



機電工程署
EMSD



23

ETY COUNCIL

strial World


OCTOBER 1 - 6, 2023

IRSC 20

INTERNATIONAL RAILWAY SAF

"Reconnecting and reshaping railway

CAPE TOWN, O



Mr. Ernest LI
Electrical and Mechanical Services Department

The Future of Railways: Safer, Smarter, Sustainable

CLIMATE CHANGE

RANDOM FAILURE

ECONOMICS INSTABILITY

OLDER RAILWAY ASSETS

SOCIAL EXPECTATION

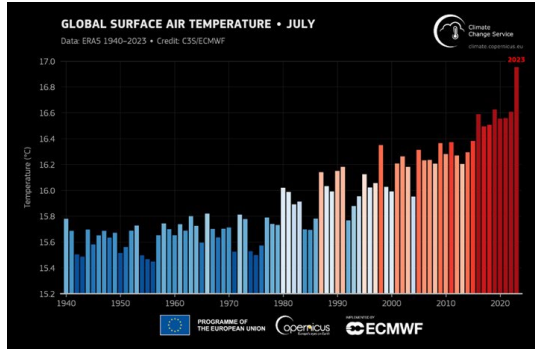
AGEING POPULATION

HUMAN FACTOR

TALENT SHORTAGE



Climate Change



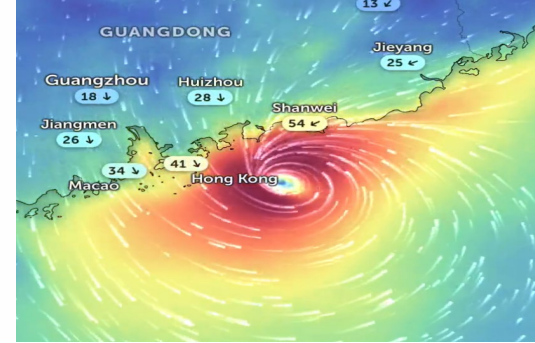
HOTTEST JULY
and the
HOTTEST MONTH

Sources: World Meteorological Organization



RAINFALL become
more EXTREME

Sources: South China Morning Post



TROPICAL
STORMS
become more
SEVERE

Sources: Hong Kong Free Press



Wildfires become
more frequent

Sources: The New York Times

Sustainability

United Nations Brundtland Commission defined sustainability as

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable Railways

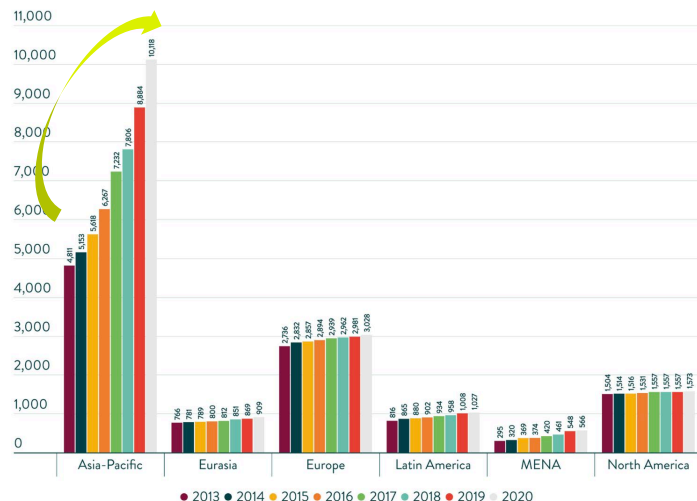


CONNECTIVITY
SAVING&CONSERVATIO
RELIABLE&SAFE
INCLUSION&DIVERSIT
Y

Connectivity

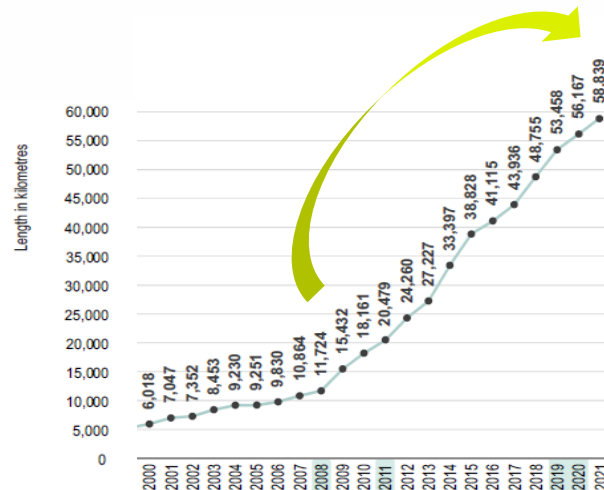
Worldwide Rail Network Expansion

Total Length of metro infrastructure in the Asia-Pacific 2.1x
2013 > 2020



Source: The International Association of Public Transport (UITP) |
Statistic Brief for World Metro Figures 2021 issued in May 2022

Total Length of High Speed Rail infrastructure in the world 2.9x
2011 > 2021



Source: International Union of Railways (UIC) | ATLAS High-Speed Rail 2022

Saving & Conservation

CO2 Emission

Global CO2 emissions from TRANSPORTATION
in 2022 **~22.9%** by sector

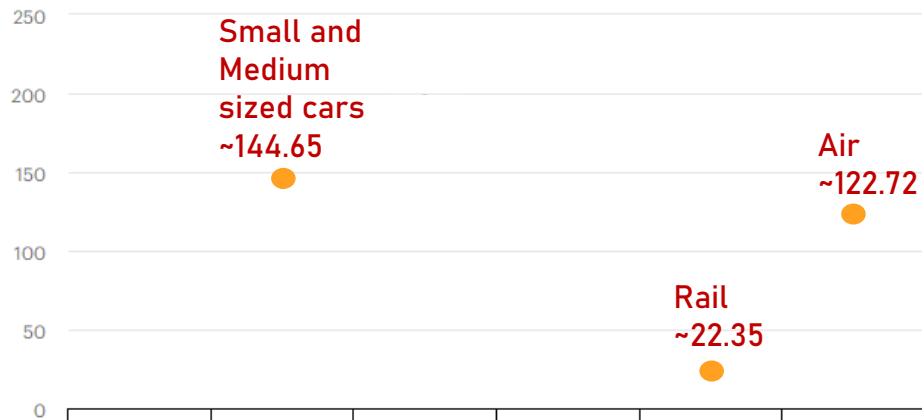


Global CO2 emissions from
RAIL in 2022 **~1%** by
transport

Sources: International Energy Agency

Global average of motorized passenger transport modes, 2022

g CO₂-eq/passenger-km

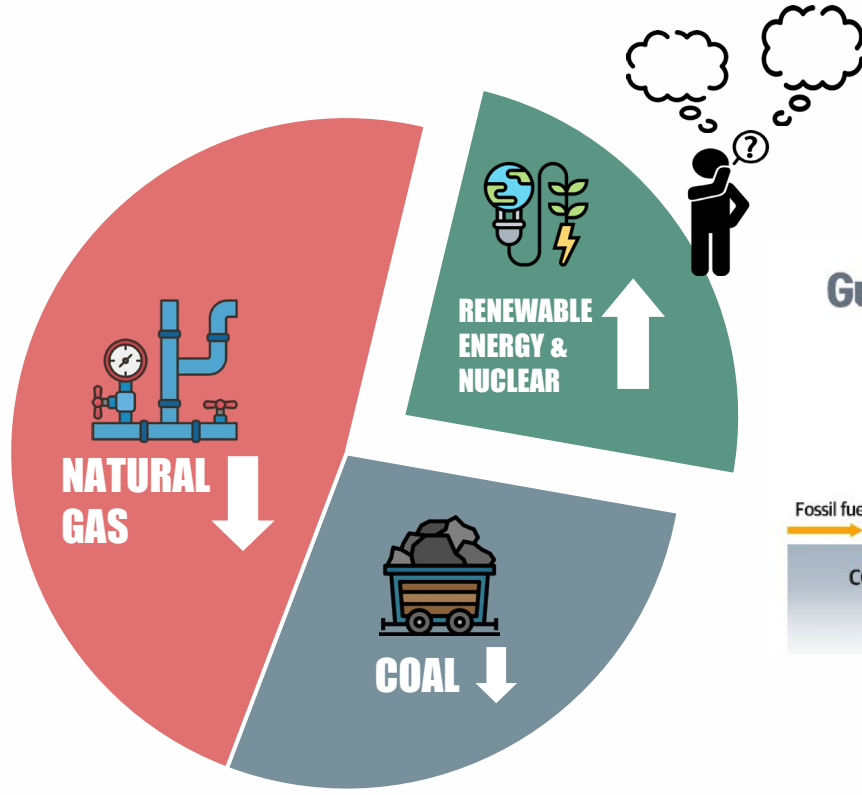


Sources: International Energy Agency

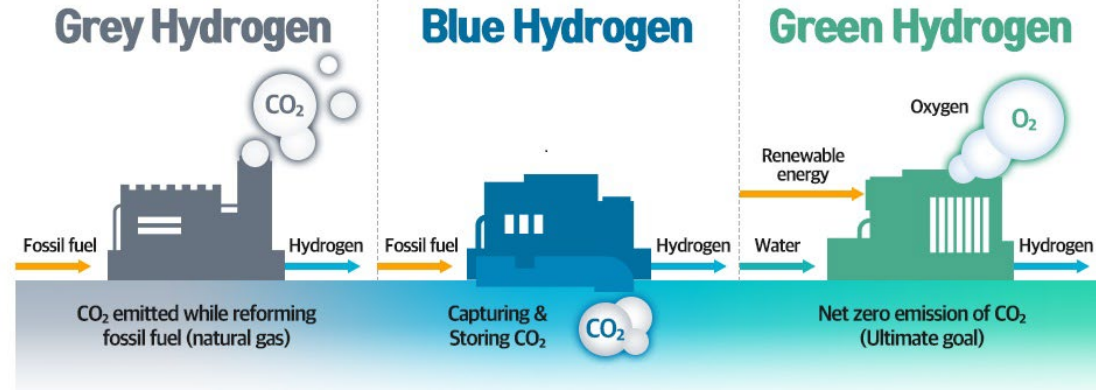
Rail Infrastructure innovation in a changing world



Saving & Conservation

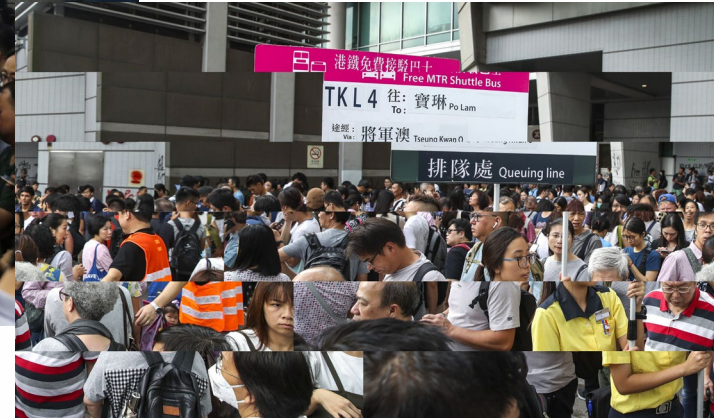


Option for Future?



Reliable & Safe

Our trains are efficient, **99.9%**
Passenger Journeys On-time



Sources: South China Morning Post

“ HIGH Consequences LOW Frequency Risk”



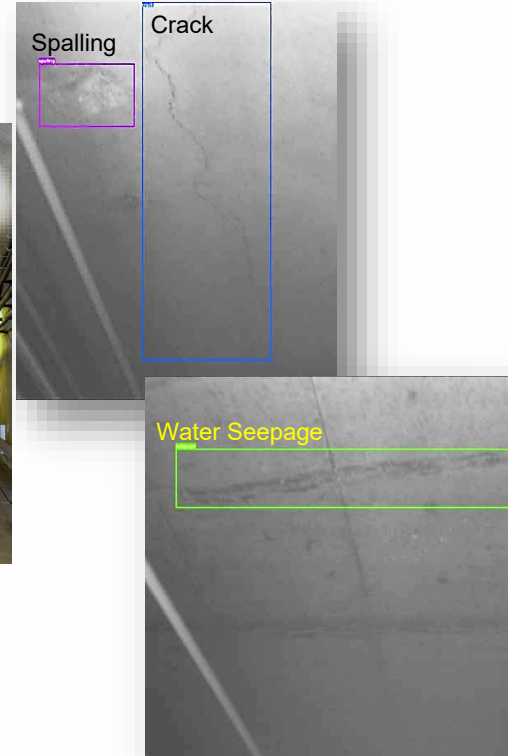
Reliable & Safe



Intrusion Detection (Fallen Object)



Train-borne Railway Infrastructure Inspection System



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From labour-led maintenance to **TECHNOLOGY-LED** smart maintenance

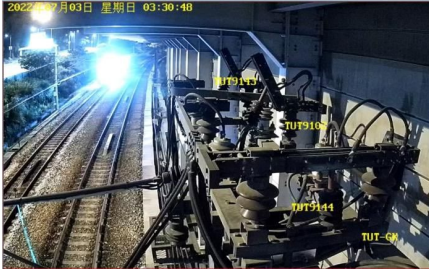
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Reliable & Safe

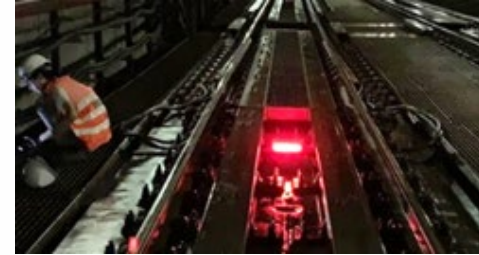
Extension of Maintenance Window



Maintenance Window

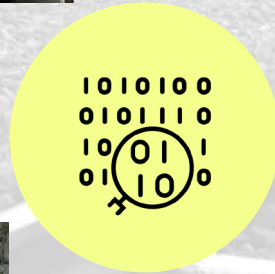


Visualized Remote Earthing System and Motorized Isolator Control



Red Flashing Light Remote Control System

Reliable & Safe



DATA



INFORMATION

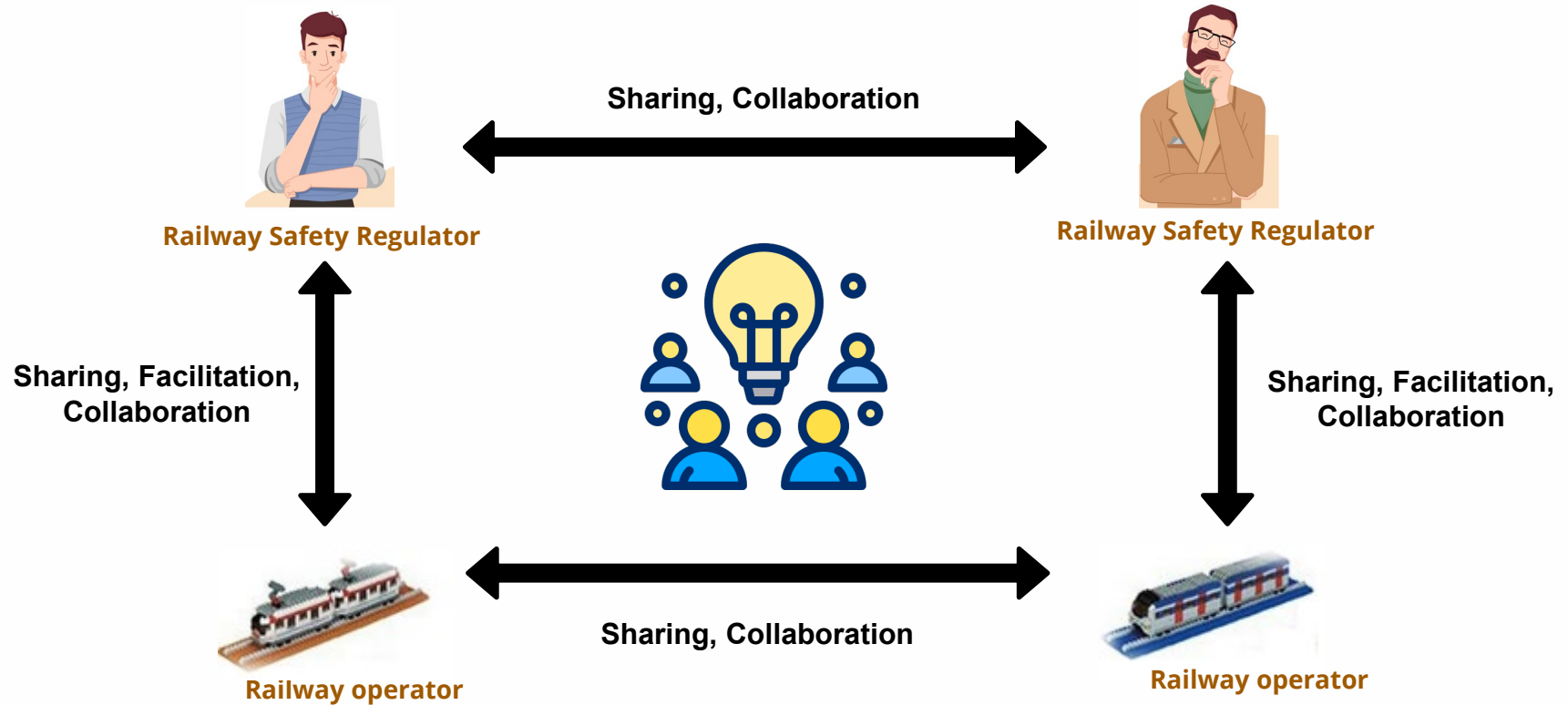


INSIGHT



DECISION

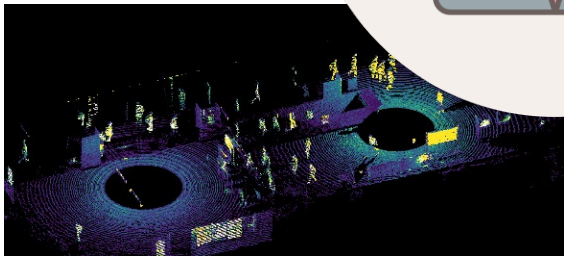
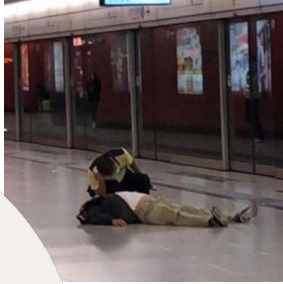
“The more we SHARE, the more we HAVE”



Inclusion & Diversity



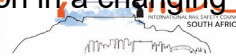
Inclusion & Diversity



OVERSEAS
EXAMPLES

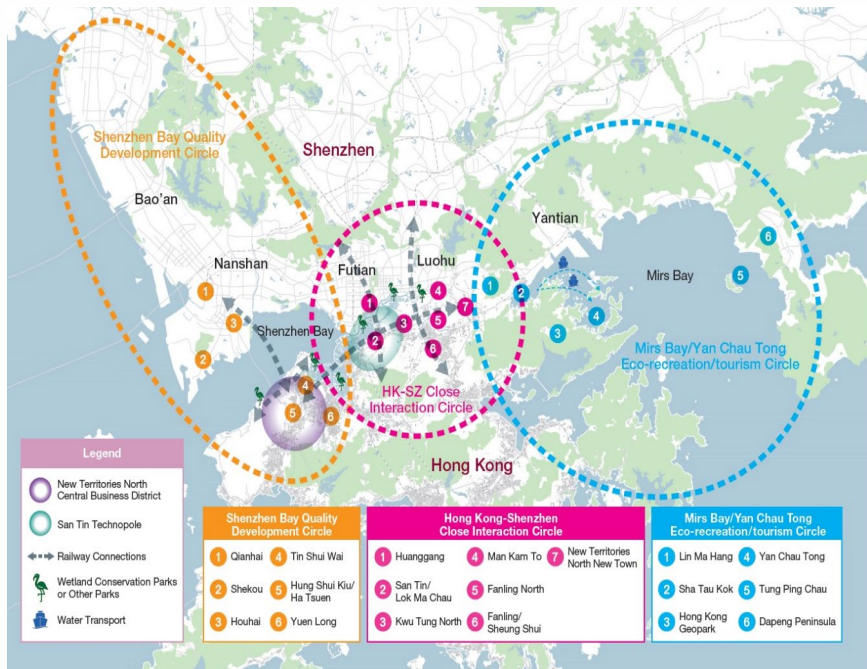


Rail Infrastructure Innovation in a changing world



Sustainable Development

HK Rail Network Expansion



INFRASTRUCTURE-LED PRINCIPLE

Sustainable Development

HK and China Rail Network Expansion

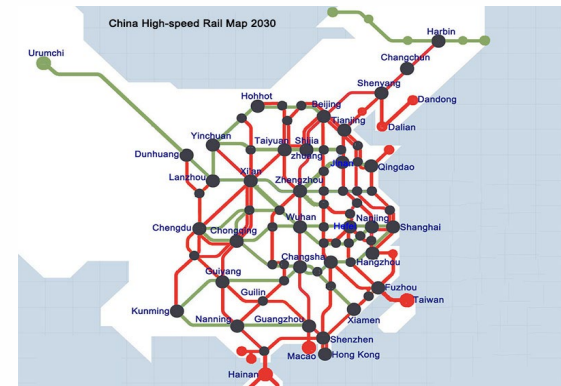


2023

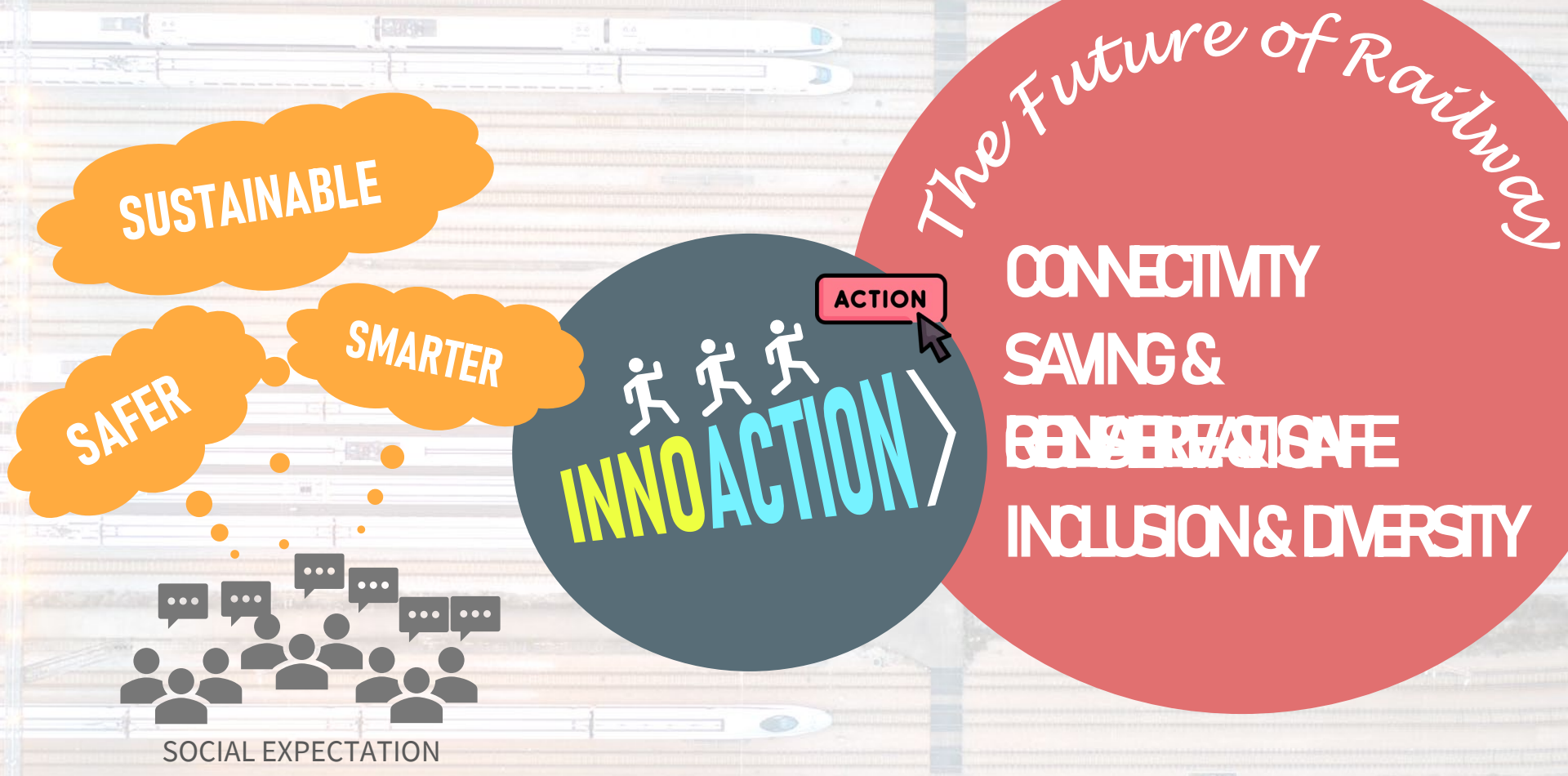


“4+4” Transform to “8+8”

2030



Rail Infrastructure Innovation in a changing world



CSRI

The Future of Railway

CONNECTIVITY

SAVING &

ENVIRONMENTAL

INCLUSION & DIVERSITY



HOSTED BY



RAIL SAFETY ON THE RIGHT TRACK

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