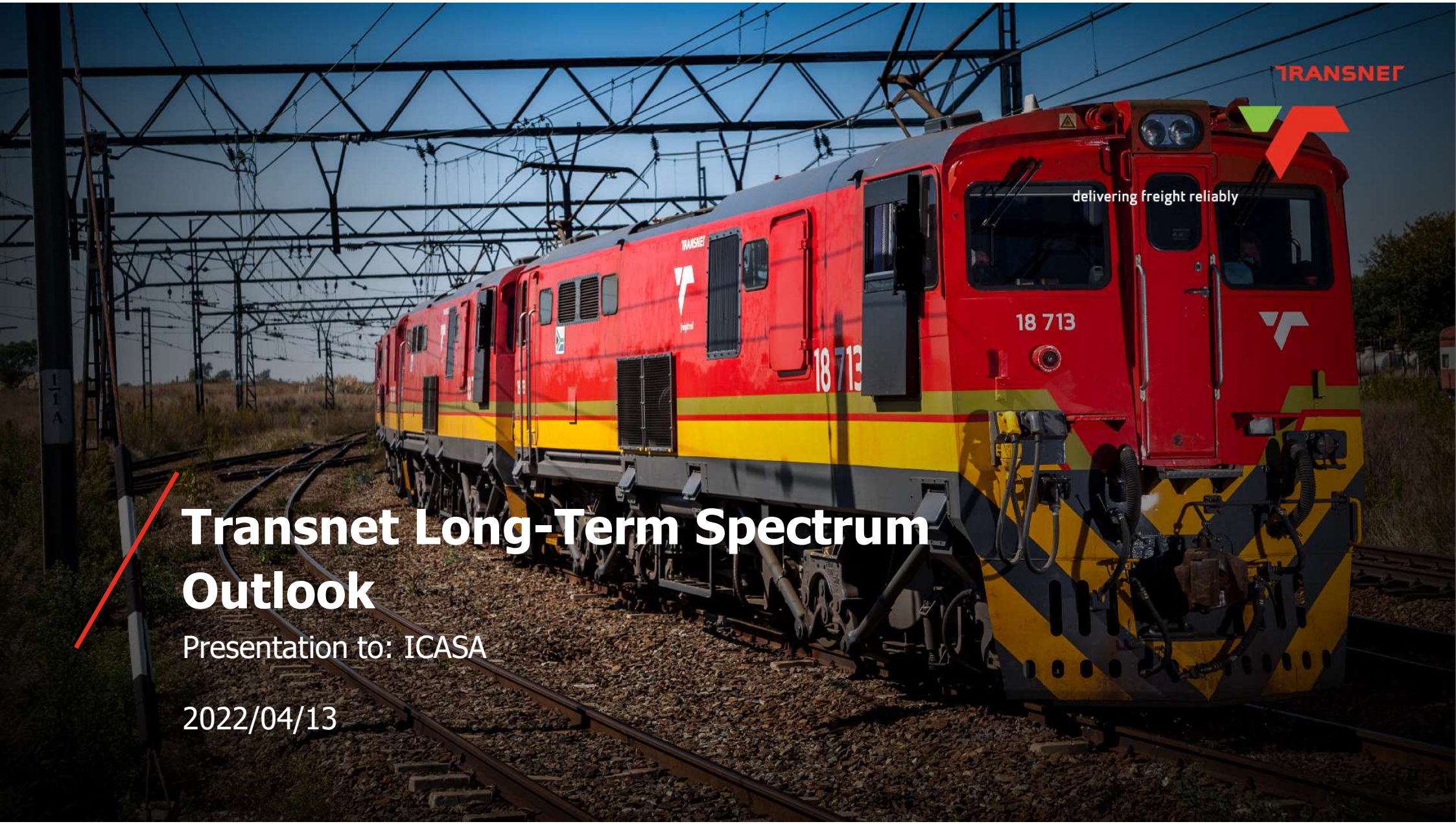
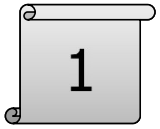


Transnet Long-Term Spectrum Outlook

Presentation to: ICASA

2022/04/13

Agenda



Introduction

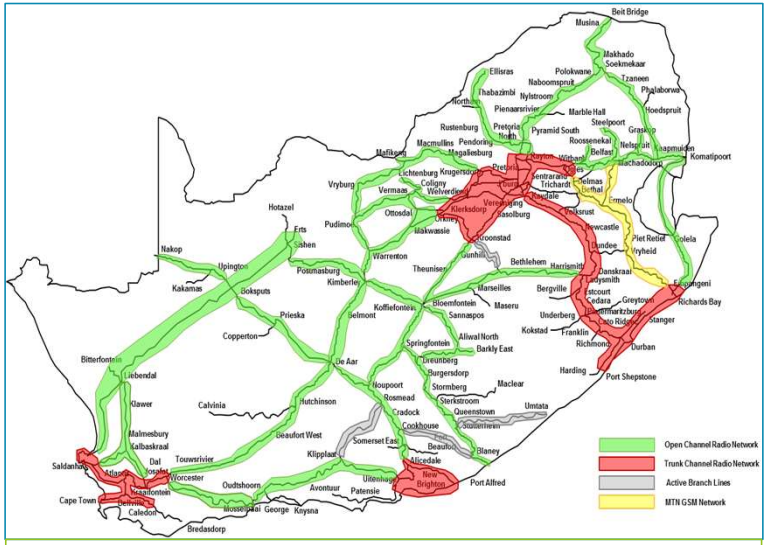
Rail Technology Evolution

Future Spectrum Requirements

Conclusion

Introduction

Transnet spectrum Usage



Three Networks radio networks provide mission critical communications

- Owned analogue UHF Conventional channel Network, national. – Voice as a Service
- Owned analogue UHF MPT1327 trunked radio network, operates on NATCOR line and in Cape Town, Port Elizabeth, East London, Johannesburg and Durban metropolitan areas. – Voice as a service
- Managed Service GSM network leased from MTN operates on the COAL LINE. – Voice and data Service at a premium.
- Used by all Transnet Operating Divisions. Usage not charged.
- The ports are the main users of the network.

Spectrum allocation

- Telemetry – 138 MHz Band
- UHF Analogue Networks - 450 to 470 MHz band
  - Open Channel Radio Network
  - Trunked Radio Network
- UHF Digital PtP Networks – 440 MHz
  - Telecontrol
  - Condition Assessment Systems
- Point to Point – 450 to 470 MHz band
- Microwave Links 8, 15 & 23GHz
- eLTE Port networks – 1800 MHz Band

As – Is State

Single Operator

- TFR has exclusive use of the network and fleet.

CTC – Command Center

- Train control is decentralised train control, with limited centralised visibility

Customer Service

- Access to information about consignment is obtained through Account Managers, who often do not have tools to provide real time information to customers.
- There is no self service capability.

Rail Asset Management

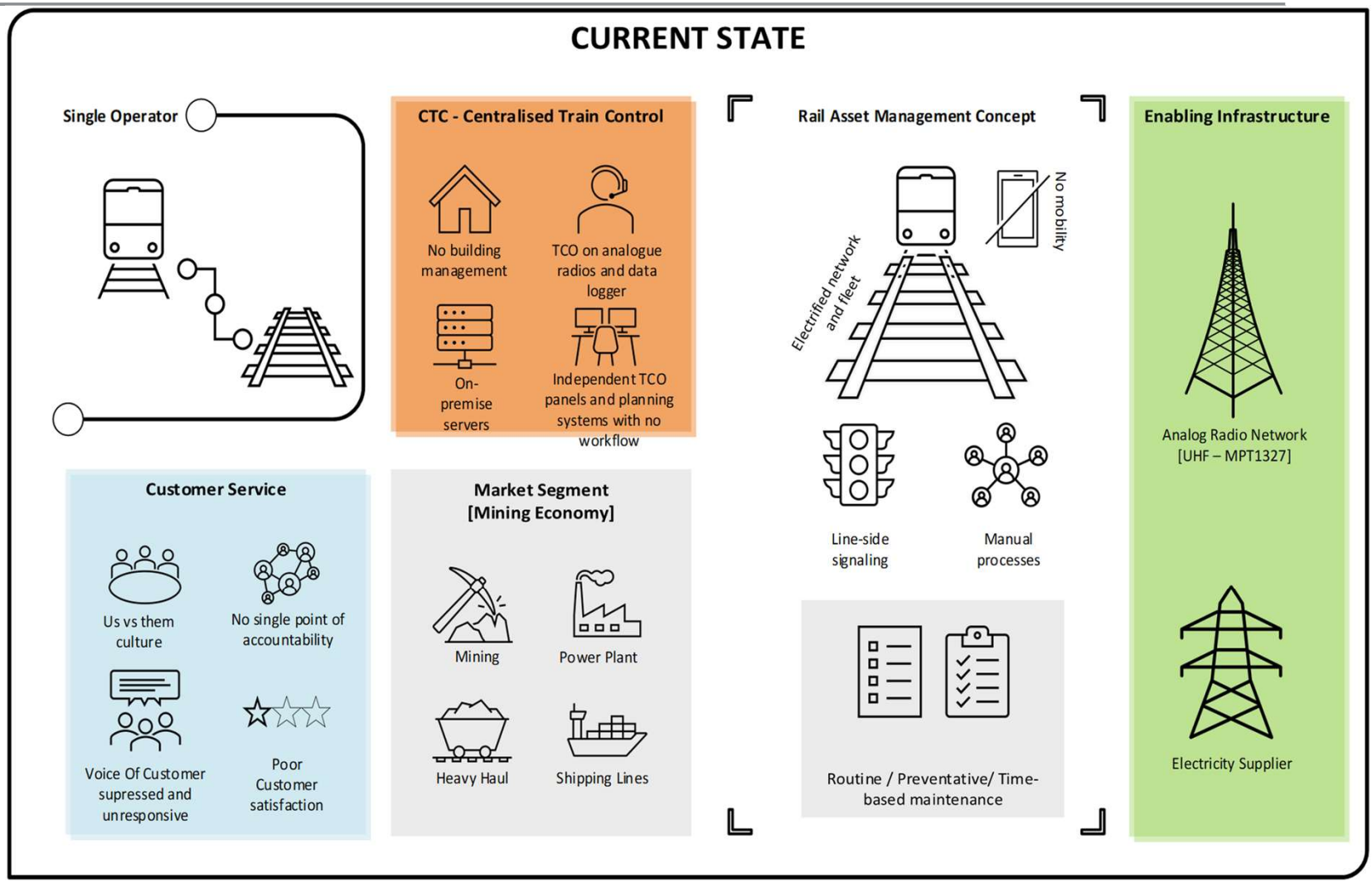
- Infrastructure and rolling stock assets are maintained according to time based and manual inspection methods. Risk of under and over maintenance.
- The network is mostly electrified with trackside signalling equipment that is prone to theft and vandalism.
- Operational systems for crew are rigidly mounted in the cab and cannot exploit new innovations

Enabling Infrastructure

- Wireless telecommunications infrastructure is limited to a narrowband analogue network optimised to voice communication only.
- Traction is supplied from the national electricity grid or from Diesel.

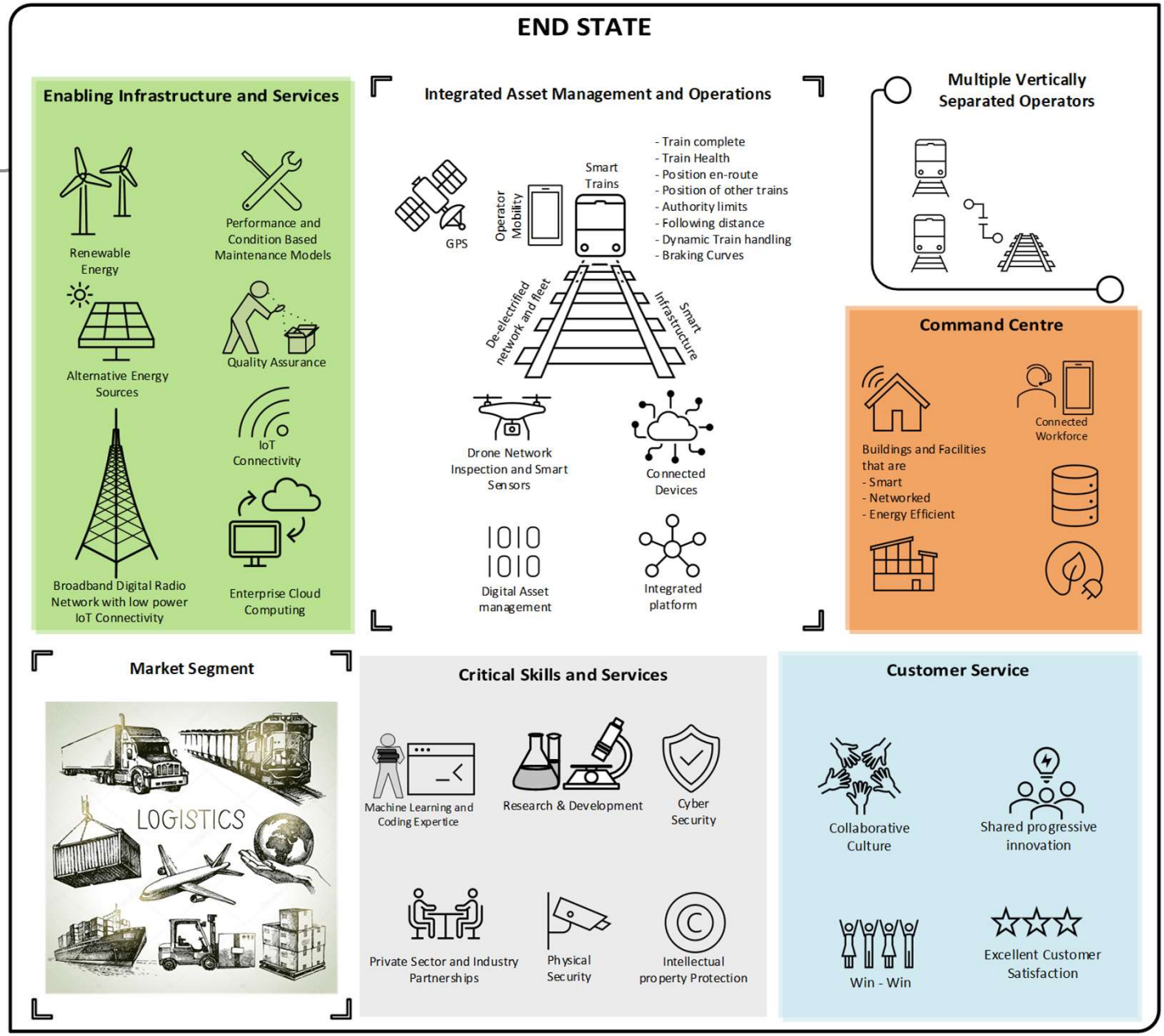
Market

- Largest market segment is the mining sector



To – Be State

- Multiple Operators
- Command Centre
- Customer Service
- Rail Asset Management and Operations
- Enabling Infrastructure and Services
- Critical Skills and Services
- Market Segment



Agenda Items Feedback

- Q 4: What future changes, if any, should ICASA examine with regard to the existing licensing regime to better plan for innovative new technologies and applications and allow for benefits that new technologies can offer, such as improved spectrum efficiency?
  - Transnet would like suggest that ICASA has more active network elements that progressively checks the utilisation of assigned spectrum. This units can then feed an active database that shows the dynamic usage of the spectrum being used.
- Q 16: Which vertical markets will require the most secured licensed spectrum to overcome their current interference and congestion issues?
  - ICASA should consider the allocation of dedicated spectrum in a coordinated manner for utilities, Railway and Public safety vertical markets.
- Q 18: What are your views on reallocating the following bands for IMT over the next years?
  450-470 (20MHz)
  - This band can be allocated to IMT as noted from the ITU recommendation. The band offers 5 MHz band in a FDD band plan and can be used for IMT especially in rural areas. To maximise the usage of the band it would be prudent to have the sharing of the usage of the spectral.

Agenda Items Feedback

- Q 44:Which vertical markets will require most secured licensed spectrum to overcome their current interference and congestion issues?
  - Railways (RSTT) and port communication requires licensed spectrum to achieve the mission critical objectives. The risk of interference with these systems can have a negative impact on the delivery of freight and that could filter to the economic growth envisioned for South Africa

Conclusion

- Spectrum will be essential for the future Logistics
- Sub 1 GHz spectrum needed for rural coverage
- Logistics efficiency from port to customer will be essential
- The sharing of spectrum is encouraged
- The Authority support for Digitisation of Logistics will be required

THANK YOU

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TRANSNET

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