

UIC Railway Asset Management Global Conference 2019

17 - 19 APRIL 2019
UIC HEADQUARTERS, PARIS

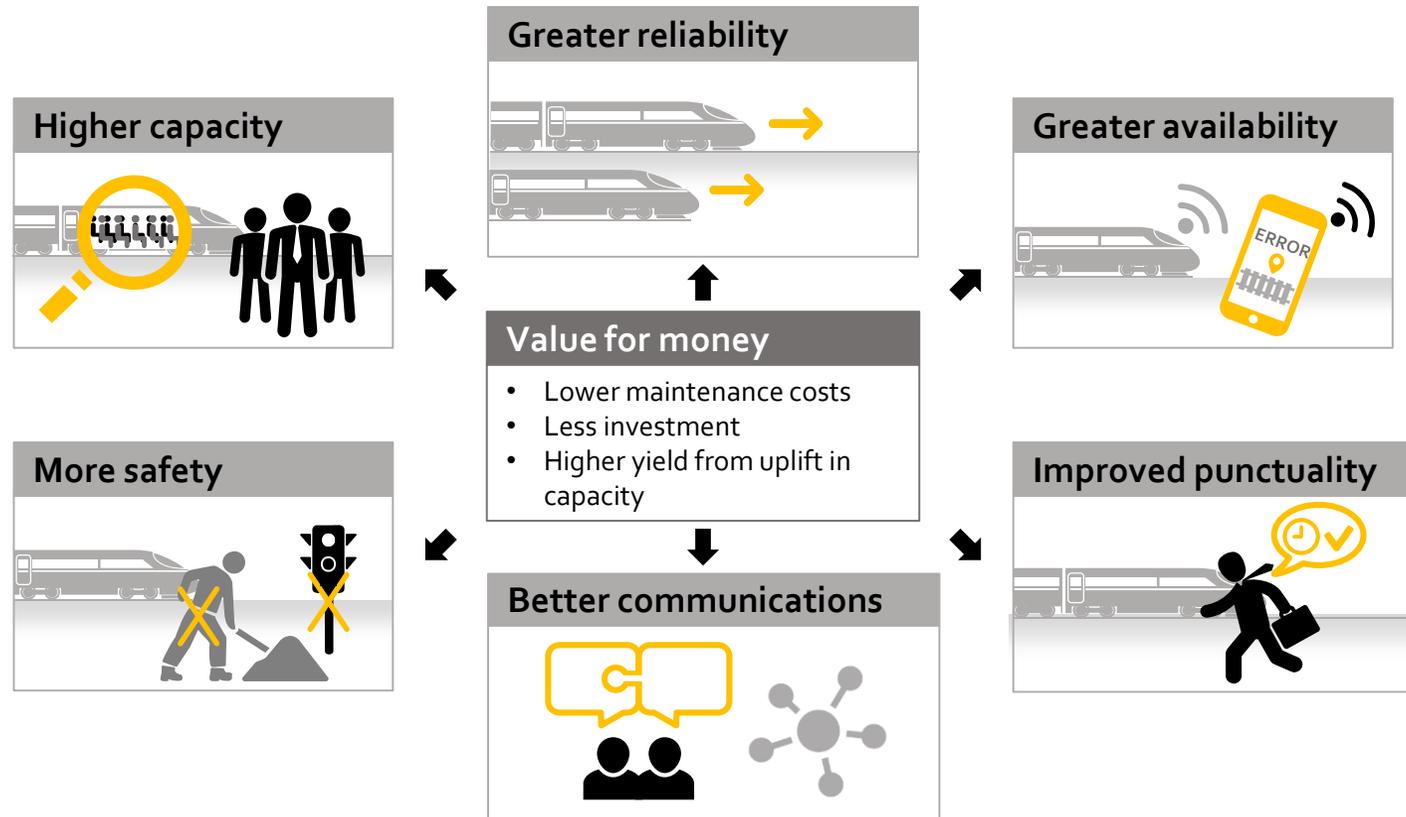
Big Data Strategies - how can railways organise to maximise benefit

Presentation
Paris, 18 March 2019

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Caroline Lowe (Network Rail)*

A smarter railway system provides the opportunity to deliver higher performance at lower cost

Benefits from big data and digitalisation



This presentation draws on the findings of two benchmarking studies carried out by civity with Network Rail in 2018

Context

Big Data study

- Aim was to understand if current approach and future plans are in line with **good practice** in other organisations and support set up for the **effective and productive use of (big) data**

Whole System Modelling

- Purpose was to understand how rail companies and organisations from different industry sectors undertake their **modelling & simulation** and to **identify best practices**

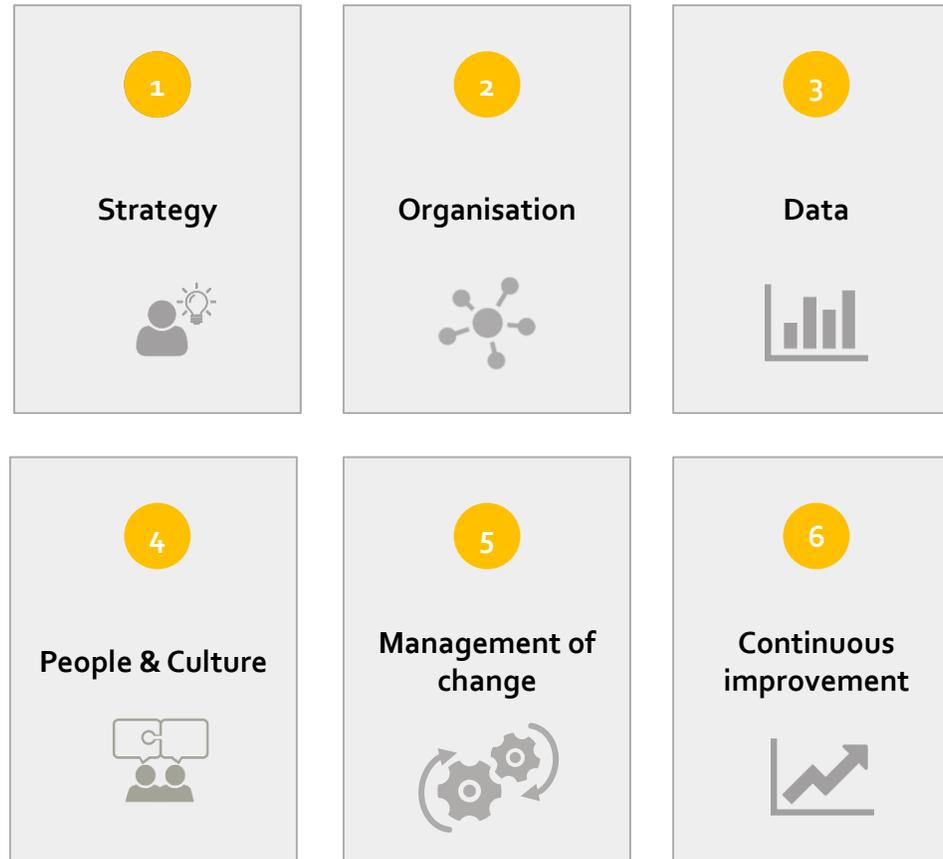
The two studies comprised eleven participants, from eight countries and six industry sectors across Europe

Context



Based on the findings of the studies, we have focused this presentation on six key themes

Key themes



A holistic strategy for big data, analytics and modelling is required, which still leaves room for innovation

Findings - Strategy



Conclusions

- **Holistic strategy** for (big) data, analytics and modelling
- Framework should **allow for innovation** according to business needs
- Contribute to **business need** and overall strategy
- **Communicate** the **value** and necessity of an effective data strategy

Network Rail has a major programme using data to improve understanding and management of its assets

Network Rail - Strategy

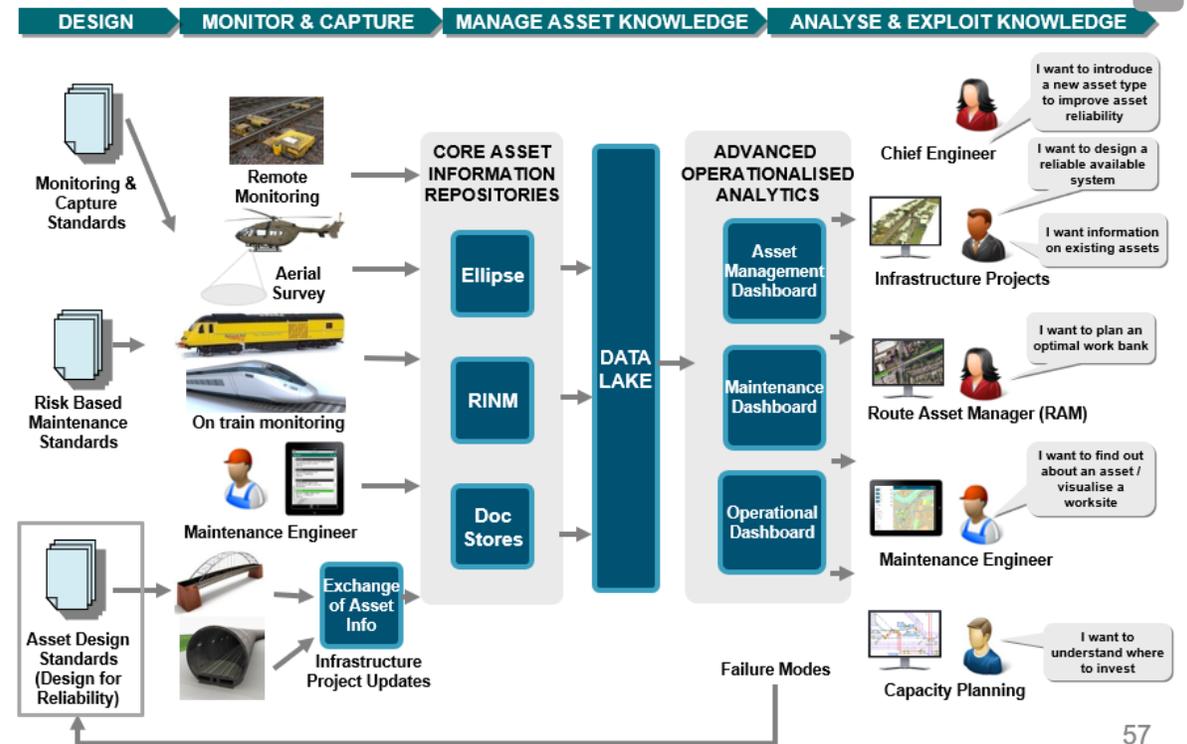
Safety, Technical and Engineering
Health & Safety Finance | Engineering Business Management | Environment & Sustainable Development Risk, Analysis & Assurance

Analysis Improvement Strategy 2017-2020
June 2017

Knowledge, Information and Data Strategy
Title: Knowledge, Information and Data Strategy
Version N°: 2.0
Status: Released
Author: Phani Chinchapatnam, Enterprise Information Architect
Owner: Apurva Sinha, Head of Innovation and Information Management
Network Rail Security Classification: Official
Data Protection Impact: Low
Date created: 05/2018
Last Amendment Date: 04 December 2018

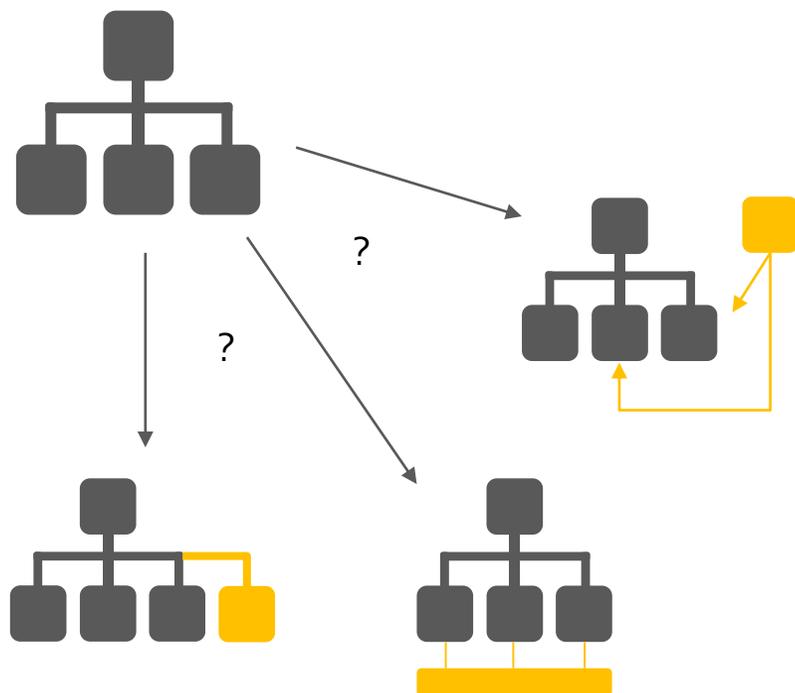
Position Paper
BIG DATA
Author: Emon Khan, Enterprise Architect
Version: 1.0
Approval: IT Architecture Review Board (ARB)
Publication: 28/03/2018
Document classification: Network Rail Internal
Issued by: Chief Information Technology Office, Network Rail

Intelligent Infrastructure Programme Scope



Key question is around suitable structures to combine data driven culture with traditional needs

Findings - Organisation

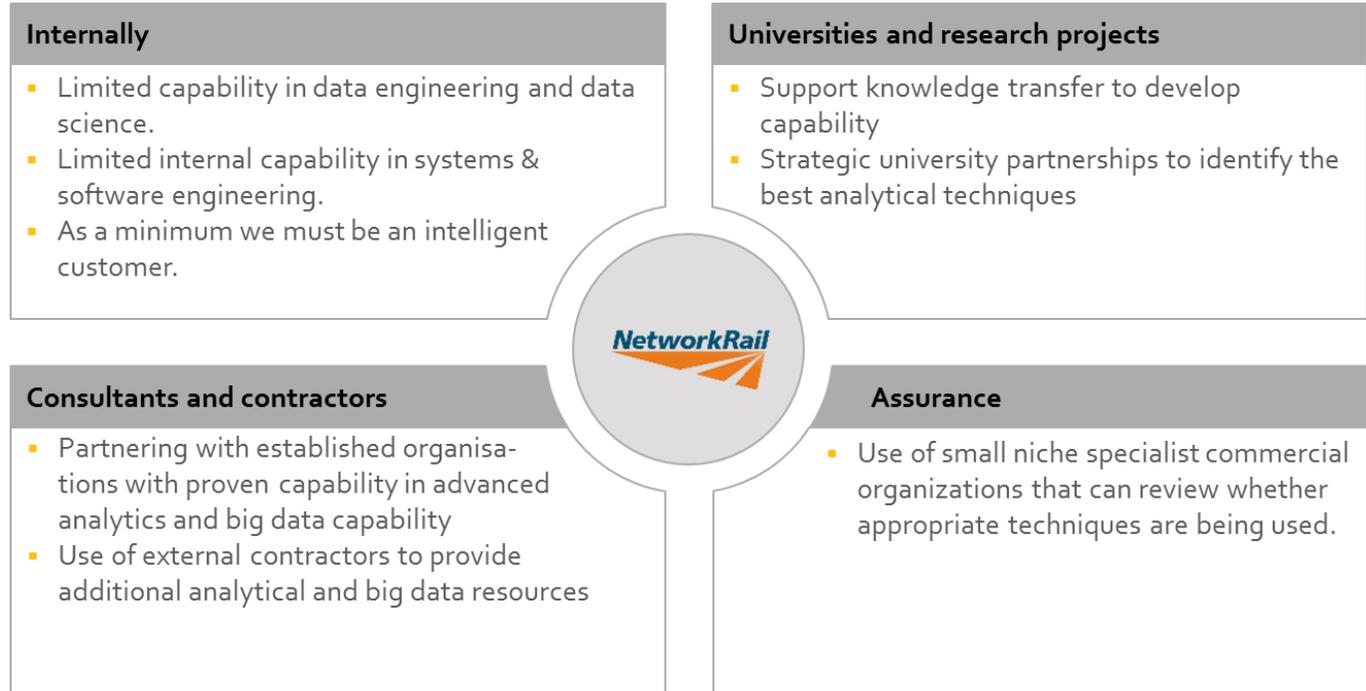


Conclusions

- Combine dynamic data driven culture with traditional needs
- Possible models:
 - using integrated teams
 - internal separate “start-up” like business units
 - partnering with external organisations



Network Rail is collaborating with a mix of start-ups, academia and big IT companies



Good data governance is needed in order to use big data efficiently

Findings – Data

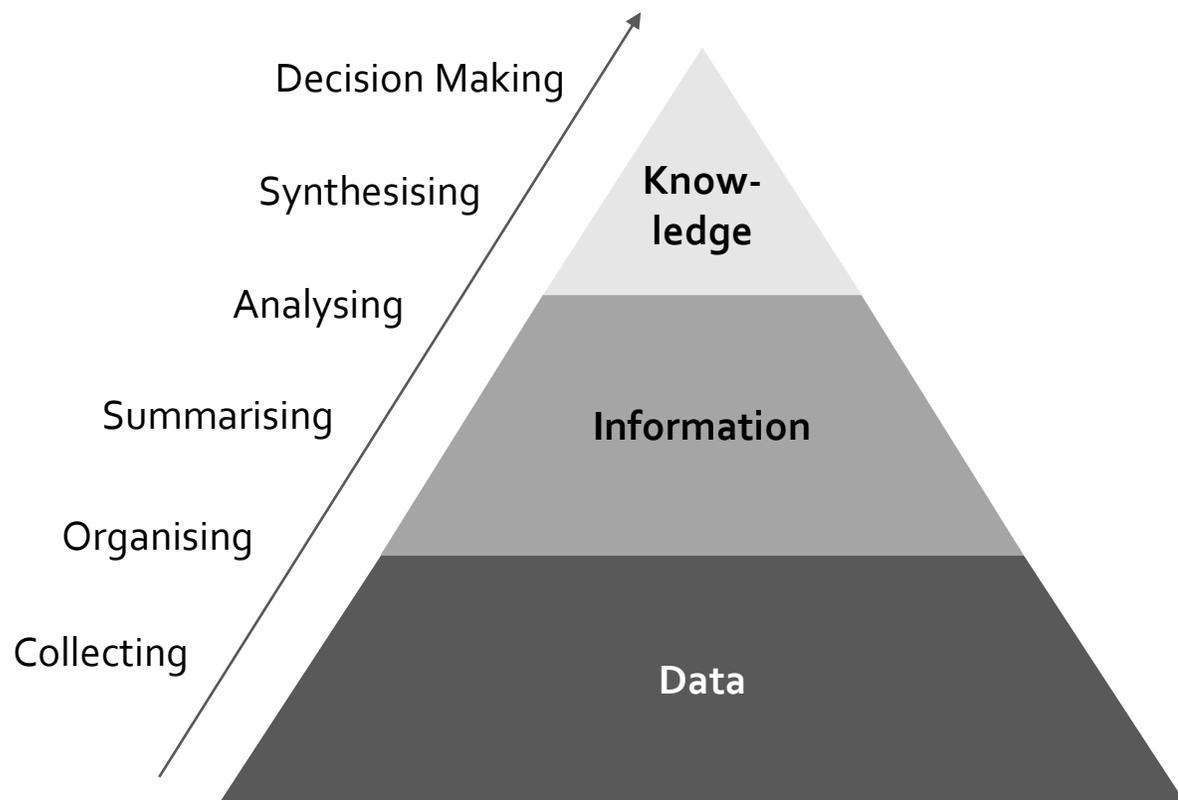


Conclusions

- Company wide data governance framework describing the overall management of
 - availability, usability, integrity and security of data
- Dedicated team for overall data management
- Effective use of data
Key question: What comes first – data or analytical need?



Network Rail – Data

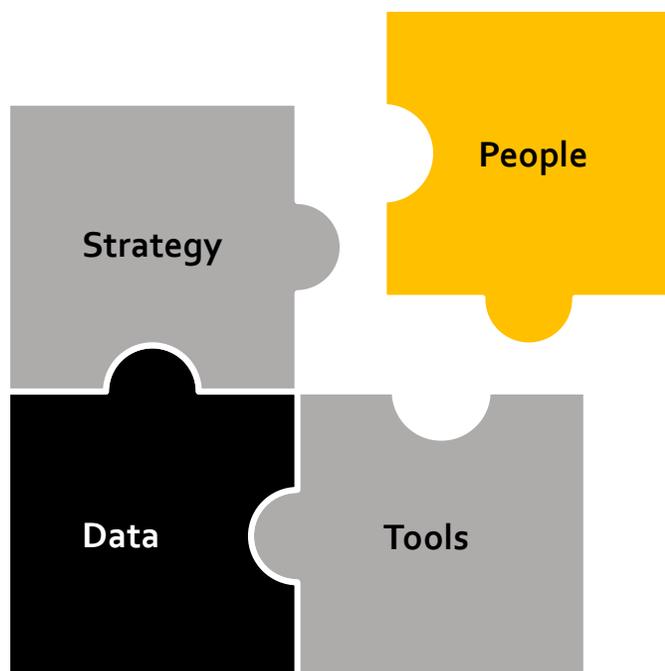


Relationship between data information and knowledge

- IT function to provide Application Programmable Interfaces (APIs) that make data available to analysts
- Analysis moves from “Managed Service” to “Self-Service”
- IOT requires highly scalable “real-time” data distribution services

People are key when it comes to maximising the benefits from big data

Findings – People and culture



Conclusions

- People are key to the success of digitalisation
- Need to integrate new types of people and new skills into existing business and knowledge
- Ensure that leaders/guiding minds in their function as experts are approachable
- Foster internal exchange



Network Rail – People and culture



The **Big Data Dilemma** states

"No Digital Strategy will succeed without immediate action to tackle the crisis of our digital skills shortage...The digital skills gap is approaching crisis levels... and the wider set of 'Big Data' skills is not being strategically addressed. This risks UK business being unable to grow the Big Data sector at the pace it should".

- Leverage STEM networks & university partnerships to attract graduates in mathematics, science, computing & software.
- Cross-organisation structured competence framework.
- Retain talent through stretch assignments and secondment.
- "Analytics community" initiatives.
- Managed frameworks
- R&D challenge statements to access niche suppliers

Embrace change as a 'business as usual activity'

Findings – Management of change



Conclusions

- Business change is as much of a 'business as usual' activity as any other, plan and resource for it
- Establish a culture open for change
- Open-minded employees are needed at all levels
- Instigate internal and external exchange

We have identified six key conclusions which are essential to deliver benefit from the opportunities offered by big data

Conclusions

- Wholistic strategy for data, analytics and modelling
- Value and necessity of these should be communicated and understood



- Railways need to set up organisations that can take advantage of the opportunities and face the challenges that data offers



- Good data governance
- Effective use of data
- Ensure data is organised and made available as appropriate



- People are key
- Focus on bringing together traditional rail knowledge and new capabilities and skills



- A state of change is now 'business as usual'
- We need to organise, plan and resource for it

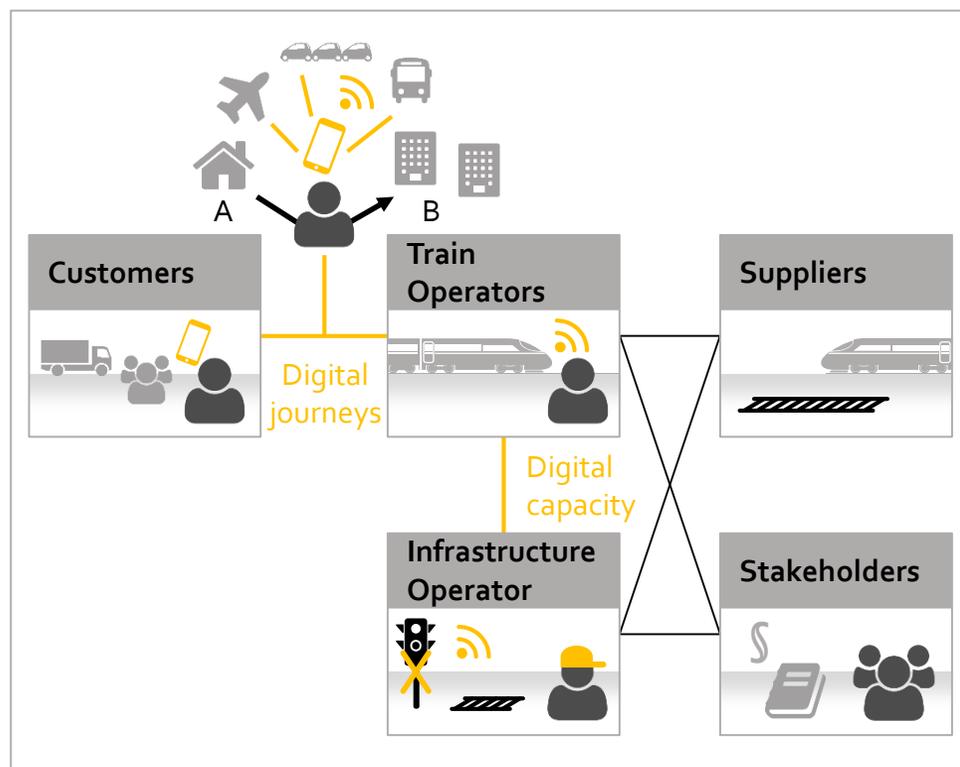


- We will only be successful if we work together as an industry
- And reach outside and learn from others



Big data requires and supports a coordinated approach within the whole railway industry

Working together



- Is there an opportunity to establish a platform to enable an open exchange about the future development of digitalisation, big data, modelling?
- Discuss challenges such as leadership, organisation, implementation and change
- Support the development of an agile data and digitalisation strategy

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