

INTERNATIONAL UNION
OF RAILWAYS

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UIC GSM-R Conference **Frequency Management Group**

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#UIC GSM-R Conference
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Communication is an important factor for the railways

- GSM-R is used for voice and data communication towards a traveling train
- GSM-R is mainly used for train radio, shunting radio, ETCS
- With ETCS data communication GSM-R as bearer service will become a higher importance

The railways spend a lot of effort to find solutions for the interference problematic because communication is essential for train operation

Interferences I



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▪ **Current Situation in Europe**

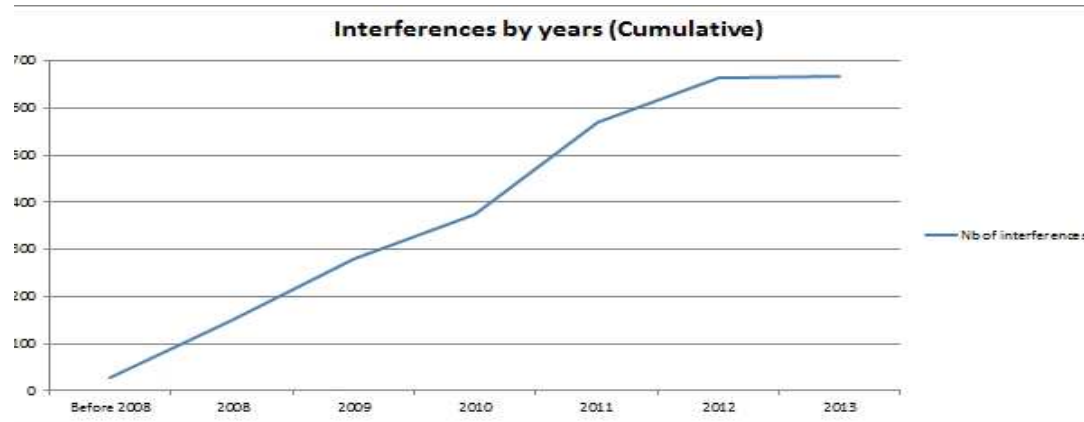
- GSM-R networks are subject to interferences from public mobile networks
- Leading from severe impairments for voice and data communications to network loss over several hundred meters of track
- UIC Interference Database currently lists more than 650 locations in Europe with interferences

Interferences II



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- The number of interferences currently reached a plateau because the rollout of public GSM is almost completed whereas some railways just started to build up their GSM-R networks
- UIC technical experts estimate for the future an increase of the interferences due to the successive roll out of broadband systems by public mobile operators in adjacent frequency bands and in close proximity to the railway lines
- These assumptions are supported by several activities performed by UIC and it's members in lab, field and by the ECC

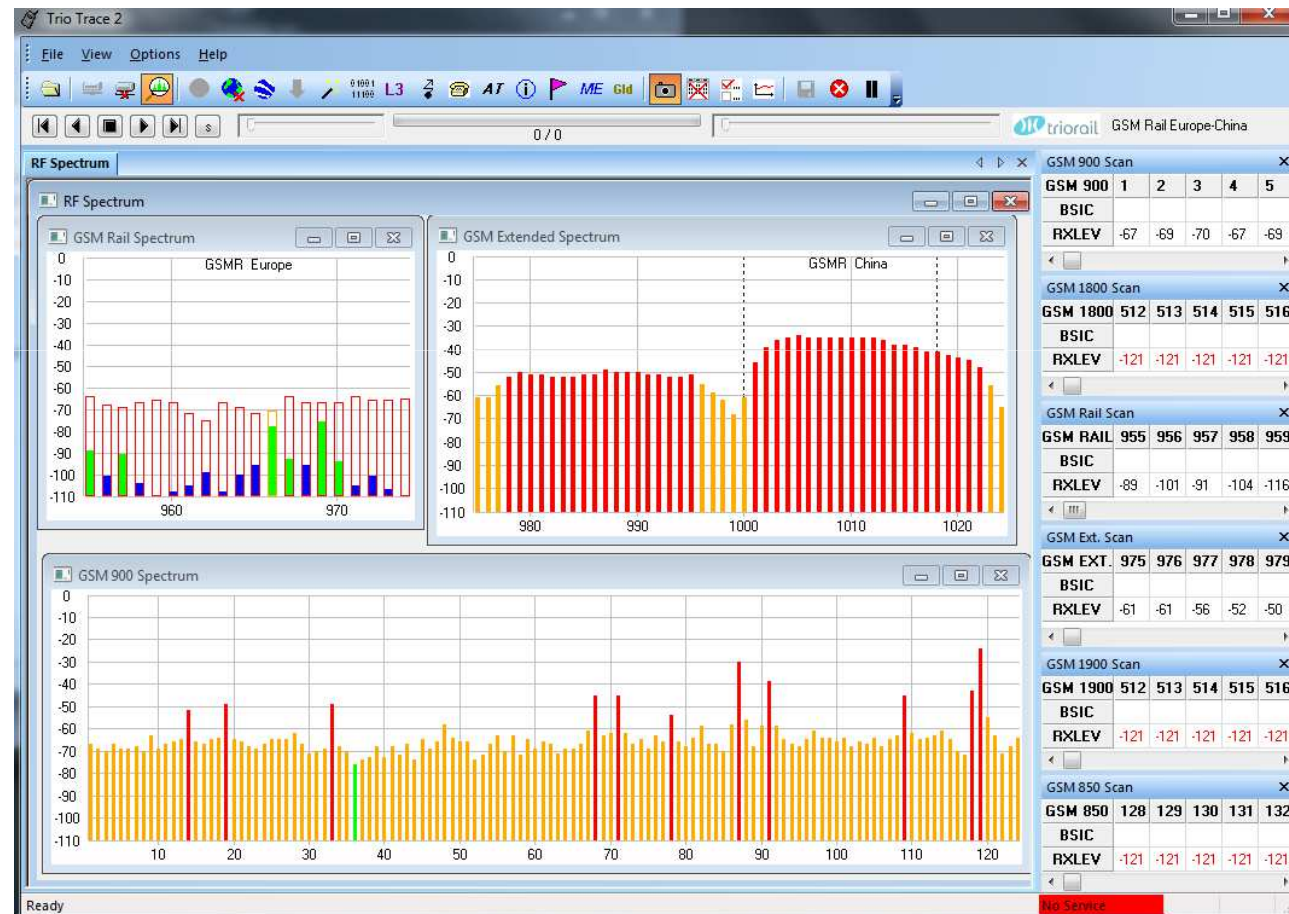
Interferences III



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The future is not far away, real scenario measured in UK !



ECC Activities



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- ECC WG FM issued a questionnaire to its members to get feedback on the national situation
- Main conclusions to be drawn from the national responses of National Regulatory Authorities (NRA)
 - no clear picture on the number of interferences can be derived from the statements reported
 - blocking and intermodulation inside the GSM-R mobile receiver are the two main root causes
 - interferences of today are mainly caused by GSM-Systems in adjacent band
 - Technical improvements and coordination are the keywords
- ECC currently performed a test campaign to figure out the necessary requirements to ensure coexistence

UIC Activities on technical level

UIC demonstrated on technical level the impact of interferences to the operation of GSM-R by

- Technical analysis performed by a UIC expert team resulting in studies like (mentioned as 3rd parties document in ECO database EFIS):
 - O-8700
 - O-8725 /
 - Red-M Report on the impact of UMTS 900
- UIC experts performed practical measurements together with the GSM-R mobile and filter suppliers
 - in Sweden, hosted by Trafikverket
 - in Italy, hosted by Joined Research Center (JRC)
 - Field test in UK, hosted by Network Rail
- The documents have been or will be made available for UIC members and distributed within CEPT to support the discussion on European level
- UIC pushed for the development of technical solutions on GSM-R mobile supplier side and in standardisation groups

UIC Activities on European level



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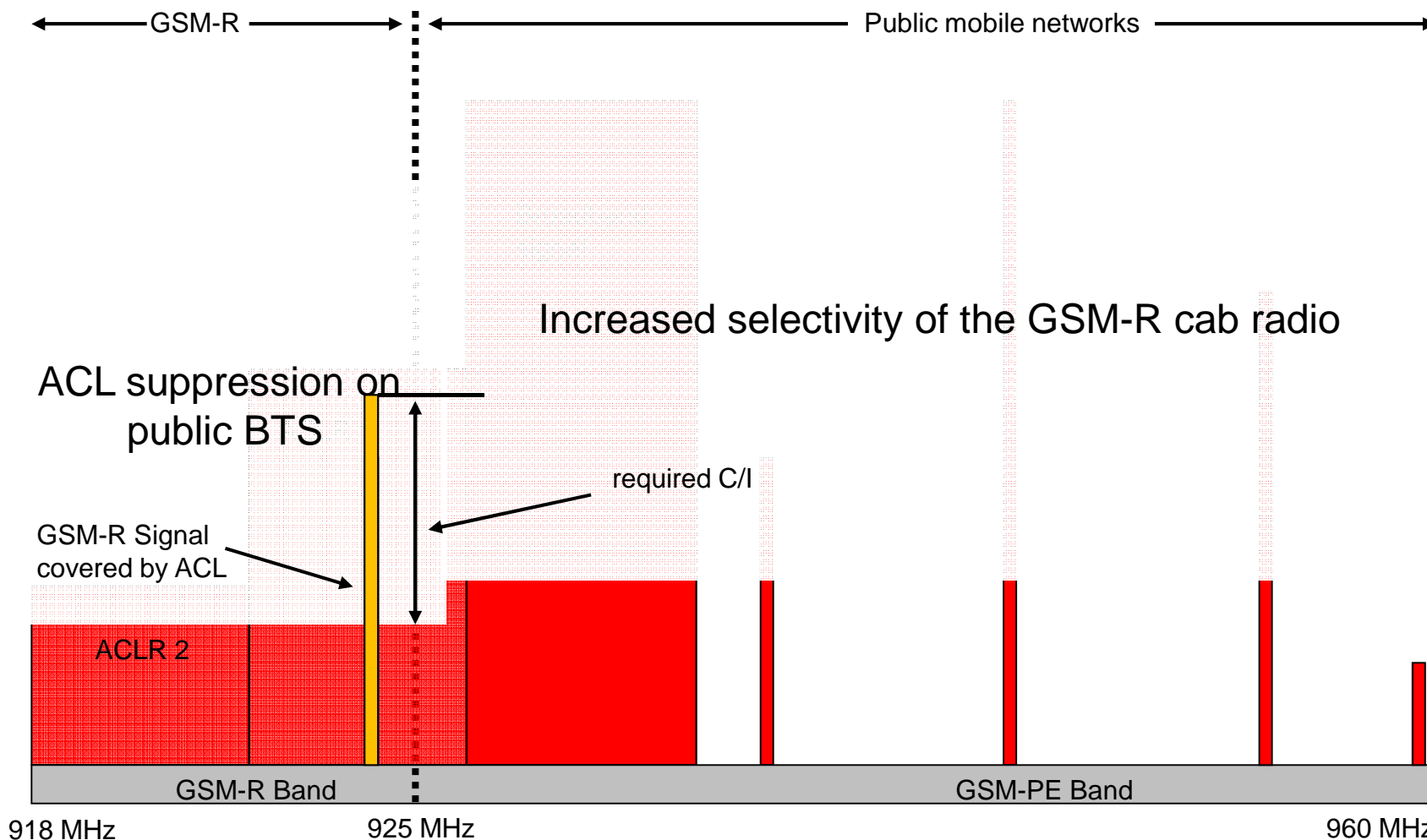
- UIC joined ECC WG FM and supported the CG handling the GSM-R interference issue
- UIC joined ECC WG SE and supported the development of ECC Report 162
- UIC participated at the ERA Interference Workshop
the aim of this workshop is to create the awareness for the issue Interferences and the discussion of possible solutions
- UIC participate at the « GSM-R Follow Up Group meeting - (GFUG) »
The aim of this follow up group is to identify necessary actions and to coordinate actions between involved, to exchange information and to find mutually agreed

Solutions



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Conclusions



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- After several years of time showing the clear evidence and discussions, it's now time to act
 - On ECC side
 - WG FM Correspondence Group to provide proposals to WG FM
 - provide measurements and analysis
 - definition of coexistence values
 - provide a proposal for a Coordination Agreement
 - On Commission and ERA side
 - define a process to ensure coexistence
 - update the technical requirements in annex A of the CCS TSI
 - On Railway side
 - act according to the process and coordination agreements defined
 - accept solutions and start their implementation
 - On Public Mobile Operators side
 - act according to the process and coordination agreements defined
 - accept solutions and start their implementation

What's left to say



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