LIGHT RAIL
SUMMIT
2021
EDINBURGH

Presented by **UKTram** & **LRSSB** on Thursday 23rd September

UKTram
The voice of light rail

LRSSB
Light Rail Safety and Standards Board

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Welcome Back

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Managing Directors Update

Headlines from the past 18 months in the Pandemic:

- **Funding, Funding, Funding, Funding, and Funding**
- **Working together**
- **Collaboration**
- **Communication, communication, and more communication!**
- **Adaptability**

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2021-22 Key Deliverables

The key summary points from Q1 and Q2 to date are:
• All planned deliverables started as per Business Plan

Legend: Finished | Planned to be finished | Actual Started | Planned number to start | Total Number
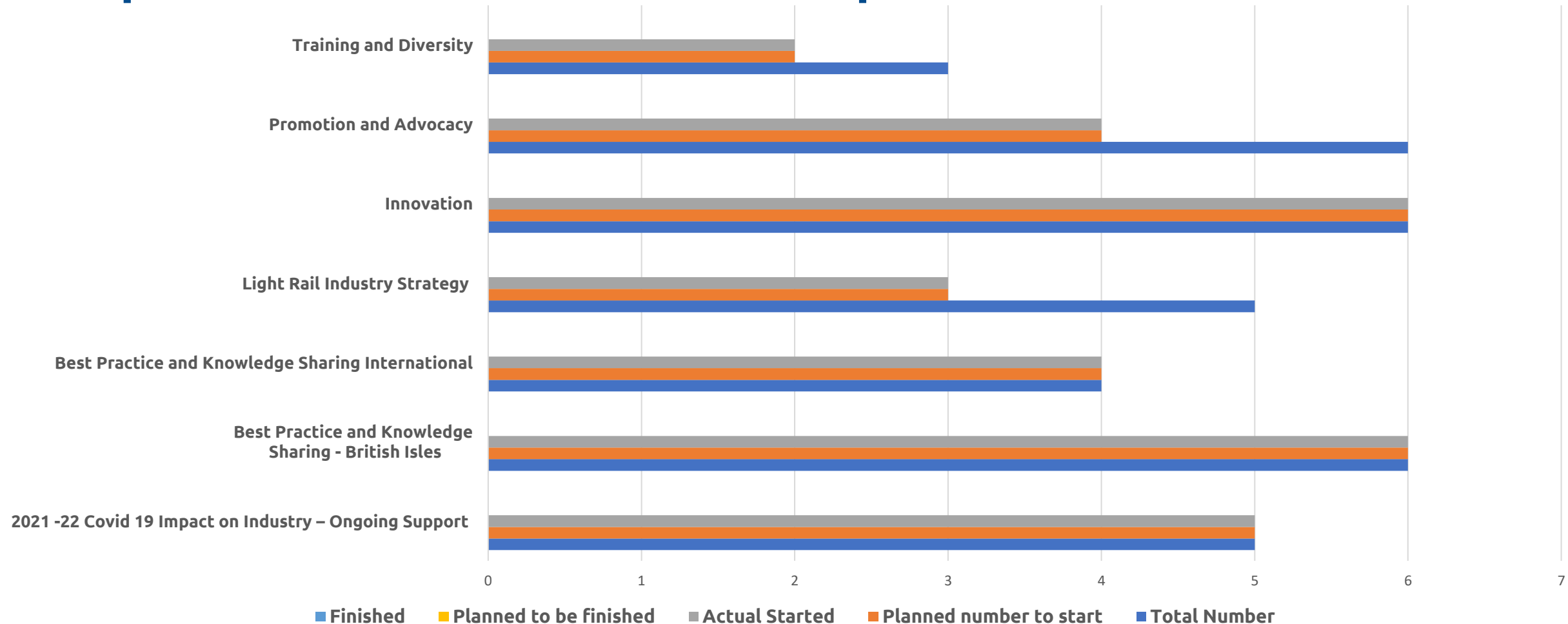
Deliverables Due for Completion Due in Q2

- **Light Rail Strategy**
- **Review and Rank Innovation**
- **Create 'Library' of new ideas and products**
- **More Industry Articles**
- **Publish Guidance Documents, to support 'Road Maps' and case studies for creation and expansion of Light Rail systems**
- **Continue to refresh and add to Information Pack on Implementing a LR Scheme with Promoter/ User guides**
- **Revise and update mapping the areas of greatest need for training, competency and diversity**

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Business Plan Deliverables Started in Q2

- **Sustainability**
- **Review and Rank Innovation**
- **Create 'Library' of new ideas and products**
- **Engagement Drive with Universities & companies on Innovation, R & D projects, and research**

2021-22 What Next?

Operational:

- **Business Plan Deliverables**
- **Carbon Footprint**
- **Trade Membership**
- **Chair Functional Group Update meetings**
- **System data**
- **Member Visits**
- **Brexit**
- **Innovation Funding**
- **Governance Manual**

2021-22 and Beyond, What Next?

Strategic:

- **ESTABLISH UKTRAM and LRSSB for the LONG TERM**
- **Long Term DfT Funding**
- **Delivering the Light Rail Strategy**
- **Business Plan 6 Years and Beyond**
- **Continued Membership Support and Funding**
- **Wider Involvement with the DfT Transport Strategy Team**
- **Continued Growth**

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Our Aim & Vision

"Light Rail to form the backbone of Integrated Public Transport systems to maximise Urban Mobility."

"To maximise Light Rail in the UK, make it as successful and as popular as it can be; through Collaboration, Cost Reduction, Efficiencies, Innovation, Best Practice Sharing, Knowledge Transfer, Training and Diversity, Promotion and Advocacy, Integration and Technologies that all lead to enhance Customer Satisfaction".

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LRSSB Annual Report 2020/21

Highlights

LRSSB – Second year - now cemented its position within the consciousness of the sector and stakeholders alike.

TAIR and Industry Risk Model - in conjunction with Atkins, LRSSB now has an Industry Risk Model for the light rail sector that provides a clear and measured understanding of individual and national risk profiles, ensuring more control of emerging risks or precursors to incidents.

In 2020/21 Sector headline results:-

12 % Reduction in the National Total Fatal Risk to passengers

4% Reduction in the National Total Risk profile to, Passengers, Public, Staff

New Standards and Guidance Published - LRSSB continued to produce and publish a number of guidance notes, reports and good practice guides.

This includes documentation to assist in closing out some of the recommendations from the RAIB investigation into the Sandilands accident.

Website – New website launched – will host the Digital Reference Library (LRG 1.0) for the sector.

2021/22 Business Plan

Aid the sector in providing a zero serious harm environment for customers, public and staff.

Purpose and Aims

- **To fully integrate TAIR into the Industry Risk Model**
  - ❖ Surveying the sector to understand how to improve TAIR platform for ease of use and multifunctionality
- **To improve the sectors understanding of both the national and local risk profiles**
  - ❖ Now have new Dashboards produced and being presented to networks
- **Bowtie Risk Assessment**
  - ❖ From identifying the sectors top risks, LRSSB is working with the assessment tool provider to develop a platform that will enable a network to understand its safety maturity (RM3) and their ability to mitigate risk.
- **To continue to populate a digital reference version of LRG1:0 (TPG)**
  - ❖ Gap analysis and hierarchy of documentation required identified
  - ❖ Target of in excess of 20 documents in 2021/22 - 9 produced so far this year, a further 6 in draft
  - ❖ 3 year programme of work
  - ❖ Now hosted on the website

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2021/22 Business Plan

Aid the sector in providing a zero serious harm environment for customers, public and staff.

Purpose and Aims

- **Working with other Bodies to provide the sector with a repository of documentation, guidance and best practice from alternative sources**
  - ❖ Agreement now in place with BSi for LRSSB to be distributor of light rail relevant standards
- **To continue to work closely with the ORR and Members**
  - ❖ Sharing outputs and deliverables from the model so the regulator understands the sectors current and emerging risks but also how the issues are being addressed
  - ❖ Seeking help and assistance from the sector
- **Help the UK Tram sector innovate and bring about change to the way it develops, designs, constructs and operates tramways**
  - ❖ Currently aiding Midland Metro Alliance and looking to assist with the South Wales Metro project
  - ❖ Produce a more detailed Safety Verification process – a roadmap of gateways

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- **To formalise and gain clarity on future funding**
- **Mandate the requirement to be a Member**
  - ❖ As a condition of their license obligations, the majority of Britain's train operators are required by the ORR to be members of the RSSB and to comply with the obligations of membership
- **The need to embed LRSSB documents within the sectors requirements**
  - ❖ Unlike RSSB Operators **are not** obliged to be a Member or to comply with its outputs. A more formal arrangement, as RSSB, would better embed LRSSB's documentation into the sector
- **Fully populated Digital Reference Library – LRG1.0**
- **Research and Development into innovation from all around the globe and different industries**
  - ❖ Currently scoping research and development into Obstacle Avoidance software adopted in Europe
  - ❖ Project under way on human fatigue deterioration software
- **Vision to make the LRSSB as synonymous with light rail as RSSB, VDV, CEN and BSi are in their respective arenas.**

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Owners & Authorities Group

Deliverables:

- Collation of Economic and Environmental Impact
- Future Projects
- Strategic Alignment
- Rollingstock Procurement

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Working Group Updates – UKTram Centre of Excellence
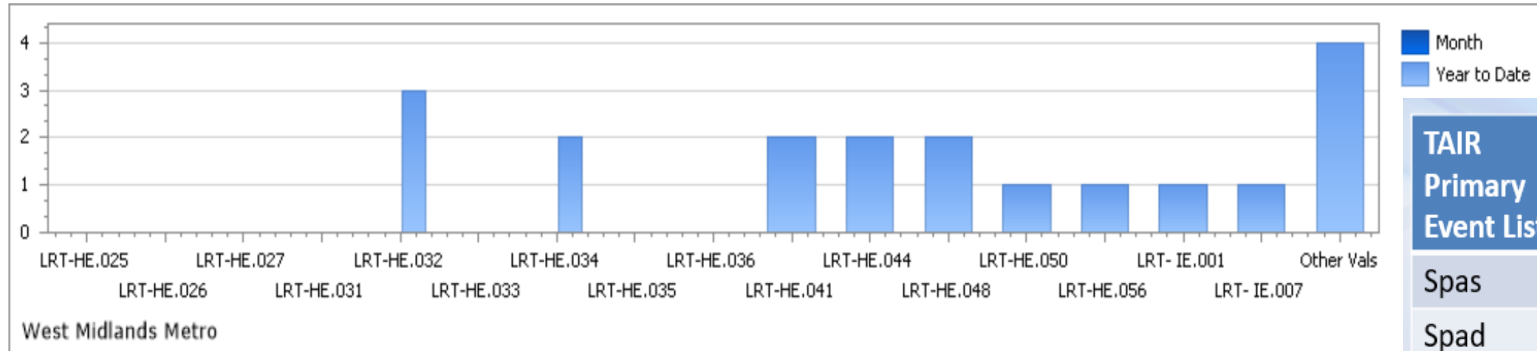
Matthew Taylor, UKTram Director

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UKTram Centre of Excellence

- **Who are the Centre of Excellence?**
- **What do we do?**
- **Who are we advising?**
- **What have we achieved?**
- **What are we going to do?**
- **What do we need?**

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TAIR Database

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TAIR Tram Accident & Incident Reporting

Events Register | Risk Assessment | Events | LRSSB | Actions | Reports | Forms | Maintenance | Documents | Covid-19 Documents

West Midlands Metro

TAIR Primary Event List	Number of Events
Spas	20
Spad	20
Tech Spad	20
Will provide greater local analytical granularity of events for operators that they require	

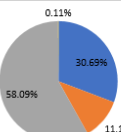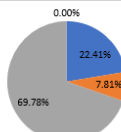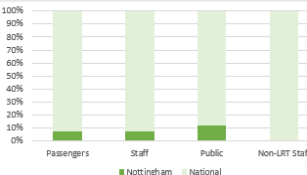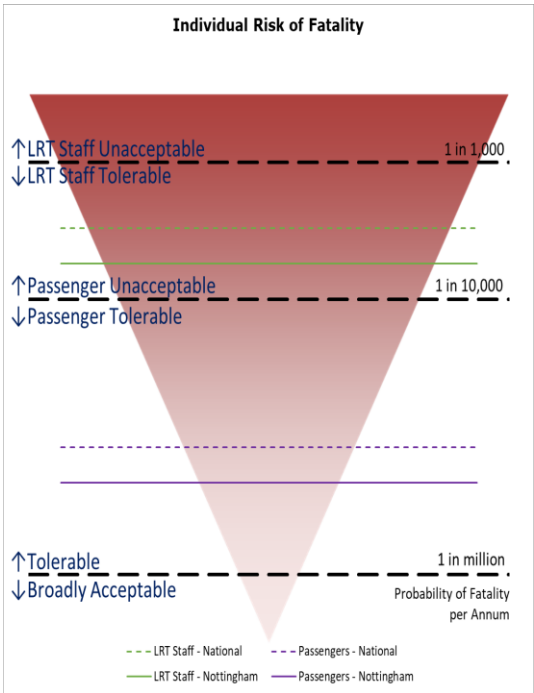| TAIR Secondary Events List	Number of Events
Spas	60
Will automatically group common event types under one defined risk model HE category (Agreed with Atkins)	
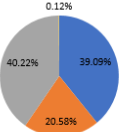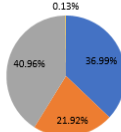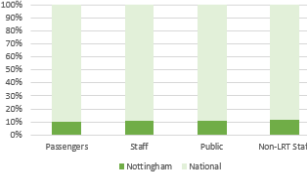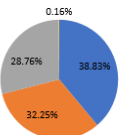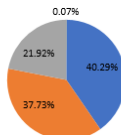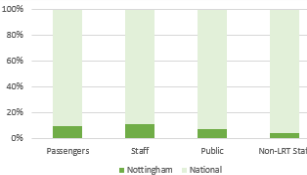
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TAIR Database Activities

- Addition of new event categories
- Reprogramming of TAIR to align new events to risk model
- Enhancement and modification at request of sector
- Integration of risk model analytics
- Collation of all sector historical data
- Design and Development of additional modules e.g. RAIB report tracker

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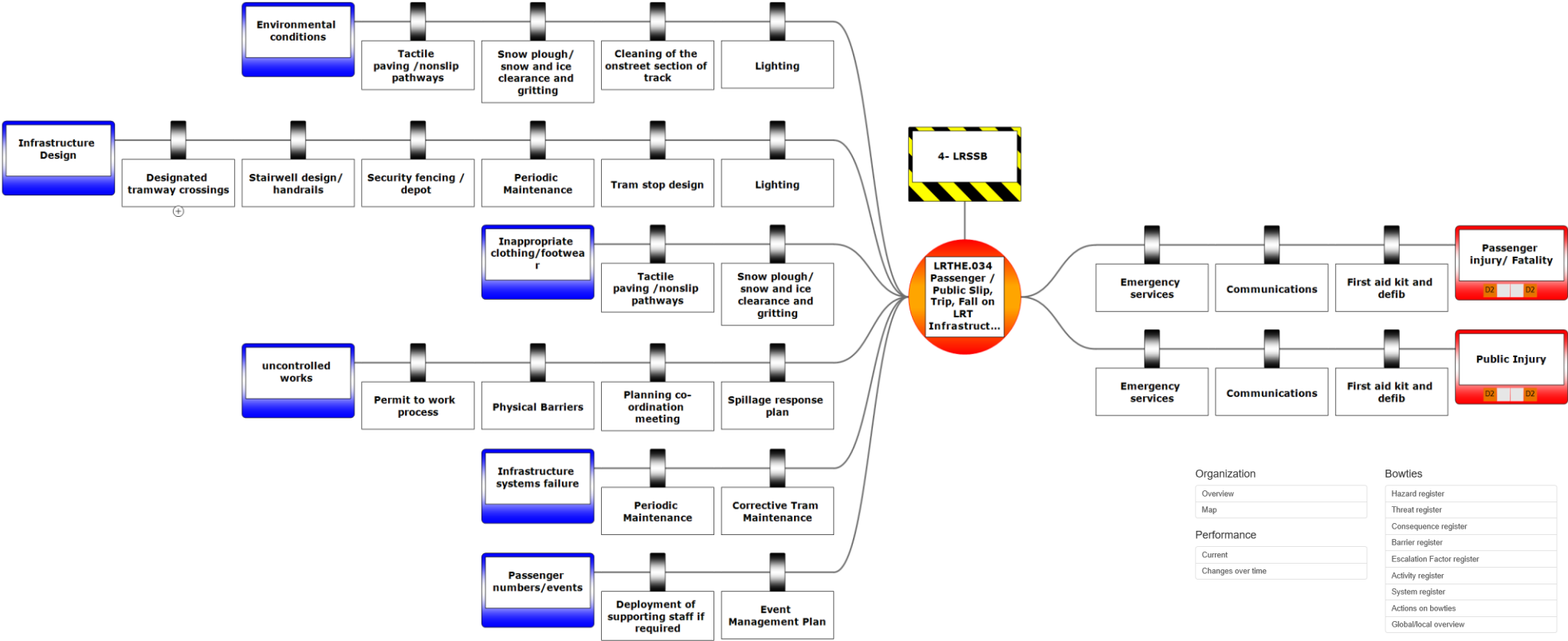# Risk Model

Risk Model Activities

- **Addition of new event categories**
- **Improving analytic outputs, making them more easy to understand**
- **Incorporating modifications at request of sector**
- **Preparation of model for upcoming sector risk model reviews**
- **Development of sector profile analytics**
- **Collation of all sector historical data**
- **Aligning risk model with TAIR**

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Bowtie XP

Bowtie XP Activities

- Identification, research and procurement of software
- Arrangement and delivery of training to the sector, ORR and Duty Holders on Bowtie XP platform
- Development of framework for the sector, hierarches, security etc.
- Trialling of software with individual networks
- Development of Global Bowtie Assessment framework on new Bowtie Server, starting with the top 10 sector Hazardous Events
- Development of common sector language in relation to controls / barriers
- Development framework to allow upload of risk model data to provide automated production of Global Bowtie Assessments

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RM3 Toolkit

RM3 Assessment toolkit survey

Home / Audits / RM3 Assessment toolkit survey

| ☰ Fill Outs | Details | Observations | ◄ View answers on bowties |

| Question | Answer | Show all ⌄ | ▼ Filter |
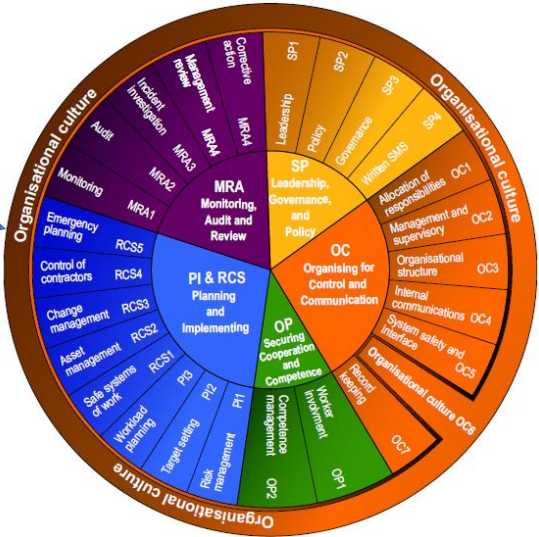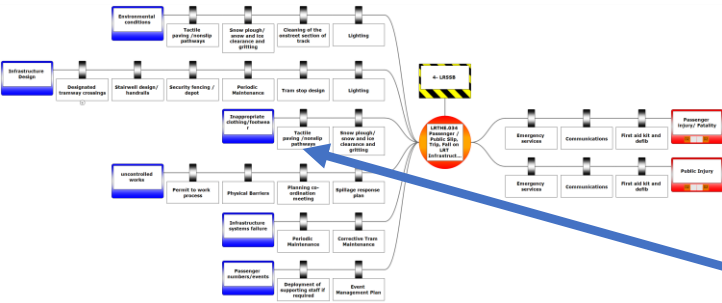
Question	Value
SP1 Leadership	1 Ad-hoc
Details	
Health and Safety policy	4 Predictable
Details	
Board Governance	2 Managed
Details	
Written health & safety management system (SMS)	3 Standardised

ttps://lrssb.bowtieserver.com/Audits/FillOut/Observations/71d9f97b-fe89-496d-845f-b4ee885be79e?returnUrl=%2F...

30

RM3 Audit Tool

- Delivery of RM3 workshops to the sector that identified the need for a standardised audit tool
- Identification, research, test and procurement of software
- Oversite of integration of RM3 into software
- Consultation with and presentation of design concept of tool with ORR
- Development of tool for possible use across sectors in consultation with ORR RM3 Board
- Evaluation of the audit tool with both the ORR and sector
- Integration of RM3 maturity measurement with sector bowtie assessments
- Development of RM3 tool to aid internal peer review from within the sector

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Development of LRSSB Sector Risk Management Architecture
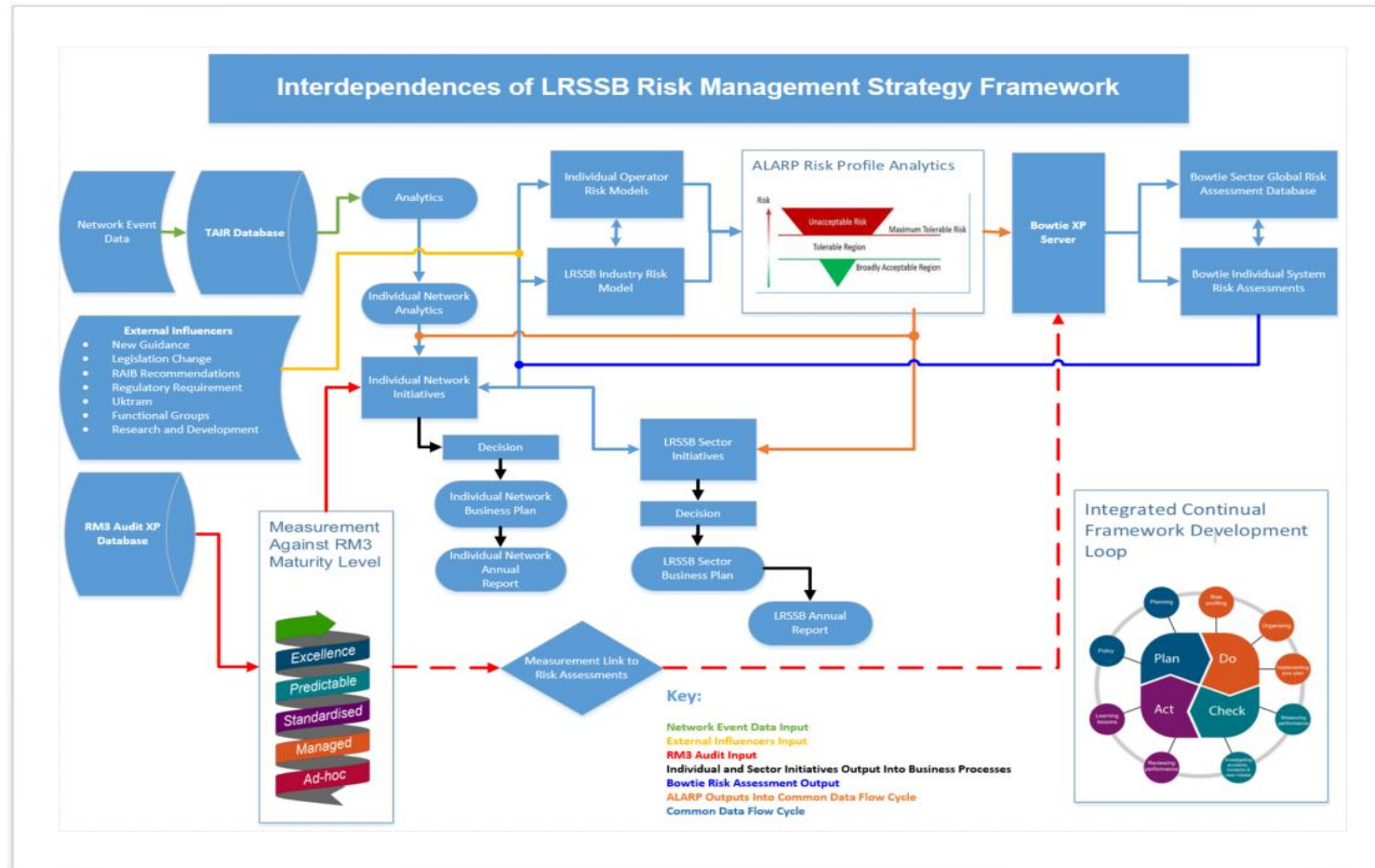
Activities
- **Aligning all our system platforms into a single integrated sector risk management framework**

Working Group Updates – UKTram Engineering Group

Iain Middlemiss, UKTram Engineering Group Chair
Craig O'Brien, UKTram Engineering Manager

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UKTram Engineering Group

Pre-Covid Activities

Knowledge sharing

Networking
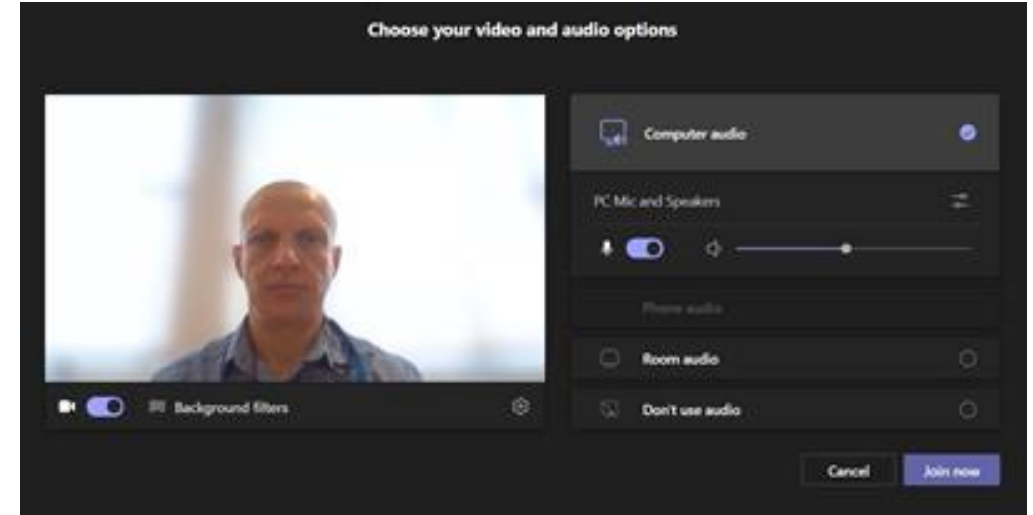
Main meeting

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Best Practice day

UKTram Engineering Group

Post-Covid Activities

Knowledge sharing

Networking

Main meeting

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Best Practice day

Any Questions?

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THE REAL

UKTram Engineering Group

Iain Middlemiss, UKTram Engineering Group Chair
Craig O'Brien, UKTram Engineering Manager

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UKTram Engineering Group

•What's Changed?

Increased attendance

Relevant updates & information

New faces

Hot Topics & sharing BP

Engineering Group Outputs

2020-2021 Projects

Authority to Work digital Platform	S&C review & standardisation	Training & competency	Apprenticeships
Web & Mobile App based application	WP1 - Review current standards	1st ever Tram specific **N**ational **O**ccupational **S**tandard	UKTram part of Industry trailblazing group
Ability to Individually modify	WP2 - Development of standard on how to approach S&C inspection and maintenance	40 individual modules for Rolling Stock & Traction power	Tram pathway option to be created within current suite of standards
Increased safety aspect	WP3 - Detailed analysis of S&C inspection and maintenance limits	40 individual modules for Infrastructure multi skills	Increased inclusion, diversity & increase in non-technical skills
Reduction in resource & increase in efficiency	WP4 - Development of inspection gauges (per system)	Potential for Pilot imitative with UK system maintainer & virtual training	Addressing & bridging the industry skills gap

Engineering Group Outputs

2020-2021 Projects

Procurement Collaboration	Lifecycle of Assets	Rolling Stock predictive maintenance	OLE Benchmarking
Grinding	Switches & Crossings	Tyre turning & replacement	BP manual based Multiple system
Tamping	Overhead Line	Bogie overhauls	Glossary of terminology definitions & images
Gauge corner welding	Sleepers	Gearboxes, Axles	Heritage to be included in next revision
Railwear monitoring	Sub-stations	Fleet replacement determination	General overview of all assets

Engineering Group Outputs

LRSSB Guidance & Standards

Wheel Rail Interface	Managing Rail Breaks	S&C Design	Underrun protection
OLE Maintenance manual	Stray current management	Tram Glazing	CDM Regulations
Grooved Welding	Tram Audible warning	Urban Track standards	Trap & Drag

Engineering Group The Future

Benchmarking & Asset Management

Renewals strategies

Lessons learned

Preventative maintenance

Condition based monitoring

Increased owner/ authority involvement

Predictive maintenance

Obsolescence management

Procurement strategies

Existing Benchmarking Groups

Imperial College London

Railway and Transport Strategy Centre

Community of Metros CoMET
Founded 1994
18 Members, including New York, London, and Hong Kong

Nova Group of metros
Founded 1998
20 Members, including Rio, Toronto, and Barcelona

IBBG
Founded 2004
15 Members, including Dublin, Montreal, Paris, and Singapore

iSBeRG
Founded 2010
14 Members, including Munich, Tokyo, and Sydney

ABBG
Founded 2011
22 Members, including Austin, Cleveland, and Rhode Island

GOAL
Founded 2016
11 Members

International Mainline Rail
Founded 2016
6 Members, with Norway, Belgium, Netherlands, and Australia

Railway Infrastructure
Founded 2016
4 members, initially in Australia

GOAL – Benchmarking Group of North American Light Rail Systems

Perspective through data
- How do we compare to our peers?
- What are our strengths?
- What are our weaknesses?
- Quantitative Backing for "rules of thumb"

Best practices through Discussion:
- What are others doing to improve?
- What works/what doesn't?
- How to implement best practices.

KPI's
- Growth & Learning
- Customer
- Internal processes
- Financial
- Safety & Security
- Environmental

Benchmarking, Guidance & Standards
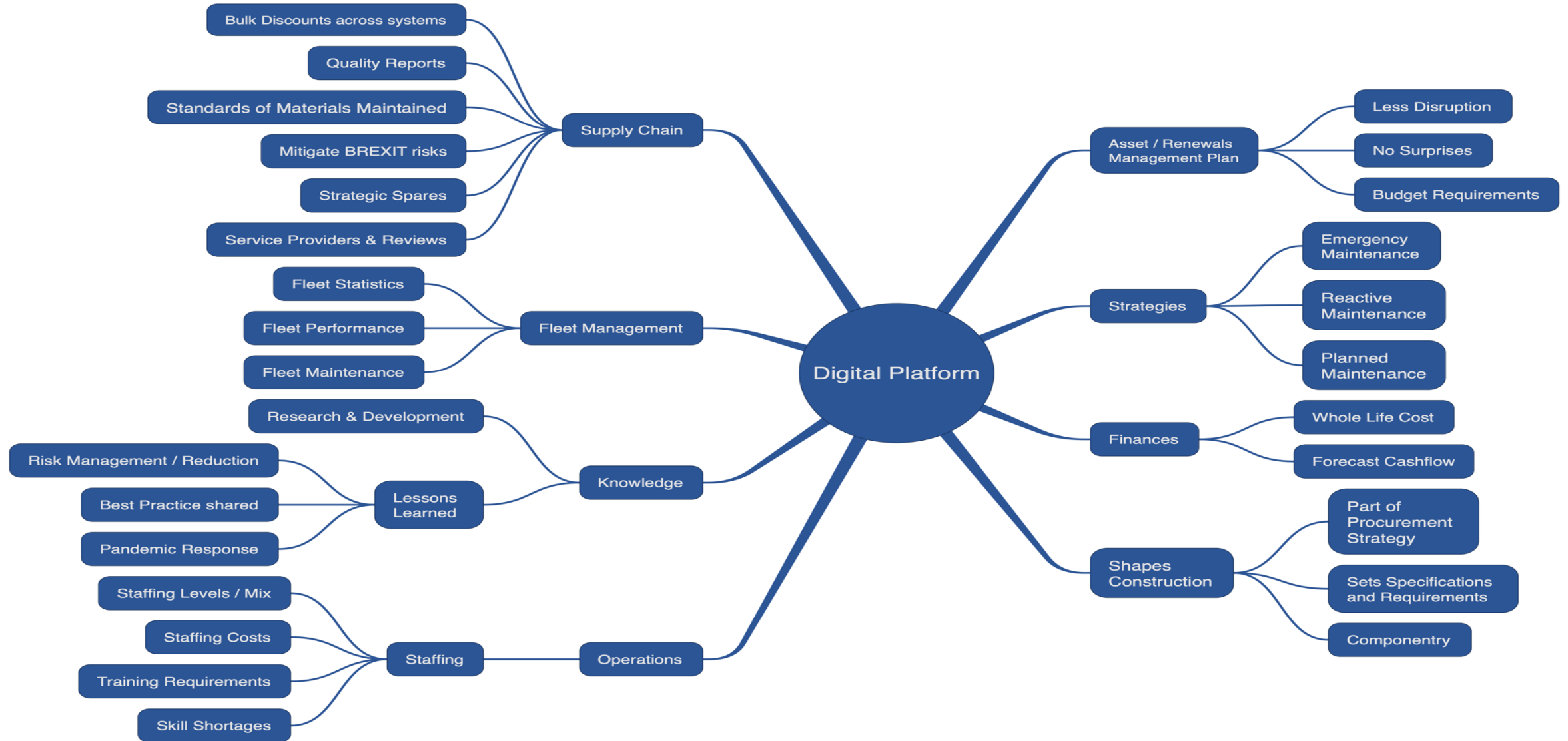
Research, Development & Innovation

- **Pedestrian distraction at level crossing**
- **Improvement of drivers non technical skills**
- **Detection of cars at level crossings**
- **Research for improving standardization of fire-fighting systems for railway vehicles**
- **Improving the Safety Performance of Passenger Rail Car Glazing Systems**
- **Improving Public Safety through Inter organizational Information Management at Public Transportation Hubs during Mass Events or Critical Events**
- **Developing Objective Timetable Quality Metrics**
- **Integrated information management system, as a method of improving the effectiveness of carrying out rescue operations at railway accidents**
- **Development of Derailment Detector with Twin-Sensor**
- **Towards the European Railway Safety Culture Model**

UKTram Operations Group

- **Group Chairs Update**
- **Communications**
- **Human Resources**
- **SPAS Categorisation**
- **Tram Driver Trainer NOS**

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