

**Cross-industry research – supporting the delivery  
of long term strategy**

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- **Current context for GB rail research**
- **Current focus of cross-industry research**
  - Strategic
  - Case study - electrification
- **Innovation**
  - Sharing
- **RSSB research services in support of industry**

- Rail Value for Money Review of GB rail recently conducted
- Considered ways in which government and industry can reduce cost
- One area of focus was research and innovation
- Review identified research and innovation as critical to underpinning cost reduction and long term growth
- BUT .....
  - Innovation needs accelerating
  - Industry needs to work closer together
  - Research, development and innovation need to be aligned

## Why do research?

- Cost
- Carbon
- Customer
- Capacity
- Safety

.....to make the railway more sustainable

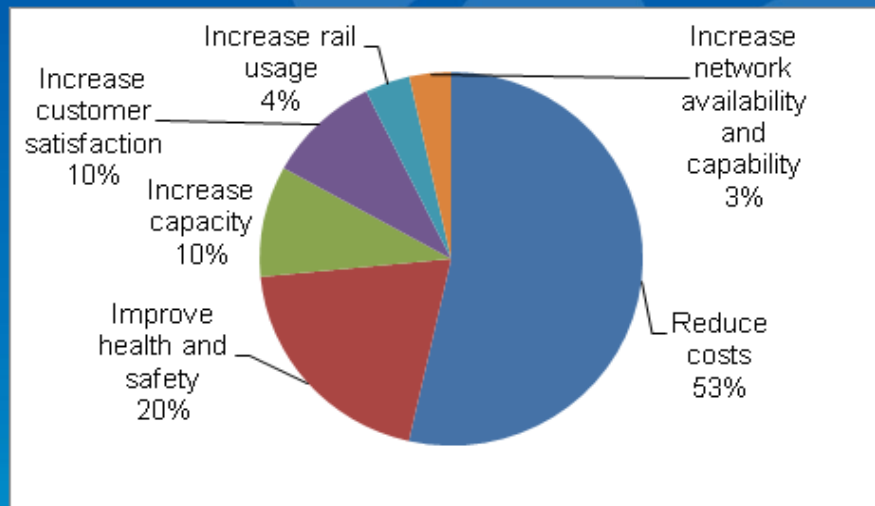
- Railway is a system, but delivery is split into constituent parts
- R&D focus of individual organisations is within scope of their own operation
- Cross-Industry/Government - long term interest - funding secures research that would not be done by industry
- A focus on longer term strategic research that can 'change the game' – 2050 and beyond

# Delivering economic value

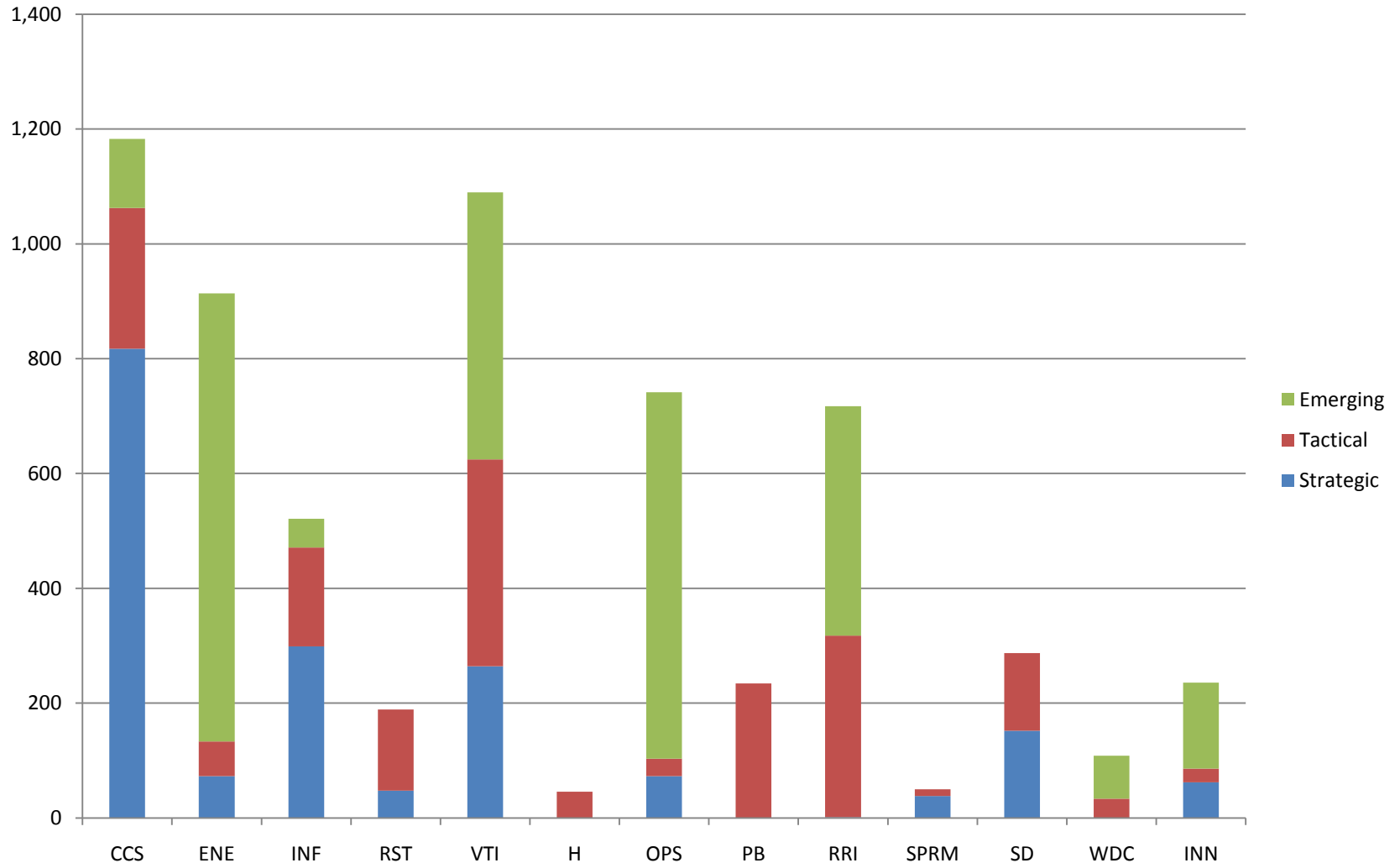


- Estimated £94m of potential benefits from 2009/10 projects costing £8m
- Current projects potential to deliver £670m benefits
- Examples: Vehicle Track Interaction – Strategic Model – saving £100m + Regenerative braking – Saving £50m+ and saving Carbon Train Horns and Containment – Both **avoided** spending £20m++ Track Circuit Assistors – Reduced train cancellations on FGW Modern Hearing Aids – Saves costs and retains staff for longer Taking Safe Decisions – Highways Agency and Nuclear sector decisions

Industry objectives addressed by recently completed research



# Split of research across the programme



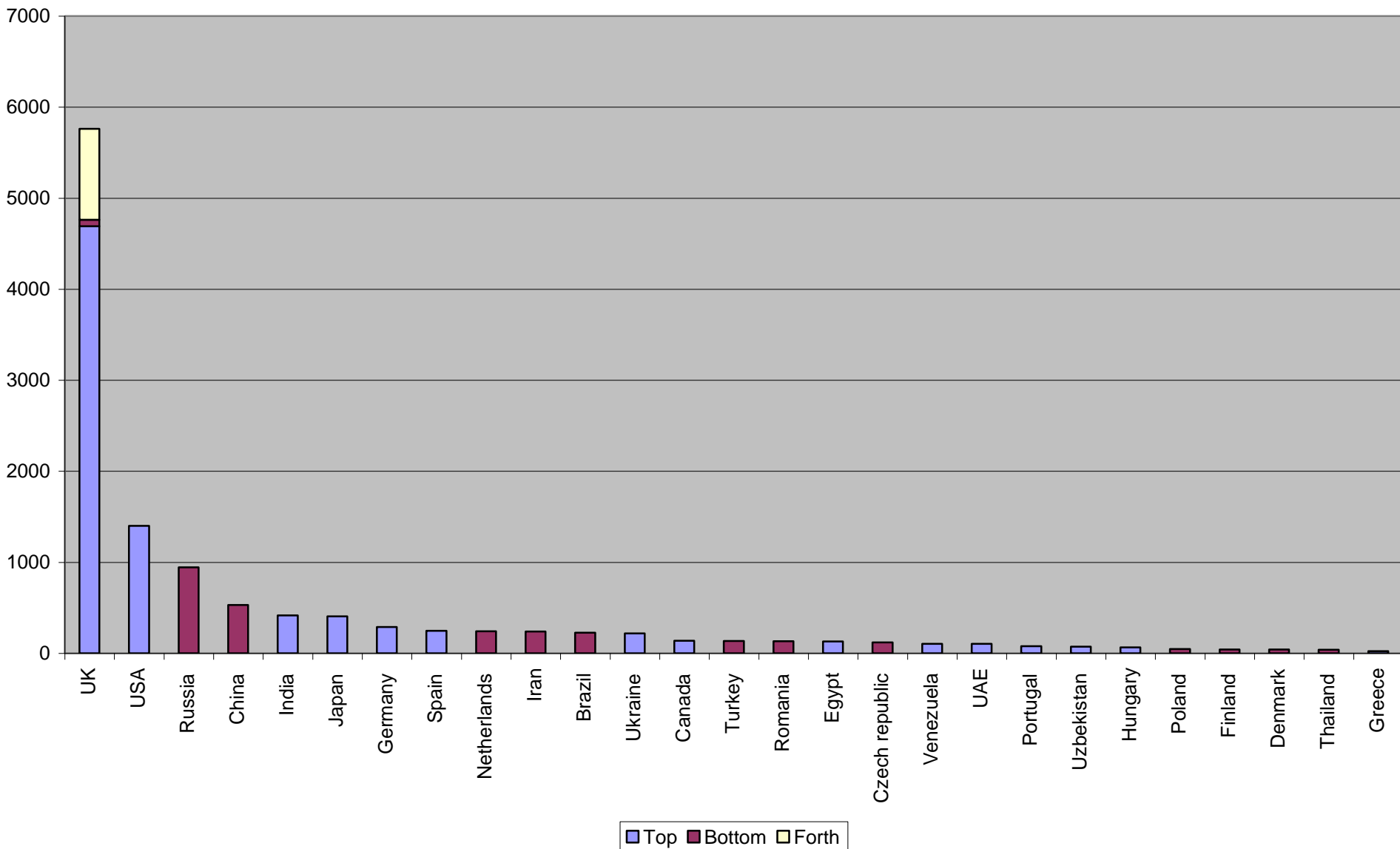
- Strategic research can be characterised as:
  - Concentrating on defined but broad-ranging subjects where it is possible to identify a need for improvement, but not necessarily the specific solutions
  - Addressing complex, multi-faceted problems
  - Likely to require innovative approaches
  - Areas where implementation may be many years ahead
  - Likely to involve complex modelling and/or proof of concept
  - Typically requiring strong industry collaboration

- Focus on strategic priorities and long term strategic projects that ‘change the game’
  - Next Generation Traffic Management
  - Energy Strategy
  - Whole System Reliability
  - Data and communications
- Raise implementation rate
- Secure wider sources of funding
- Accelerate innovations

‘Supporting the delivery of the long term goals of industry and government’



# A 'live' strategic issue - electrification



- Currently 39% of the network is electrified – 25% is 25kV AC overhead, 14% is 750V DC third rail
- The GB main line third rail system is the largest in the world – nearly 40% of total global mileage – with most other applications in metro systems
- Third rail is not considered suitable for relatively long distance, high speed operation
- It is a limiting factor on increasing capacity and decreasing journey times
- Much of the third rail power supply system is due for renewal in
- *T950 Investigating the economics of the 3rd rail dc system compared to other electrification systems*

Highlights the need for an industry-wide long term migration strategy, covering

- Trains
  - All new EMUs to be ac compatible
  - “Change on the move” requirement to maximise operational flexibility
- Signalling
- Junction Layouts / Structures
  - Active provision for OLE structures / wires in future
- dc infrastructure
  - Minimise potentially abortive investment

- A pan-industry rail innovation and growth capability that builds on:
  - Network Rail's approach to innovation
  - collaboration with the UK's Technology Strategy Board (TSB) to take innovative solutions through product development and into implementation
  - cultivating, identifying and exploiting innovation in UK universities – building on RRUK-A and industry's existing network of centres of expertise
- Proposals for a Transport Systems and Integration Technology and Innovation Centre
- Directing resources at the most transformative and value-adding innovation
- A move to open innovation

# SPARK – igniting innovation



The screenshot displays the SPARK website interface. At the top, the SPARK logo is on the left, and navigation links for Home, Library, Discuss, My profile, and Add a record are on the right. A search bar is visible below the navigation. A modal window titled 'Add a record' is open, showing five categories: Publications, Research projects, Initiatives, Centres of expertise, and Test facilities. Each category has a representative icon and a placeholder text 'Sea dico expetendis no, est ea tempor sapientem lorem libris...'. Below the modal, a table lists records with columns for Title, Type, Author, Category, Year, and Keywords.

Title	Type	Author	Category	Year	Keywords
Title text of Research projects...	Online	Leticia Bacon	Strategic Initiatives	2011	Online, e-book
Title text of Centres of expertise...	Resource	Terry Garza	Human Resource	2011	Resource
Title text of Test facilities...	Annual report	John Bolton	R & D	2010	Annual report
Title text of Data sources...	online	Maria Santiago	Finicial Business	2009	online
Title text of Centres of expertise...	Newspaper	Alvin Taylor	Campaian organiser	2007	Newspaper, magazine

# SPARK - a place for interacting



## Comments for this record

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Rating (0-5)



## Discussion themes

- **Research idea** – I am thinking about doing research into this ...
- **Issue/opportunity** – I am looking for solutions to tackle ...
- **Funding** – I am looking for a funding mechanism ...
- **Collaboration** – I am looking for partners for ...
- **News stories** – Have you heard ... ?

- **Leverage** funding - maximise value
- New association for collaboration in research with **UK Universities – RRUk-A**
- Industry **grant scheme** brings direct industry participation
- Improved **business cases** for all research undertaken
- Knowledge search/work with partners to **solve problems without research**
- Synergy with all other RSSB activities – technical expertise, risk model, standards etc
- Relationships with GB and overseas railways and research bodies
- International profile and reputation
  - Member of the International Rail Research Board (IRRB)
  - Organising committee - World Congress of Railway Research
  - Links with Asia (eg Japan (RTRI, JR Co's), Australia (CRC, AAR), North America (TTCI, AAR, TRB, FRA)
  - UIC Research Coordination Group

# RSSB - whole system, whole solution

