HUAWEI ENTERPRISE ICT SOLUTIONS A BETTER WAY

How GSM-R serves railways globally

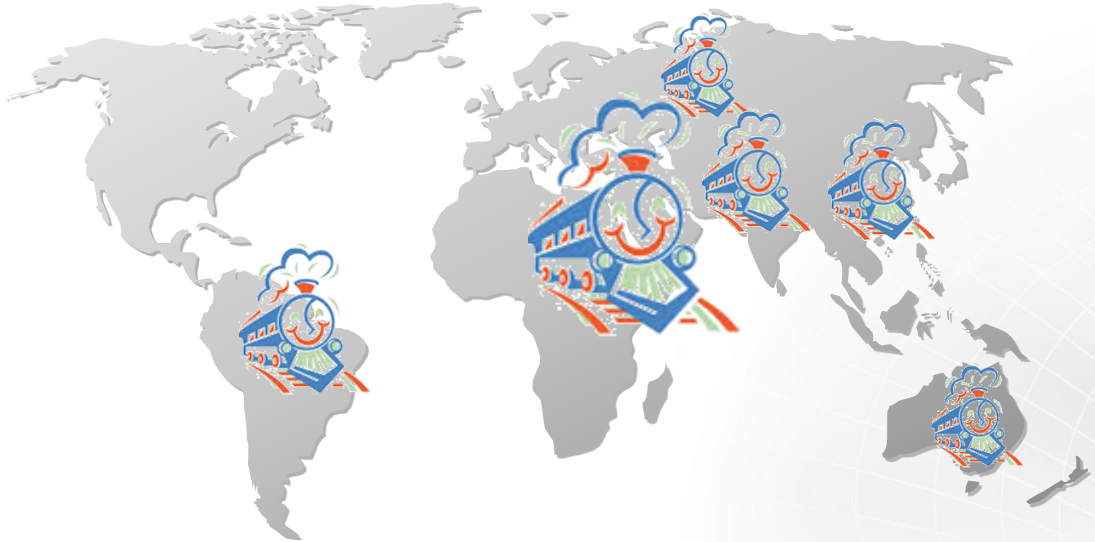
Norman FRISCH
Business Development Railway Solutions

HUAWEI

296%

HUAWEI

GSM-R in the global market



- **Rail has freedom of technology choice**
- **GSM-R recognised as safe option**
- **Today:**
  - most GSM-R contracts are awarded outside of Europe
  - Most GSM-R tender announcements outside of Europe

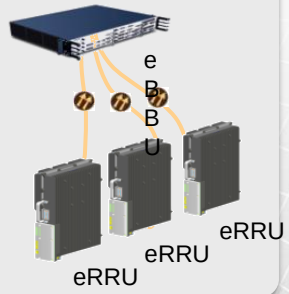
GSM-R for Australia metropolitan line

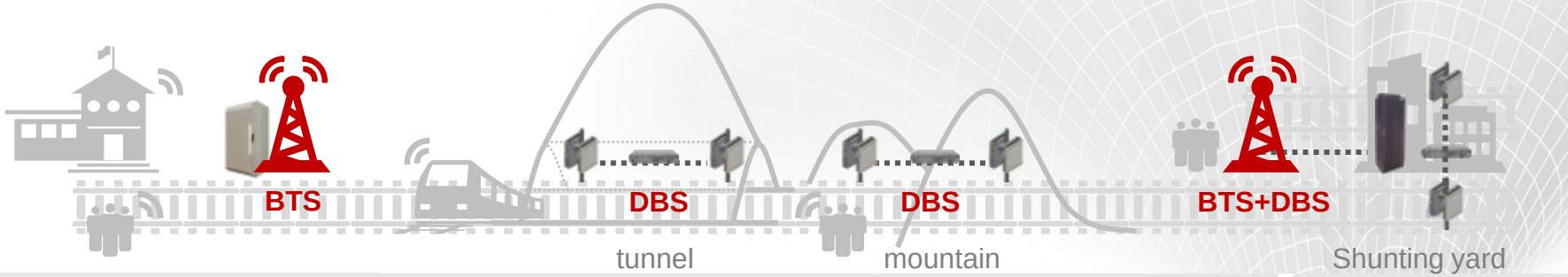
Customer

Location:	**Metropolitan line Sydney**
GSM-R solution:	**Huawei**
Dispatcher Subsystem:	FREQUENTIS
Cab Radios:	funkwerk aktiengesellschaft

GSM-R advanced features applied

- **Frequency 1.800 MHz**
  - use of standard 3GPP chipsets
  - Spectrum availability for rail customer
- MSC Dual-homing
- Distributed BTS
  - 70 km of tunnel coverage
  - 32 tunnels in Sydney
  - 43 tunnels in outskirts



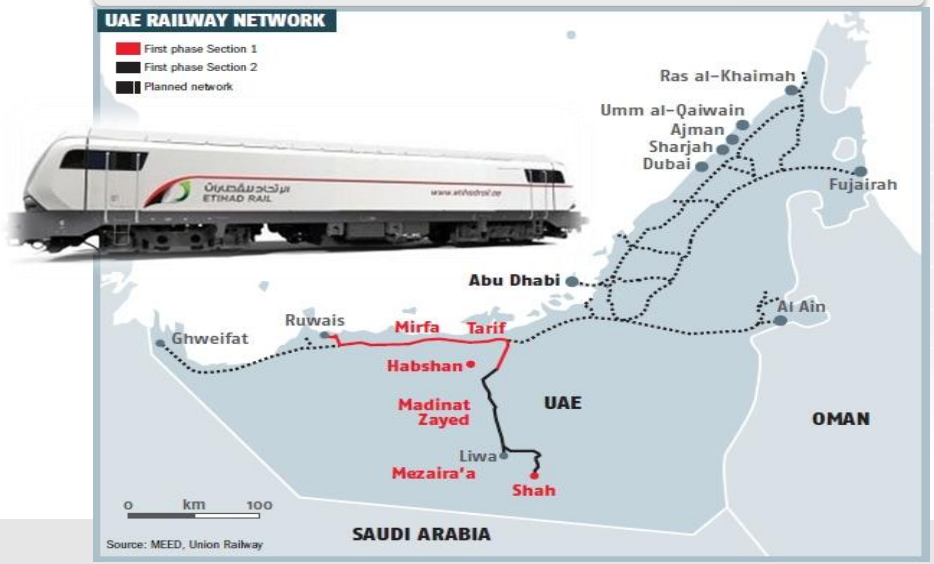


HUAWEI

GSM-R for Etihad Rail Project, UAE

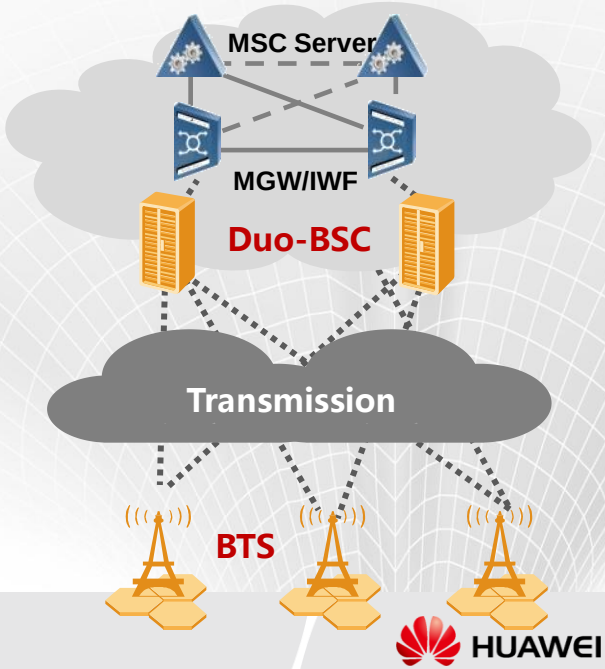
Customer

Telecom Sub-System Integrator:	**Selex ES**
GSM-R solution:	**Huawei**
Cab Radio:	**KCC**
Next generation IP based dispatcher:	**SIEMENS Siemens CVC**
End Customer:	**Etihad Railway**
Length:	**260km**



GSM-R advanced features applied

- **Duo-location BSC**
- MSC Dual-homing
- ETCS L2 line



HUAWEI

GSM-R Flat Shunting Voice & Data
Xinfeng shunting yard China 1/2

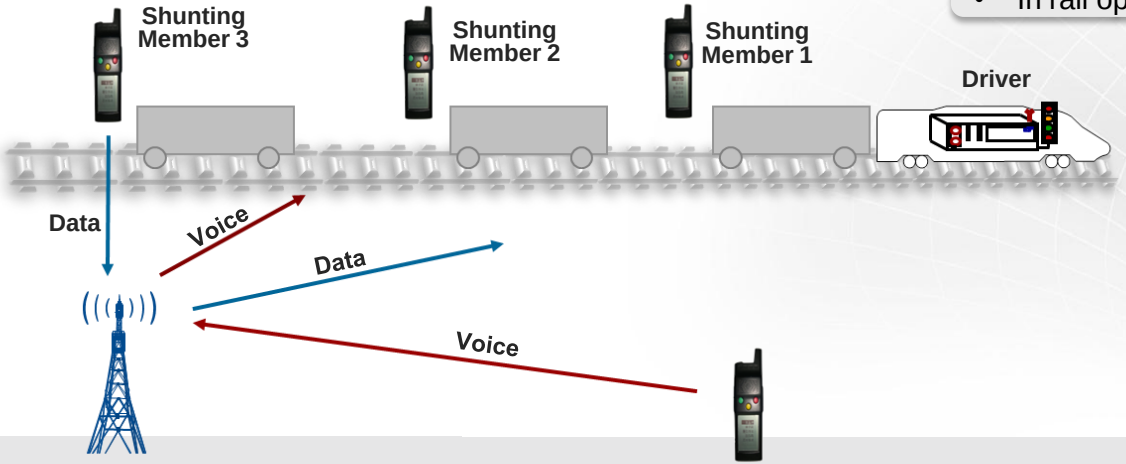
Customer

Location:	**Xi'an city**
GSM-R solution:	**BSS: Huawei**
	NSS: European GSM-R

supplier

Project background

- Xinfeng nerve center of cargo transport
- tens of loco's simultaneously running in shunting yard
- only 4MHz GSM-R bandwidth
- Voice and Data services transmitted in parallel in VGCS
- Requirement specification finalised in 2006
- In rail operation since 2010



HUAWEI

GSM-R Flat Shunting Voice & Data
Xinfeng shunting yard China 2/2

Customer

Location:	**Xi'an city**
GSM-R solution:	**BSS: Huawei**
	NSS: European GSM-R

supplier

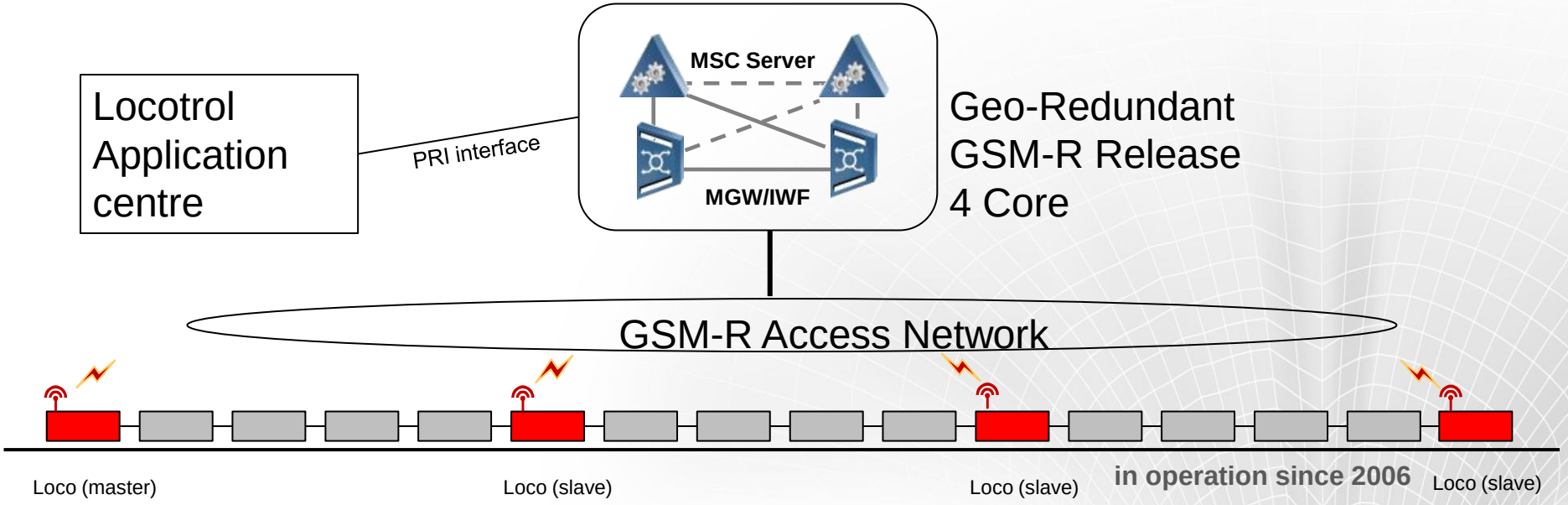
Technology applied

ETSI:	**3GPP TS 43.068: "Voice Group Call Service (VGCS)"**
	3GPP TS 44.018: "Mobile radio interface layer 3 spec"
	3GPP TS 48.008: "MSC-BSS interface "
	FACCH signalling
	SMD (Short Message Data) service

Flat Shunting Features

- Receive "Work Order" of current shunting task
- 500ms data transfer delay
- Data supported in all states of VGCS call (PTT, idle, talker change, talker, listener…)
- Shunting cab radio display "state of signal" controlled through data service by pre-defined shunting members (i.e. leader..)
- typical use cases : Link assurance & emergency break
- Automated voice announcements of emergency break status (i.e. originator) to all group members
- Flat Shunting initiation, acknowledgements and states are recorded and stored by equipment for post incident analysis

GSM-R Locomotive Synchronisation
Daqin Freight Line, China



200% freight capacity increase thanks to Locomotive control system and GSM-R CSD

HUAWEI

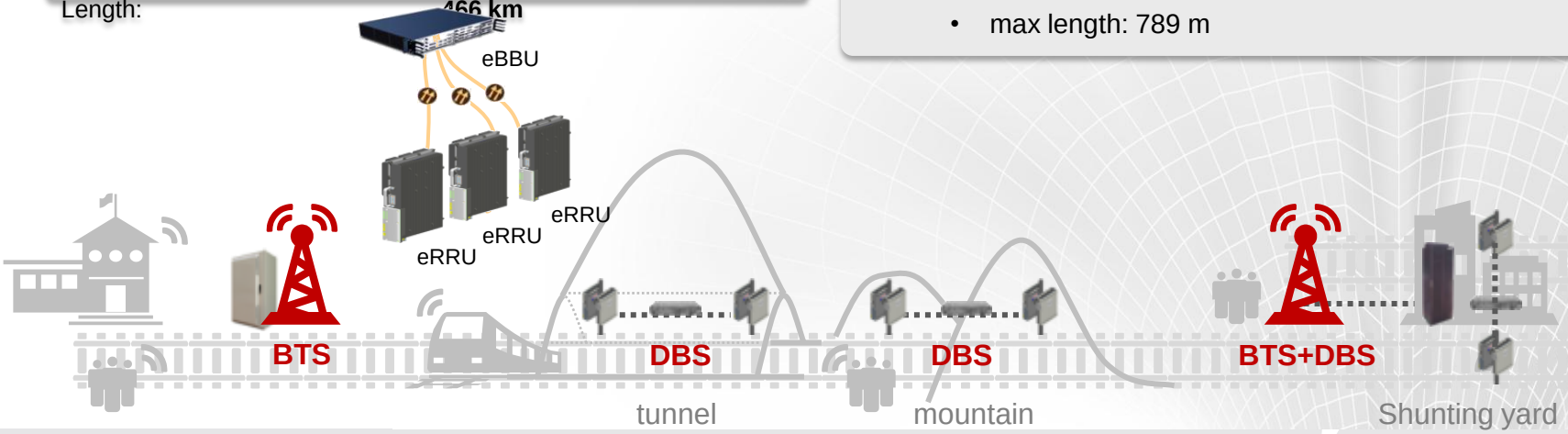
GSM-R distributed BTS
Eskişehir Kütahya Balıkesir Line, Turkey

Customer

Location:	**TCDD, Turkish Railways**
Integrator:	**ALSTOM**
GSM-R solution:	**BSS: Huawei**
	NSS: European GSM-R
supplier	
Length:	**466 km**

GSM-R features applied

- ETCS L2 ALSTOM
- Multi Vendor Integration
- **Distributed BTS**
  - 42 tunnels
  - total length: 7100 m
  - max length: 789 m



HUAWEI

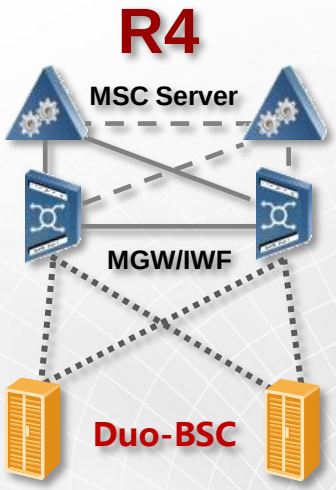
R4 GSM-R core for CTCS L3
Harbin-Dalian highspeed line, China

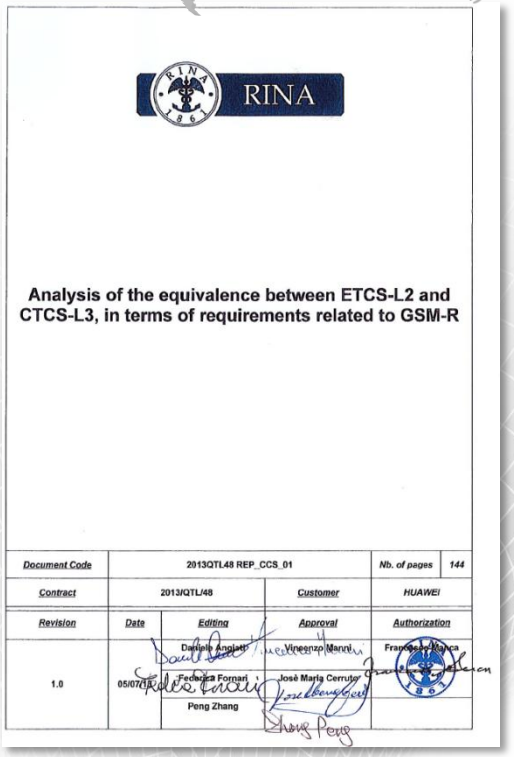
Customer

Location:	**MoR, Chinese Railways**
GSM-R solution:	**NSS/BSS: Huawei**
CTCS L3 solution:	**Bombardier**
Length:	**895 km**
Put into rail operation:	**December 2012**

GSM-R features applied

- CTCS L3 design speed 350 km/h
- QoS according to ERTMS
- Permafrost, high-altitude environment
- Geo-redundant R4 MSC's
- First R4 GSM-R core on operational CTCSL3-ETCS L2 line



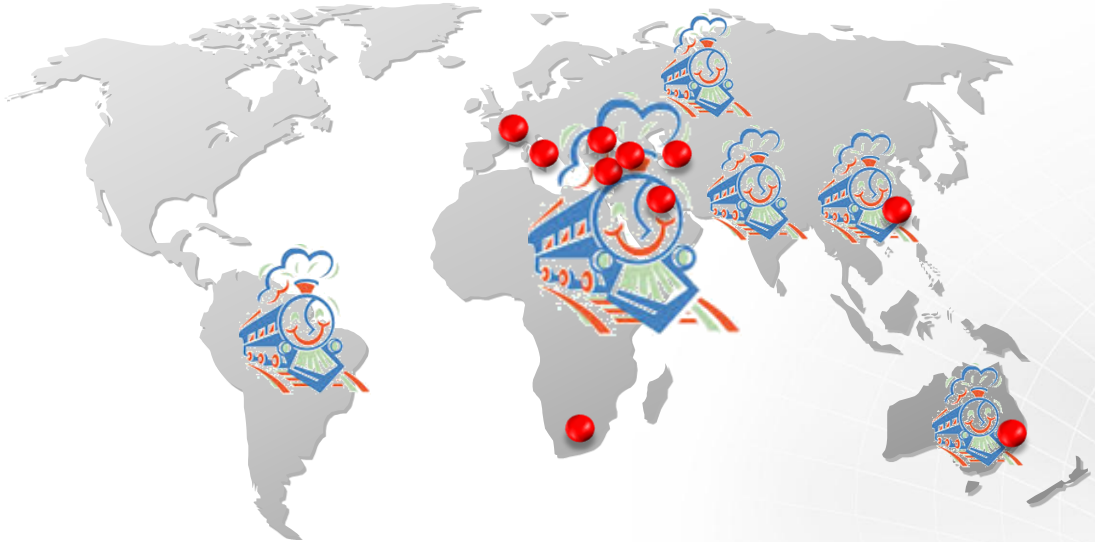


RINA

Analysis of the equivalence between ETCS-L2 and CTCS-L3, in terms of requirements related to GSM-R

Document Code	2013QTL48 REP_CCS_01			Nb. of pages	144
Contract	2013/QTL/48		Customer	HUAWEI	
Revision	Date	Editing	Approval	Authorization	
1.0	05/07/13	Daniele Angiati Federica Fornari Peng Zhang	Vincenzo Manni José María Cerruto	Francesco Marca	

Conclusion



- Strong demand and utilization of GSM-R outside of Europe
- UIC vital role to promote GSM-R and its evolution
- Promotion campaigns in Central Asia, South America and Africa would help the continuation of this success

HUAWEI

BE EVOLUTIONARY

HUAWEI ENTERPRISE ICT SOLUTIONS A BETTER WAY

Norman FRISCH
Business Development Rail Solutions
n.frisch@huawei.com

Copyright©2012 Huawei Technologies Co., Ltd. All Rights Reserved.
The information in this document may contain predictive statements including, without limitation, statements regarding the future financial and operating results, future product portfolio, new technology, etc. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in the predictive statements. Therefore, such information is provided for reference purpose only and constitutes neither an offer nor an acceptance. Huawei may change the information at any time without notice.