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Strategy Route Mapping

Background

Route-mapping (also known as road mapping) is a graphical approach to strategic planning that enables product and business strategies, and technical innovation strategies to be aligned with each other and to be mutually supportive.

Route-mapping approaches are now widely used at company, sector and national levels to align research investments and other strategic actions with wider goals and policy.

The process has helped the UK rail industry bring into focus the key technology areas that will support it meeting increased customer needs and expectations in a sustainable way, accomodating more passengers and freight, while cutting cost and carbon. This includes:

▶ showing the linkages and dependencies between policy, programmes, research and technological development

▶ influencing the wider strategic direction of the rail industry,

identifying the contributions that technology could make to that direction and the goals, as well as the limitations of those technologies

▶ identifying gaps where further action (including commissioning of research programmes) is needed to deliver the industry's Rail Technical Strategy, and to evaluate alternative scenarios.

The Challenge

The rail industry is facing massive pressures currently, with the need to drive down costs, play its part in addressing global warming, unlock further capacity and support a more demanding and aging customer base. Industry sought to update its technical strategy so that it looked across the whole rail system, identified strategic technology opportunities, set them in context with current and planned activity in the industry and plotted a route to market for technical innovation.

How We Can Help

RSSB carried out a major project on behalf of the Technical Strategy Leadership Group to produce a route-mapping study for the industry, with the aim to develop a cross-industry collective view of rail technology in Great Britain. Sixteen route maps were developed and endorsed by TSLG which used them to focus its attention on those areas that presented themselves as being of strategic importance and to develop remits for further work.

These early route maps were then developed and refined to reflect the technical direction in each of the themes of the updated Rail Technical Strategy published in 2012. The exercise enabled the rail industry to make decisions grounded in evidence on how it applies technology to future requirements, avoiding substantial unnecessary costs which would otherwise be incurred without the knowledge.

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Key Outputs

The long-term vision for the UK rail industry and the route maps showing the technical direction for relevant themes and concepts are published in the Rail Technical Strategy. The route maps continue to be used by industry as a reference point, and the process is also being used specifically to map innovation capability.

Carbon, Emissions and the Environment

The railway is correctly perceived as an environmentally-efficient form of transport, but the need to keep ahead of competitors and make a significant contribution to wider environmental targets puts pressure on the railway to substantially improve its energy efficiency and overall environmental footprint. Short-term measures to reduce carbon emissions, such as intelligent control of lighting, reduced idling, and driver training, under the control of individual operators, can deliver substantial benefits. Further substantial improvement can be

delivered by initiatives using not only currently-available technologies such as energy metering, regenerative braking and lighter trains, but also emerging technologies, such as hybrid drives and predictive control of train movement linked to driver advisory speeds.

Cost Efficiency

Efficiency improvement will continue to be the major driver for cost reduction, particularly in the infrastructure area, but technological and operational change is expected to make an increasing contribution. Designing for reduced maintenance through appropriate differentiation of standards and solutions for the varying needs of different railway sectors will be key.

Solutions will need to be driven by whole-life, whole-system cost, but with affordability constraints and innovative funding mechanisms built into implementation planning, as is already being done for the European Rail Traffic Management System (ERTMS).

Customer Expectations & Capacity

Customer needs and expectations will change substantially the next three decades. Consequently, rail will need to deliver higher levels of reliability, comfort, accessibility and information. This will be a particular challenge in the context of increasing demand. Additional train capacity and better service performance will be key and the coherent use of technology to deliver information on train status and loading in real time will not only improve utilisation, but also offer seamless planning as well as accurate information on availability of freight and passenger services and seating capacity.

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