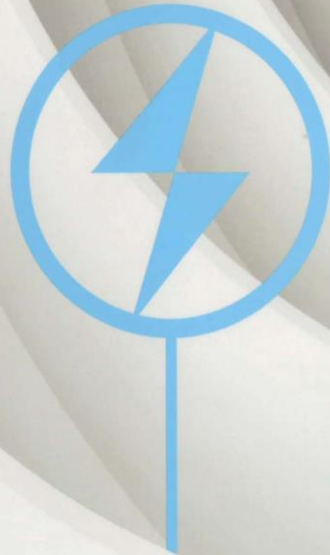


RTS TSLG



# THE **FUTURE** RAILWAY

THE INDUSTRY'S RAIL TECHNICAL STRATEGY **2012**  
SUPPORTING RAILWAY BUSINESS



# An apology from Steve



# THE RAIL TECHNICAL STRATEGY 2012 IS PRODUCED BY THE TECHNICAL STRATEGY LEADERSHIP GROUP (TSLG) FOR, AND ON BEHALF OF, THE RAIL INDUSTRY IN GREAT BRITAIN.

TSLG is an RSSB-facilitated cross-industry expert body made up of senior executive staff, charged with developing and championing implementation of the Rail Technical Strategy, supporting communication, managing strategic research, identifying opportunities, barriers and actions.

TSLG engages with the Rail Delivery Group (which endorses this strategy) and with other industry groups with a leadership role including the Planning Oversight Group and National Task Force. TSLG's remit and terms of reference are agreed by the Board of RSSB.

TSLG members



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**Bill Reeve**

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**Bill Reeve**

# 2040: A transformed railway

**Britain's railway sets the benchmark for service quality, customer satisfaction and value for money by being safe, reliable and resilient, meeting capacity and service requirements and contributing to the growth of the economy.**



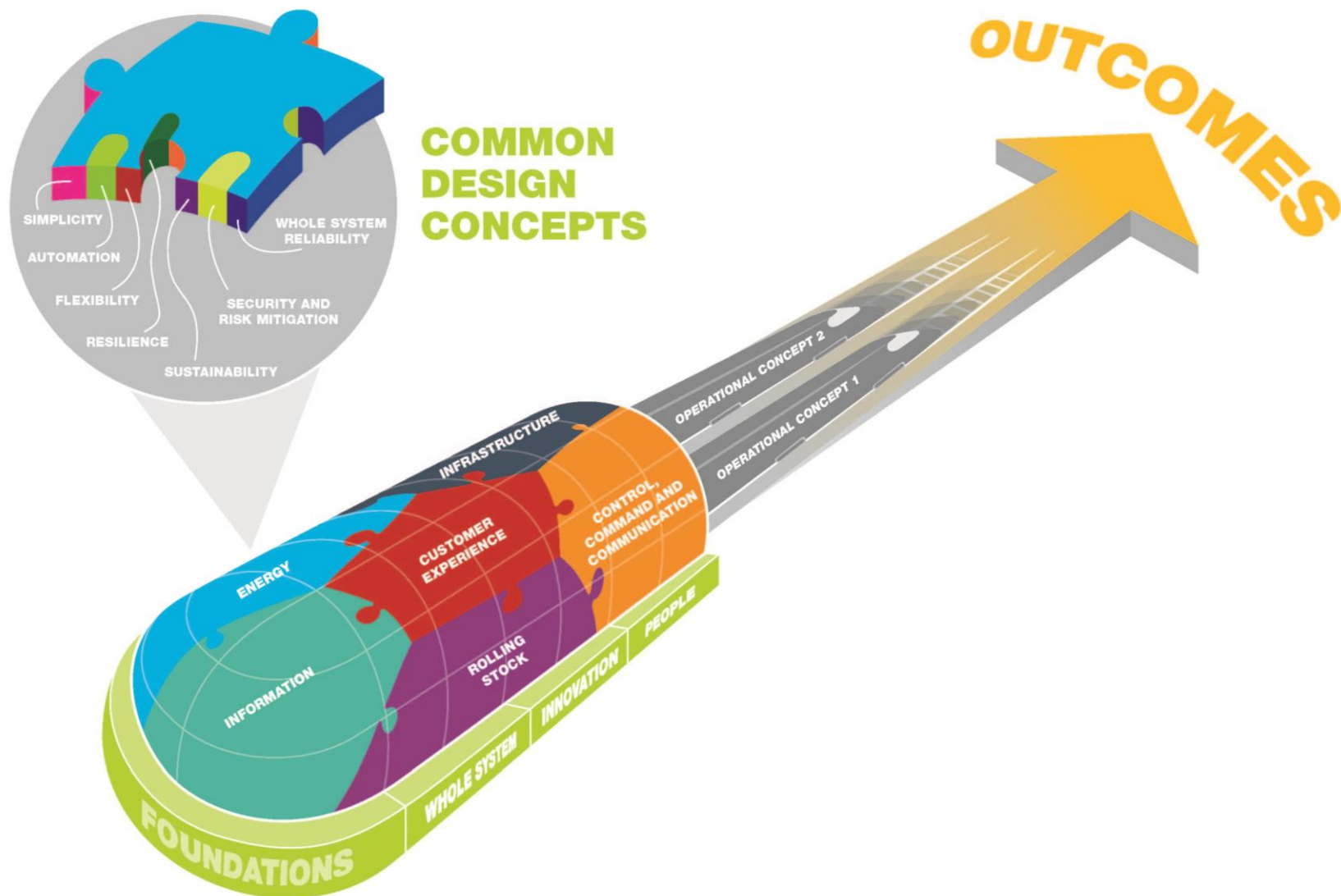
**6 Themes**

**3 Common foundations**

**7 Common design concepts**

**Brought together in a vision of the railway in 2040**

**To deliver the industry's 4Cs**





# Six themes

**Control, command and communication**

**Energy**

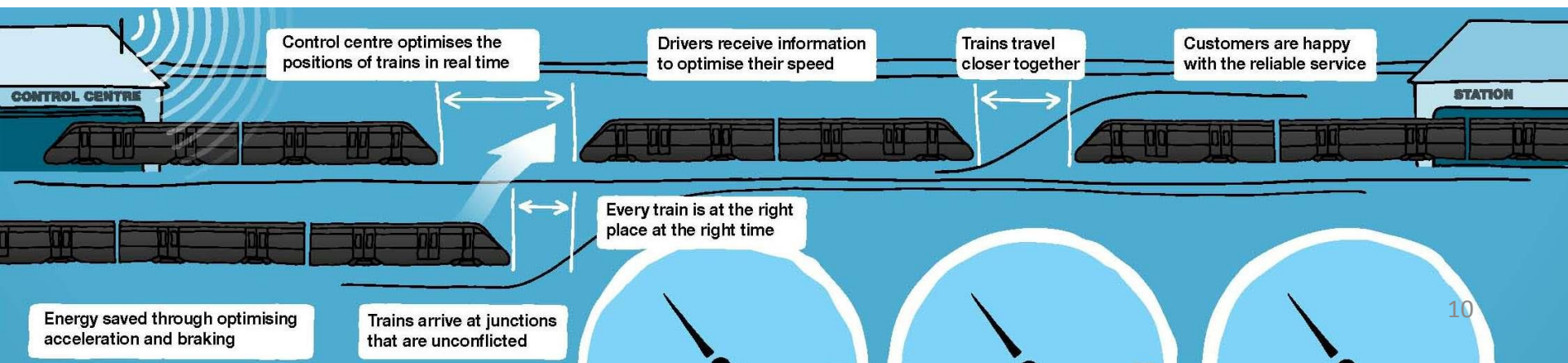
**Infrastructure**

**Rolling stock**

**Information**

**Customer experience**

# Intelligent traffic management and control systems dynamically optimise network capacity and facilitate highly efficient movement of passengers and freight



# Control, command and communication strategy

**Driver advisory systems**

**Centralised network control**

**ERTMS in-cab signalling**

**Intelligent traffic management systems**

**Automatic driver operations**

# Control, command and communication route map

**DAS**

**Algorithms**

**ERTMS**

**4G/LTE**

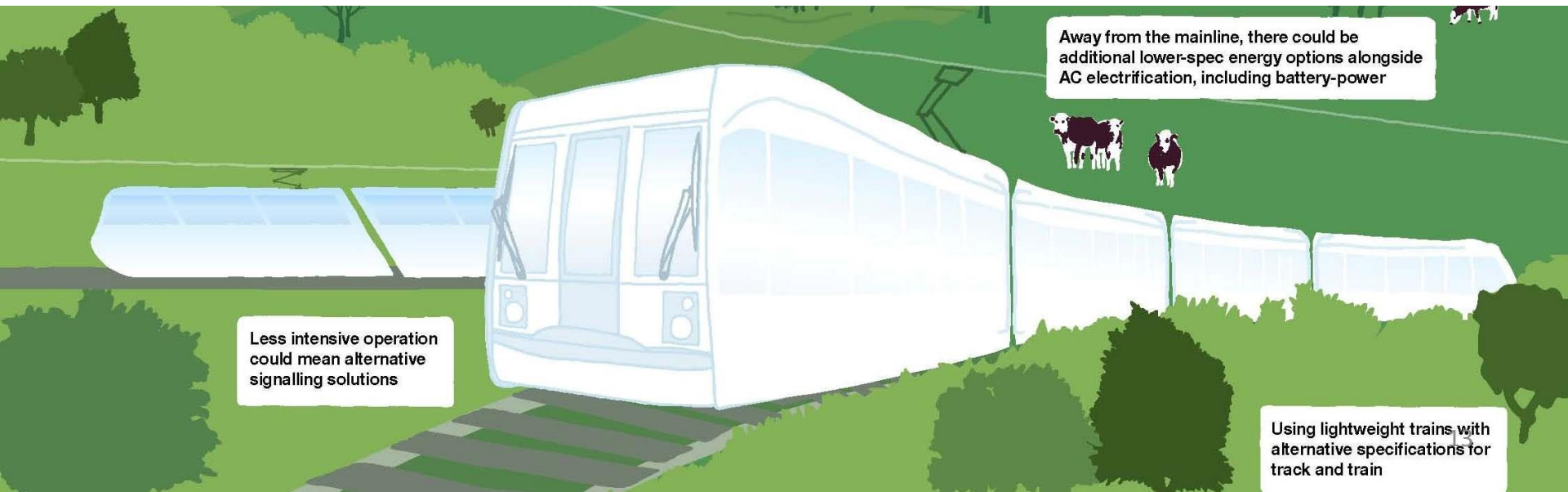
**FuTRO**

**Network capacity**

**Traffic management**

**Train location technologies**

## A low carbon, energy-efficient railway



Away from the mainline, there could be additional lower-spec energy options alongside AC electrification, including battery-power

Less intensive operation could mean alternative signalling solutions

Using lightweight trains with alternative specifications for track and train



**More 25kV electrification**

**Energy-efficient specifications**

**Intelligent traffic management**

**Smart grid technologies**

**Low carbon materials**



**Electrification cost reduction**

**Energy reduction opportunities**

**Rolling stock design**

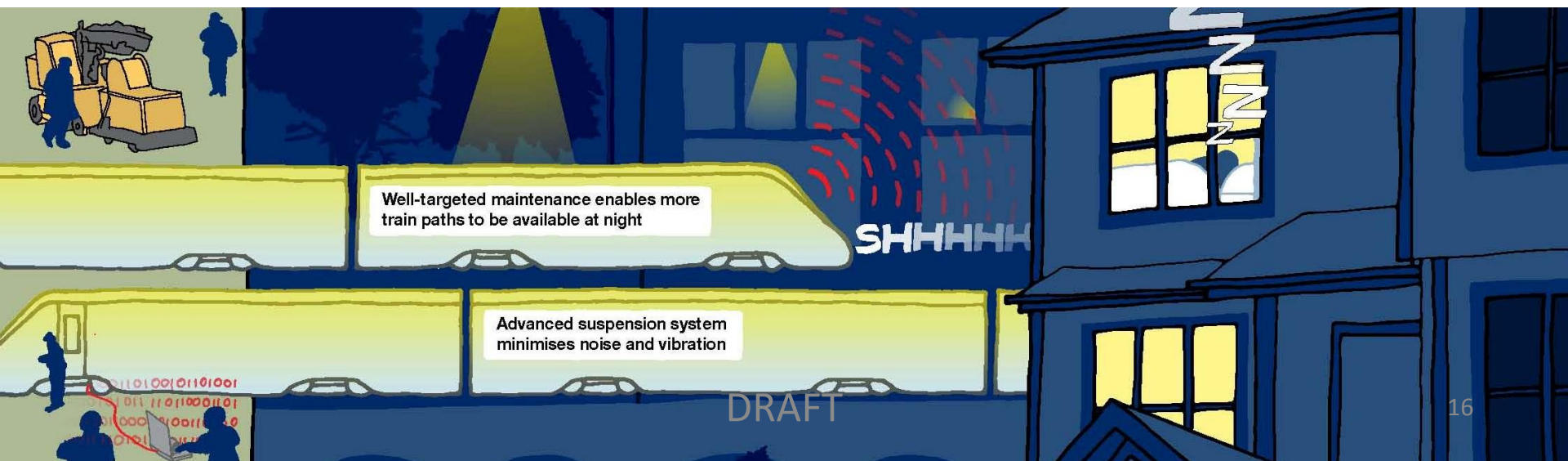
**Technology watch**

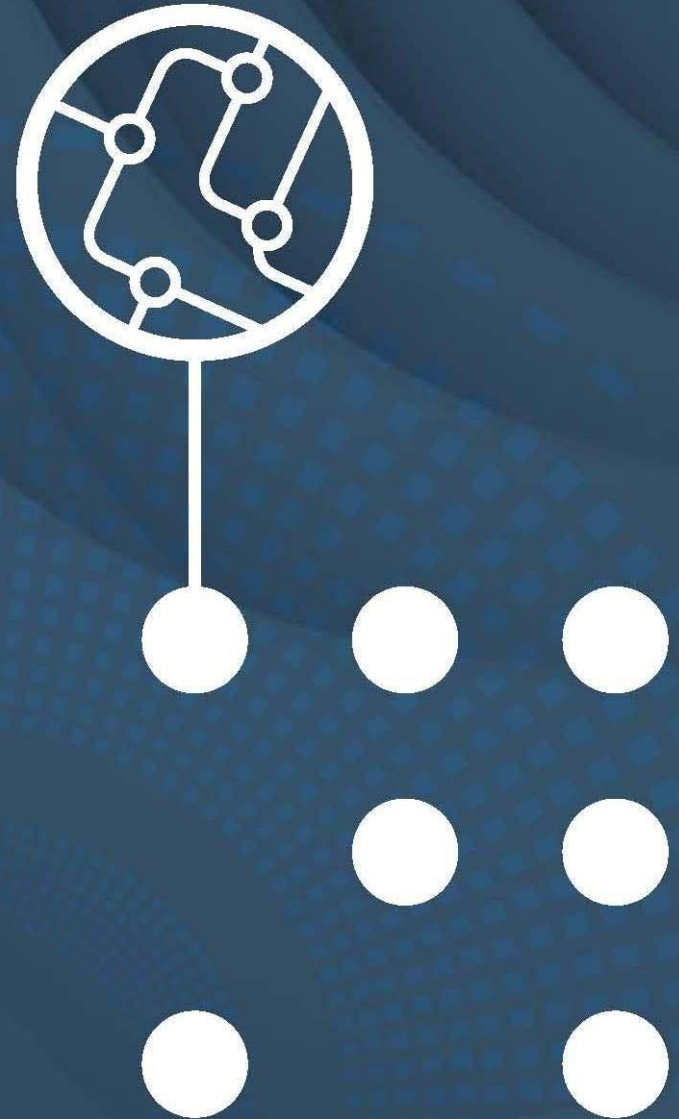
**Timetabling**

**Sensors**

**Technologies for storage, generation  
and harvesting**

**A simple, reliable and cost-effective rail infrastructure which meets customer requirements and is fit for the 22nd century**



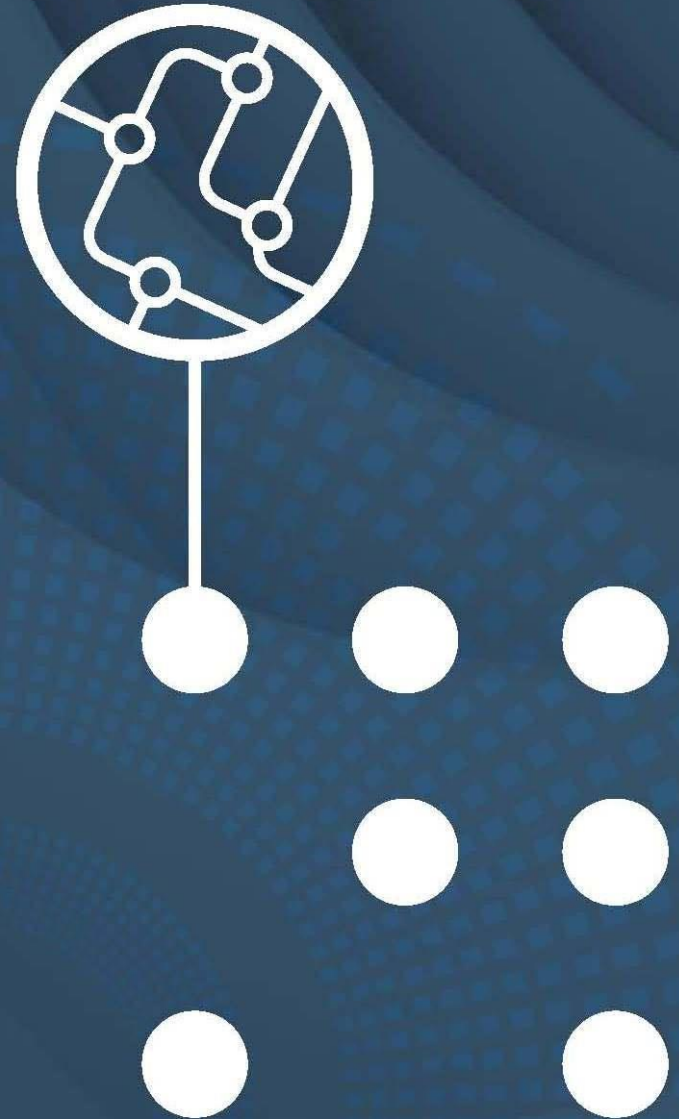


**World-class asset management**

**Future-proofing strategies**

**Embedded sustainable development**

**Cost-saving generic designs**



**Whole-system reliability programme**

**Intelligent infrastructure**

**RCM**

**4Cs long-term requirements**

**Shift2Rail JTI**

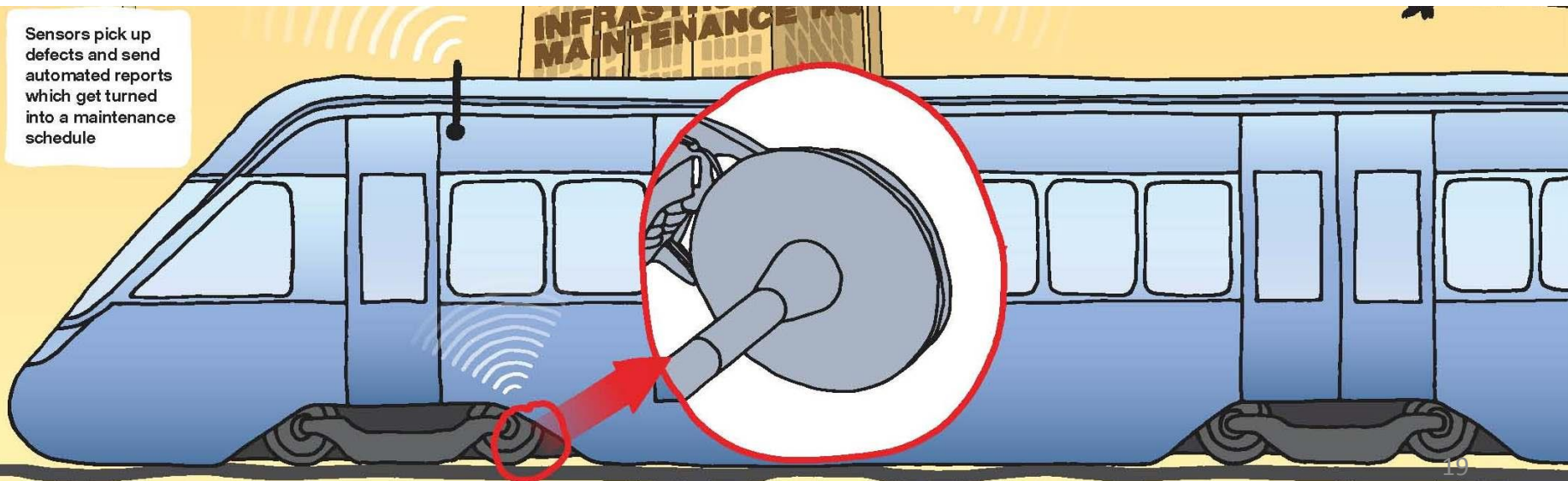
**Asset design**

**Station capacity**

**R&D for low carbon infrastructure**

**Mass- and energy-efficient, low  
whole-life cost rolling stock meets  
the evolving needs of its customers**

Sensors pick up defects and send automated reports which get turned into a maintenance schedule







**New technologies for cost and operational improvements**

**Alternative traction power sources**

**Standard architectures for sub-systems**

**Operational capabilities of freight**





**Shift2Rail JTI**

**Technology watch**

**RCM**

**DRACAS**

**Mechatronic bogies**

**Drive systems**

**Traction**

**Right-mass design**

**Open standards**

**Information is a valued rail asset  
that improves customer services,  
reduces operating costs and  
generates revenue**

Automated maintenance  
is quicker, safer and  
more cost-effective





**Common information architectures  
and protocols**

**Cross-industry information flow model**

**Exploitation of rail information**



Data management strategy

Whole-system architecture

Storage

COTS

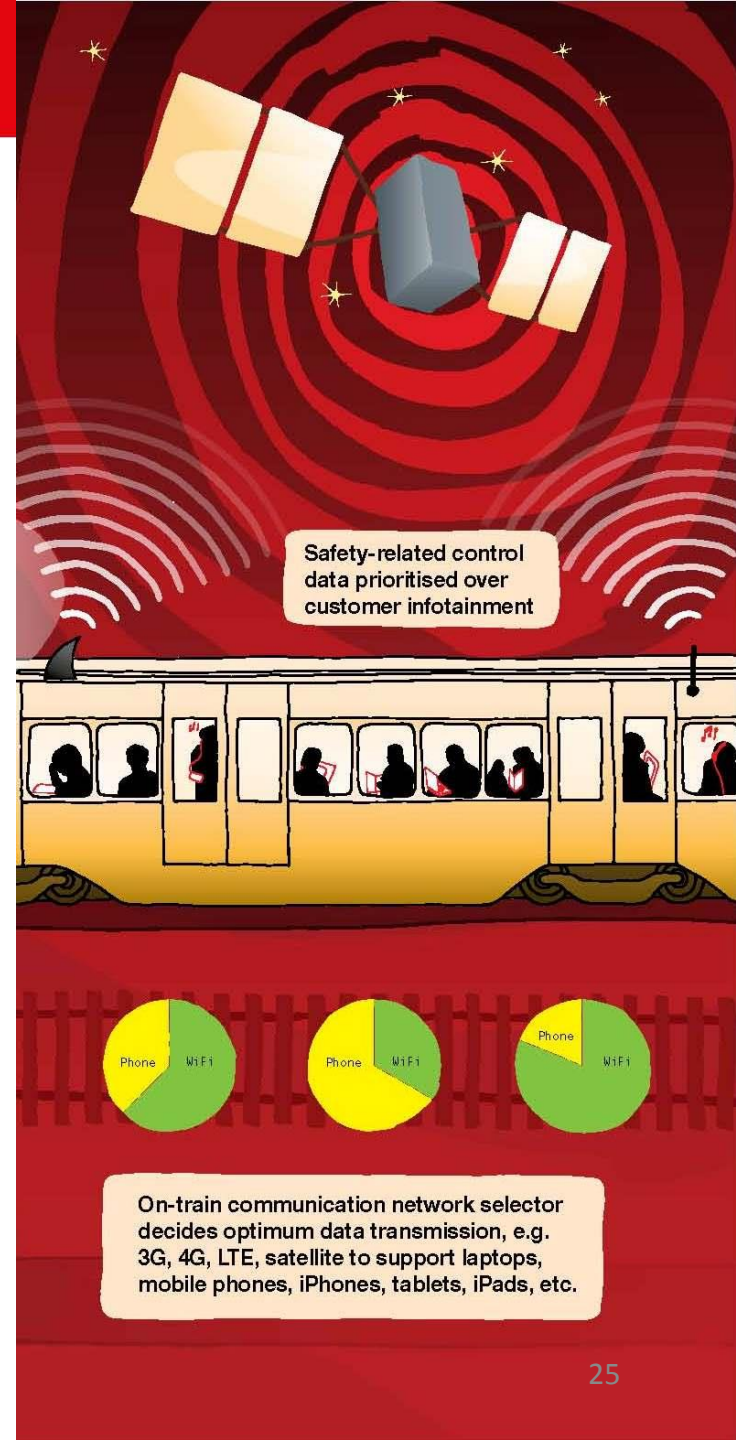
Security

Resilience

NISC

Innovation

**Rail is customers' preferred form of transport for reliability, ease of use, and perceived value**



# Customer experience strategy



**Door-to-door journey experience**

**Customer access**

**Health, safety and security risks**

**Information distribution**

**Integrated rail and freight customer information systems**





# **Customer experience route map**

**Strategic relationships**

**Transport hubs**

**PRM-compatible**

**Ticketing**

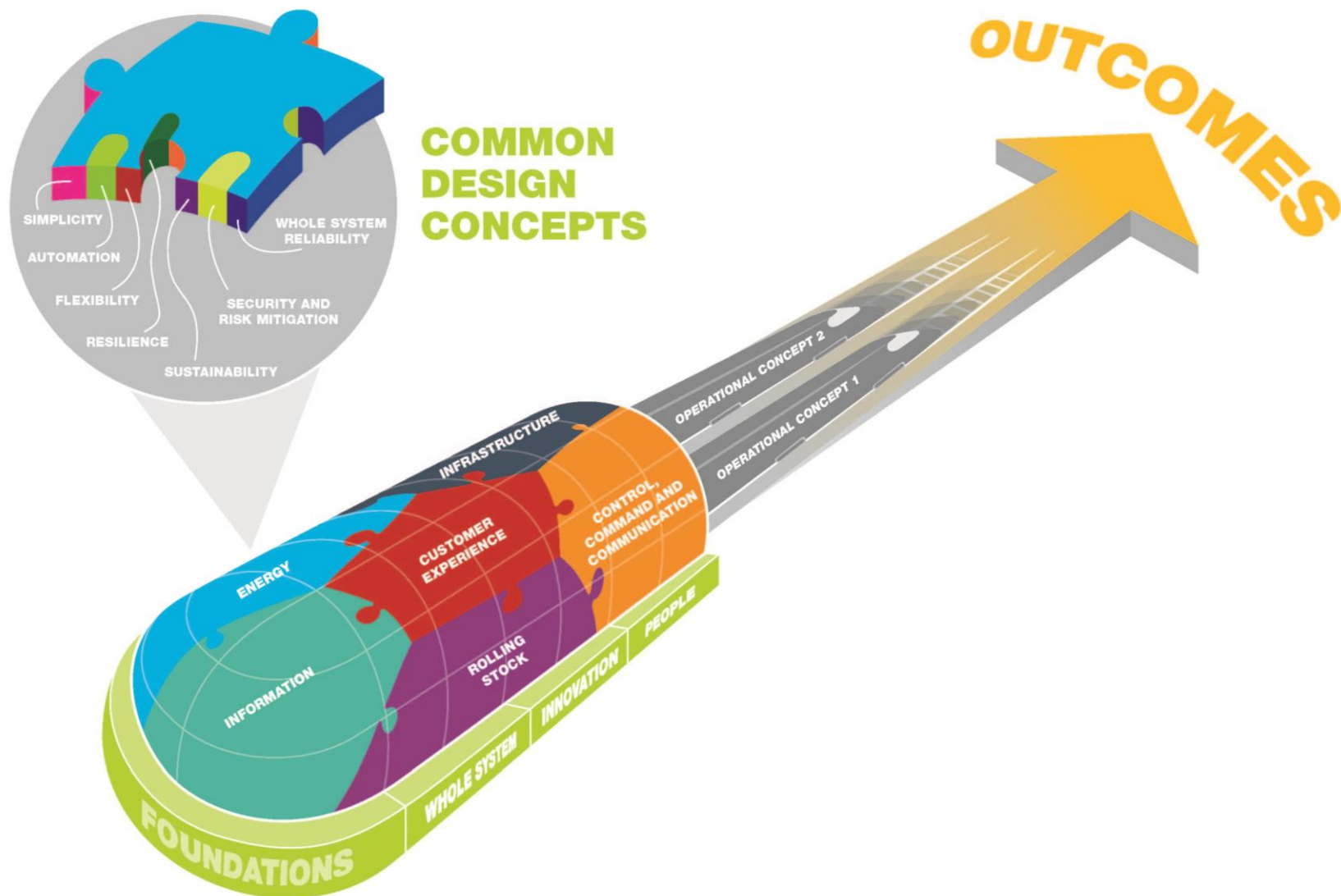
**Contactless technology**

**Safety and security**

**Anti-fraud technology**

**Personal communications**

**Apps for freight**



# Three common foundations

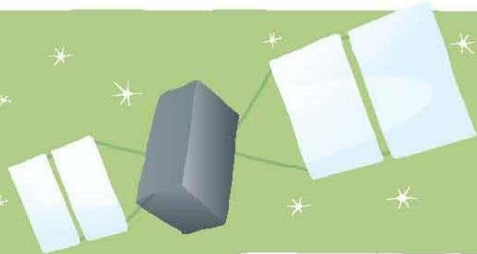
**Whole-system approach**

**Innovation**

**People**

...but the components will work well together, the system will be reliable and passenger needs fulfilled...

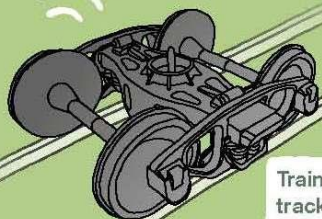
...subsystems will be 'tuned' to the wider system, assets last longer, maintenance cheaper, less downtime, safer and more reliable railway



Sensors send signal from the track and train to satellite



Pantographs and wires work in harmony



Train tuned to track, track tuned to train

# Whole-system approach



**A whole-system approach  
enables the rail industry to  
implement change easily and  
improve reliability,  
availability, maintainability  
and safety**

# Whole-system approach strategy

**An industry whole-system approach**

**Whole-system modelling capability  
and tools**

**Aligned asset management plans**

# Whole-system approach route map

**A holistic view**

**Knowledge exchange**

**Leadership**

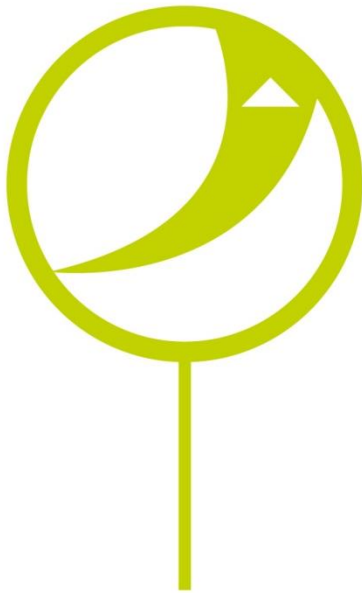
**ISO55000**

**Whole-system reliability**

**RCM**

**DRACAS**





**A dynamic industry that  
innovates to evolve, grow  
and attract the best  
entrepreneurial talent**

**Remove barriers**

**Innovation Capability Maturity Model  
Level 5**

**Commercial models for intellectual  
property**

**Support for innovators**

**Barriers**

**Commercial models**

**Transport Systems Catapult**

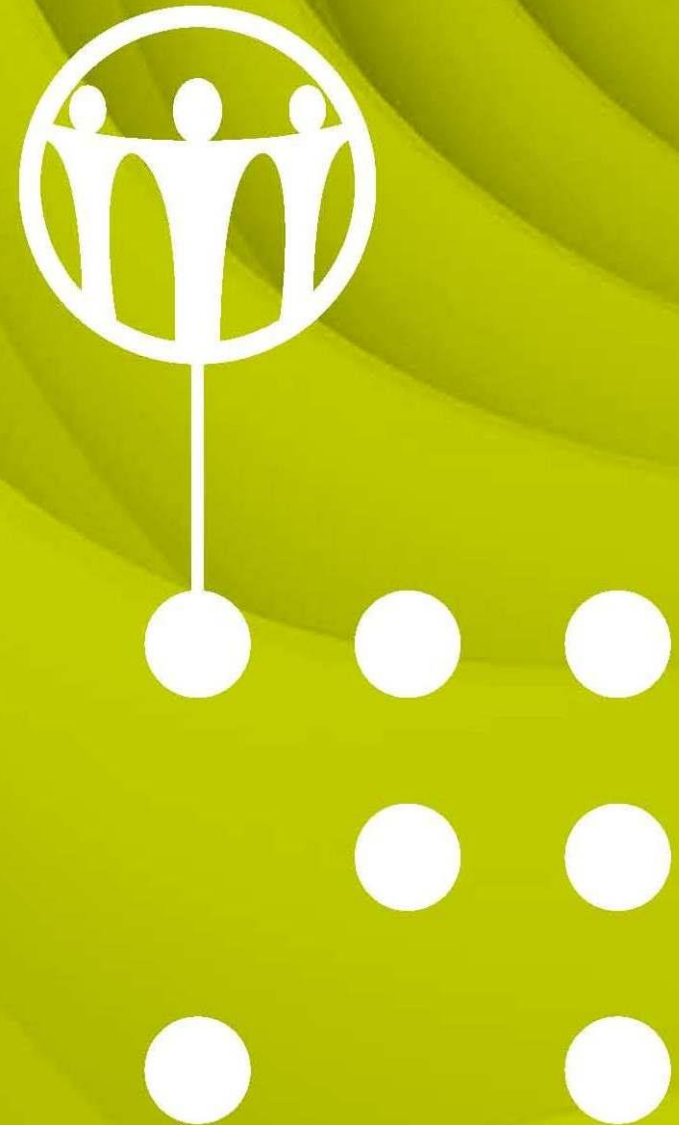
**ICMM**

**Facilities**

**Funding**



**Skilled, committed and  
adaptable people delivering  
an efficient and customer-  
focused railway**



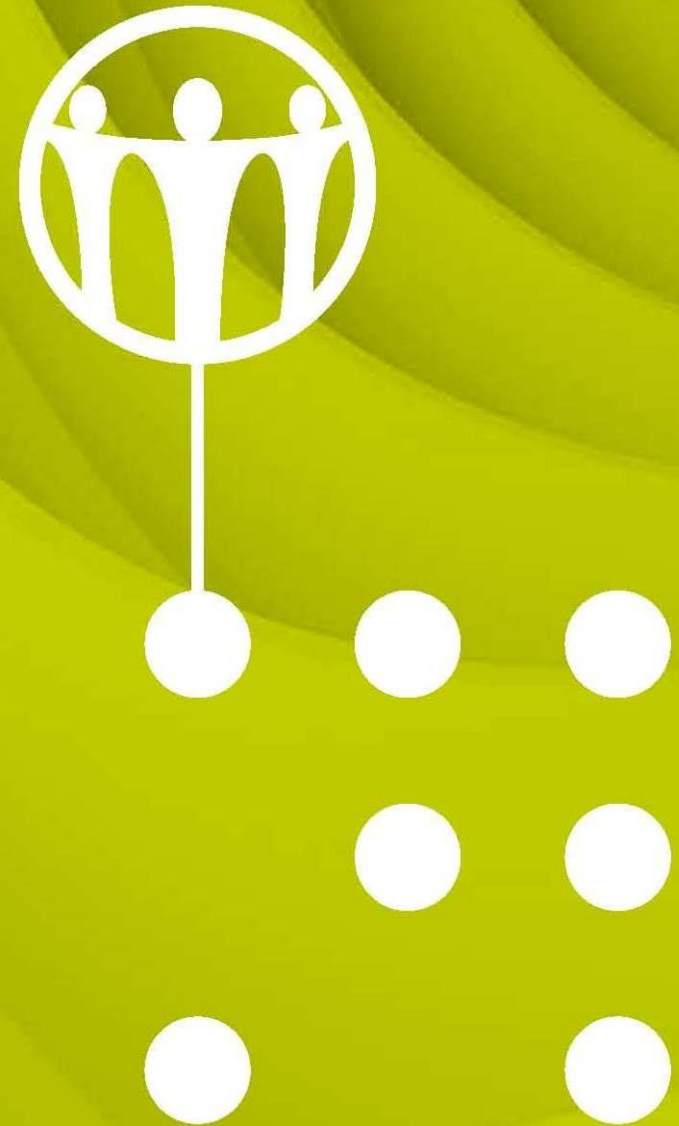
**Skills for the future railway**

**A common standard**

**Learning methods**

**Technology for people**

**Automated repetitive tasks**



**Graduate courses**

**Partnerships**

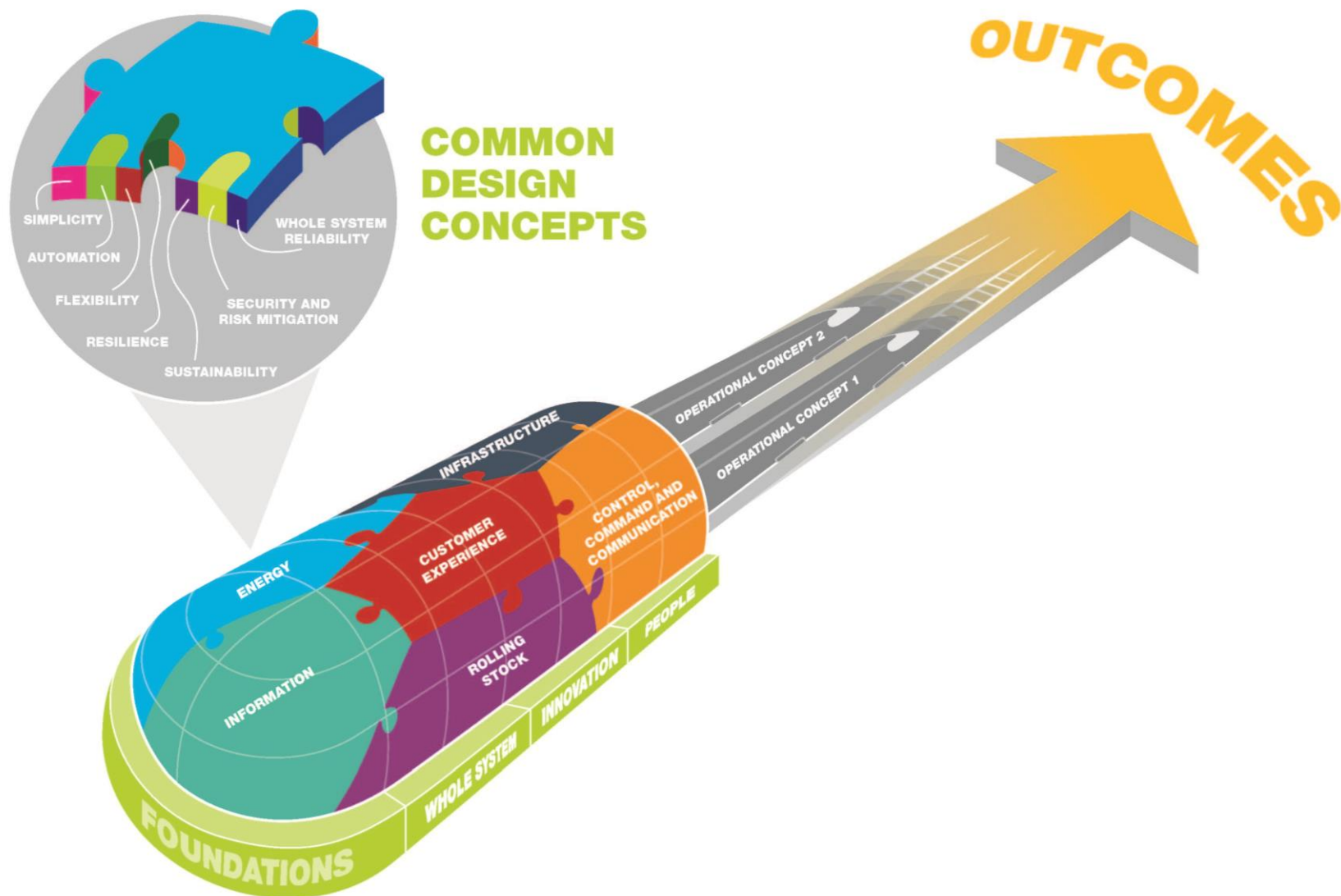
**NSARE**

**BS11000**

**Future operations**

**Tools**





# Seven common design concepts

**Whole-system reliability**

**Resilience**

**Security and risk mitigation**

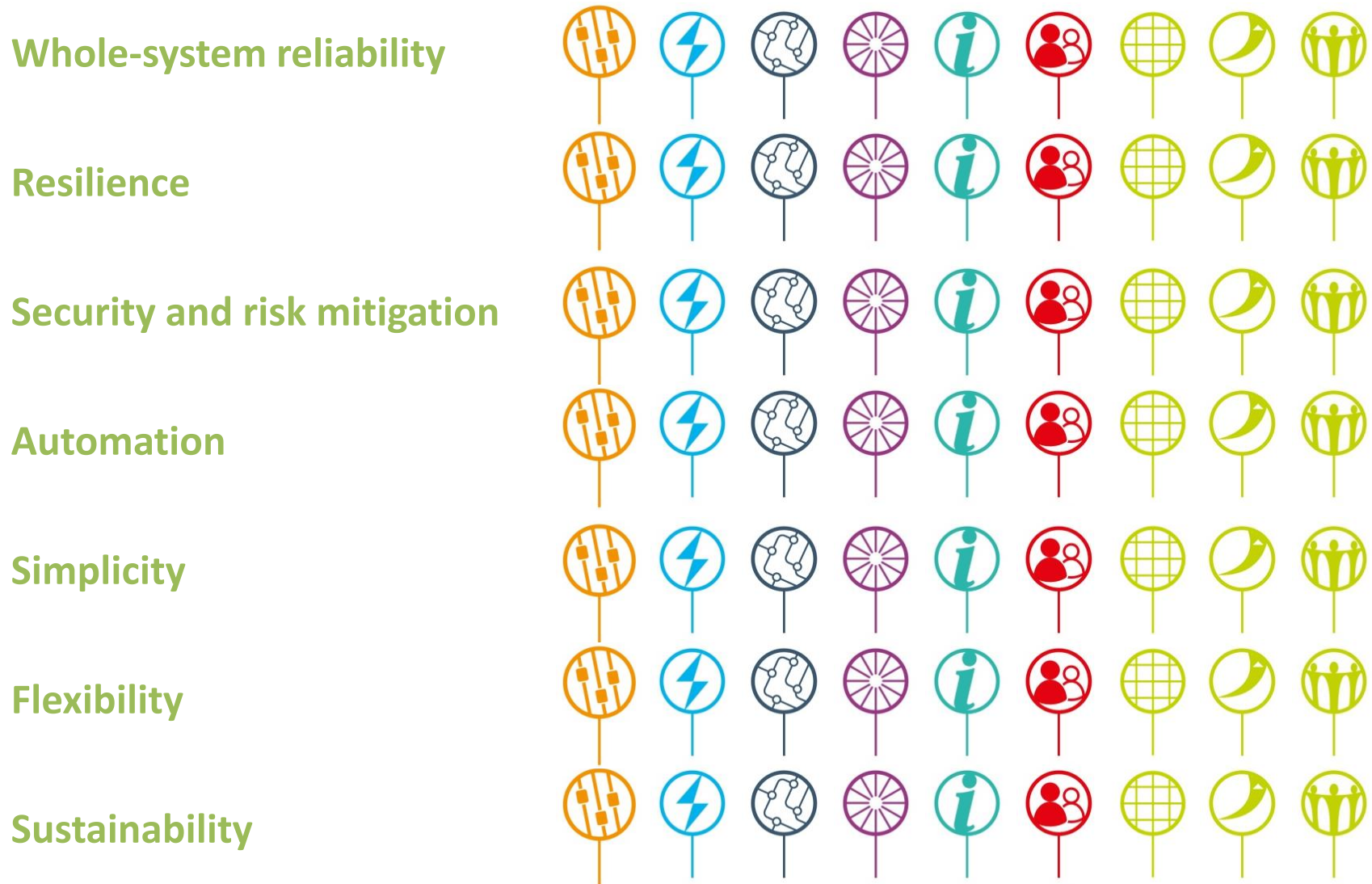
**Automation**

**Simplicity**

**Flexibility**

**Sustainability**

# Links with the strategies



# Links to RTS 2012 materials



PDF version:

<http://www.futurerailway.org/RTS/About/Pages/Download-the-RTS.aspx>

RTS 2012 web version:

<http://www.futurerailway.org/RTS/Pages/Intro.aspx>

Video and animation:

<http://www.futurerailway.org/RTS/Vision/Pages/On-Video.aspx>

<http://www.youtube.com/user/TheFutureRailway>

**Questions?**

**Thank you!**

**Contact: James Hardy**  
**[james.hardy@rssb.co.uk](mailto:james.hardy@rssb.co.uk)**

**[www.futurerailway.org/RTS](http://www.futurerailway.org/RTS)**