES

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Recent activities

- Success Rates are 32% (last two panels averaged)
- Since July 2010, Physical Sciences has funded 9 Mid Range Facilities Total value approx: £30M (inc £6.2M Capital)
  - £2.5M more due to be spent this year
  - £800k to support Strategic Equipment Panel to date
- Physics Grand Challenge Networks (see later)
- Quantum Big Pitch £1.5M
- INSPIRE Workshop £50k

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Recent activities (2)

- Catalysis Hub £13M
- NSF Calls (Chemistry and Materials) £3M
- Building on Chemistry Grand Challenge Networks
- Chemistry Capability call £15M
  - Physics Capability?
- Visits and scoping of CDT call

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Building on the Physics Grand Challenges

- Quantum Physics for New Technologies
- Nanoscale Design of Functional Materials
  - **Opportunities to partner e.g. Big Pitch for Nanoscale design (26 February 2013)**
- Emergence far from equilibrium
- Understanding the Physics for Life
  - **Two networks funded – work with these to develop strategies**

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Chemical Sciences and Engineering Grand Challenges

- Dial-a-Molecule: 100% Efficient Synthesis
- Directed Assembly of Extended Structures
- Utilising CO2 in Synthesis and Transforming the Chemicals Industry
  - **Developing links with Manufacturing for Dial-a-Molecule and Directed Assembly in Synthesis (workshop 31 Jan/ 1 Feb 2013)**

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Materials Strategy Group

- Initial discussion with stakeholders to consider issues and priorities
- Representatives from academia, industry, Government (e.g. TSB)
- Take into account strengths and weaknesses, shaping capability, other activities, opportunities for collaboration (national and international)
- First meeting 23 October 2012
- **Output will report to the Physical Sciences SAT**
- Advanced Materials Strategy - New Technologies

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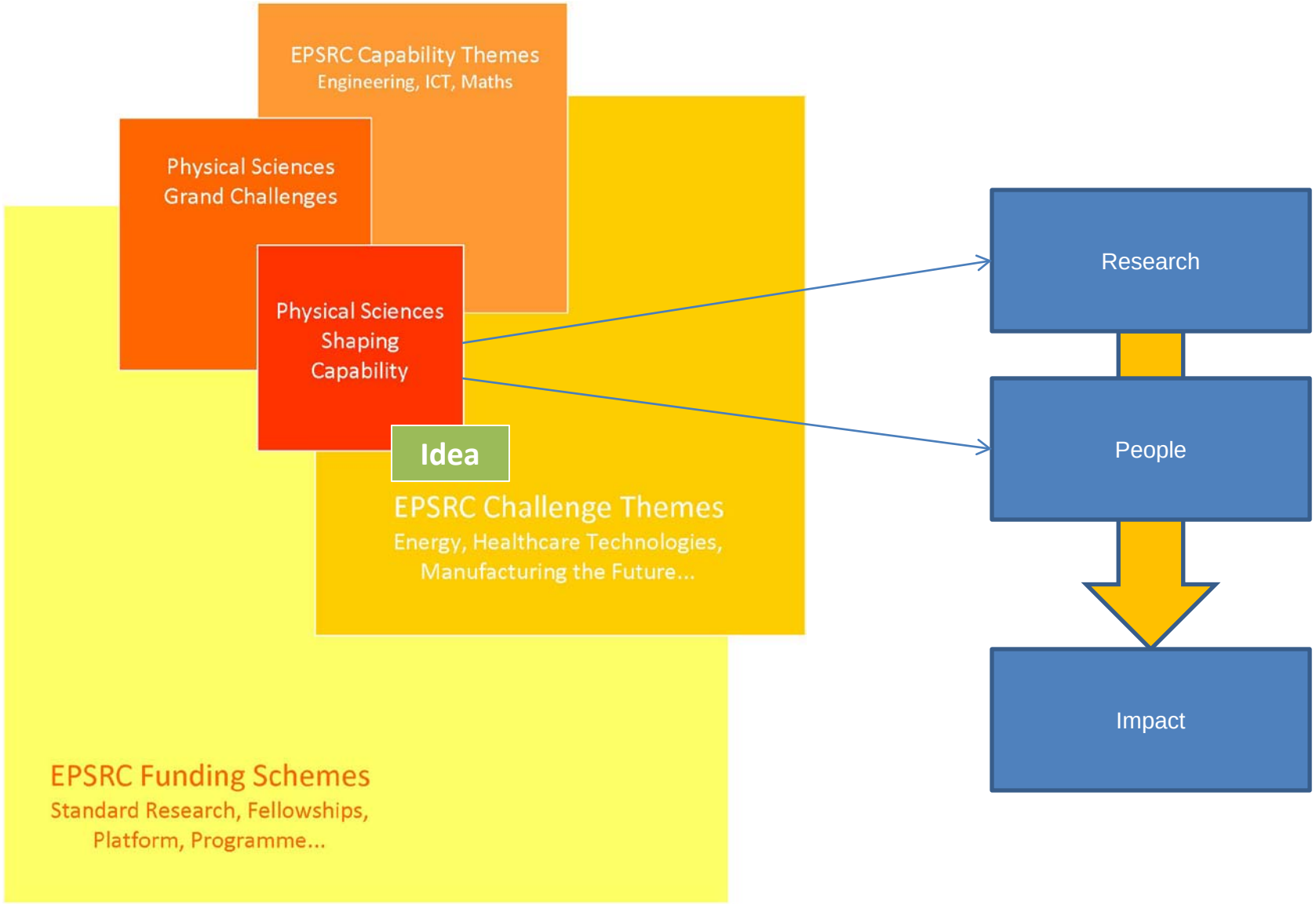
What does this mean for me?



Physical Sciences – infrastructure

- New capital arrangements
- Making use of mid-range facilities – these are a service for the research community
- RCUK Large facilities roadmap – published 9 Nov 2012
  - Need to articulate better the future needs of Physical Sciences
- Using Diamond, Harwell Research Complex and High Performance Computing

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Conclusion / Summary

- Consolidating Shaping Capability and emphasised focus on Leaders and Impact
- Peak of commitments in 2012-13 – working with our partners to safeguard best research and PhD training
- Physical Sciences research at the core of EPSRC strategy – must continue to demonstrate and create value

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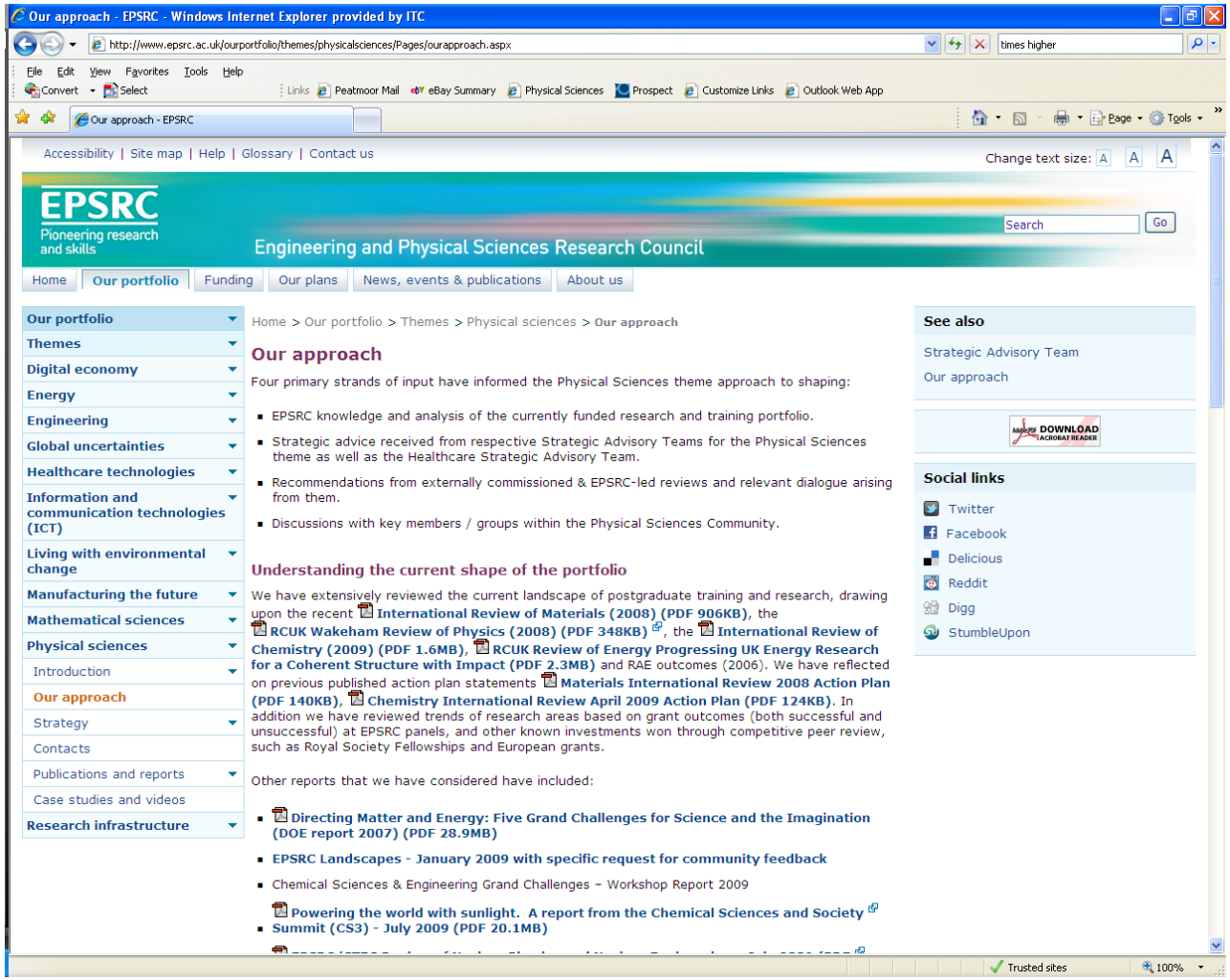
Our Approach



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Any Questions?

- Thank you for listening

- http://www.epsrc.ac.uk/ourportfolio/themes/physicalsciences/Pages/default.aspx
- http://www.epsrc.ac.uk/ourportfolio/themes/physicalsciences/ourapproach/Pages/townmeeting.aspx

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