

## **Cross Border Communication**

**for**

# **DNK/NØDNETT AND MSB/RAKEL SYSTEMS**

## **Radio Terminal Requirements for ISI**

## Reference documents

- 1 TETRA Association TTR 001-06, TETRA Interoperability Profile (TIP), Part 6: Air Interface Migration, Phase 2, Ver 2.0.1, August 2004.
- 2 TETRA Association TTR 003-02, TETRA Interoperability Profile (TIP) Part 2: Inter Systems Interface (ISI) Individual Call ANF-ISIIC Implementation, Ver 2.1.1 February 2010.  
Including CR277 (Clarification to 'MSISDN present as external subscriber number' IE).
- 3 TETRA Association TTR 003-06, TETRA Interoperability Profile (TIP), Part 6: Inter System Interface (ISI) Group Call ANF-ISIGC Implementation, Ver 2.0.2 February 2011.  
Including CR344 (Update to PSS1 to ISI PDU binding rules) and CR346 (Calling party in ISI Connect).
- 4 EN 300 392-7 V2.3.1. (2006-06) Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D), part 7: Security
- 5 EN 300 392-7, V3.2.1 (2010-06), Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security
- 6 TETRA Association TTR 001-01, TETRA Interoperability Profile (TIP), Part 1: Core, Ver. 5.1.1, January 2010

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## REQUEST FOR INFORMATION

The Inter System Interface (ISI) will be implemented in Nødnett with Dimetra SR 8.3 and in Rakel with Cassidian SR 6.0 in 2015. This document sums up the requirements identified for the foreseen functionality or predicted behavior for radio terminals migrating between the Norwegian Nødnett and Swedish Rakel system. This document supplements the existing requirements for TETRA radio terminals as approved by DNK and MSB to be used in the Public Safety Network in Sweden and Norway

## REQUIREMENTS OVERVIEW

- 1) The Tetra MS must support Air Interface migration (AIM) as described in ETSI TS 100 392-2 V3.6.1 (2013-05) and TTR001-06\_v201 v 2.0.1 (2004-04), excluding GTSI attachment .
- 2) The ISI solution will be based on static TG linking, using GSSIs (and not GTSIs). Group attachment may therefore only be performed to GSSIs, and attachment to a foreign GTSI will be rejected.
- 3) MSs shall register in the visited network, after authentication against the home network, and former attachments are then not valid in the new network. For details: AIM TIP.
- 4) The MS should be able to associate GSSIs with MNIs. A migrating MS should only attach talk groups, whose MNI is the same as the MNI of the network in which the radio terminal is currently registered. This is to ensure that radio terminals attach the right talk groups in the right network. Radio terminals shall not, however, use MNIs at the air interface.
- 5) Radio terminals should automatically associate each DGNA (Dynamic Group number assignment) talk group with the MNI of the network, where the DGNA talk group was provisioned. The MS should therefore not attempt to attach to any DGNA TG while migrating. (Note that DGNA is not covered by the current ISI standard and TIP specification, and not supported by our ISI solution).
- 6) After AIM, the MS must register on a GSSI with the MNI of the current network the MS is registered in;
  - a. If, after migrating, the MS is provisioned with a GSSI associated with the visited MNI which is equal to the last selected GSSI in the home network, then no user interaction should be needed to attach to this GSSI in the visited network.
  - b. In the opposite case, the user will need to select a different TG (associated with the visited MNI) for attachment.
  - c. For both cases, a) and b), please describe any user actions needed to 1) register to the new network and 2) make the group attachment.
- 7) The network name and selected TG name should be presented at the screen /GUI of the MS so it is clear to the user which network the user is registered in.

- 8) In order to uniquely identify calling/talking parties, it shall be possible to always present the full ITSI for the Calling Party / Talking Party, both for private and group calls. In case of a local subscriber, if network provides only the SSI (as allowed by AIM TIP), this requires the terminal to add the local MNI to the received SSI.
- 9) For outgoing services, SSI shall be used in the air interface for *local* subscribers, even if the user of the MS uses ITSI dialing. This means that while registered in the home network the MS should remove the MNI, if present, from the dialed number before the number is sent over the air interface. For migrated users, the MS shall pass the full, dialed ITSI (i.e. including the MNI) on the air interface.
- 10) Store and forward messaging is not supported over the ISI GW. It shall therefore be possible to configure the MS to allow sending of Store and Forward messages *only* when registered in the home network, and not while migrating.
- 11) The MS support the Emergency ID as specified in the Core TIP TTR001-01 TETRA part 1: Core version 5.1.1. January 2010.
- 12) The MS must be able to change behavior depending on the SwMI it operates in. Functionalities provided to the MS are expected to differ between home SwMI and visited SwMI. Some behavior changes are identified as:
  - a. Sending status alarm messages or not in connection with an emergency call
  - b. The MS to send an emergency call on the currently selected Talk Group
  - c. The MS to use a target emergency call Talk Group in the home SwMI or visiting SwMI.It is recommended the MS can keep emergency addresses defined and separately per SwMI. Therefore different emergency call targets may be chosen for the home and visited SwMI. The MS vendor is to state which options are supported and if these option can be configured to be automatic or manually initiated.
- 13) For DMO AIE the MS must be able to support SCK subset grouping type 2 (e.g. 3 subsets of 10 SCK each).
- 14) The MS shall support the default PSTN Gateway SSI as defined in the Core TIP, (16777184). In addition, the MS must be configurable/ programmable to handle PABX addresses separately per SwMI.
- 15) The MS supports E2EE updates with SDS in the home and visiting SwMI.
- 16) The MS shall only scan Talk groups that have been successfully attached, either as MS initiated or SwMI initiated.
- 17) It must be possible for the MS to use ITSI addresses when sending SDS messages.
- 18) SDS based AVLS or positioning services must support the use of full ITSI for the MS according to ETSI TS 100 392-18-1 V 1.3.1 (2007-04) chapter 6.3.77 Terminal or location identification. The format used is LIP.

- 19) The MS will handle default SwMI error messages to identify if a Home SwMI service is not supported after migration to a visited SwMI.
- 20) The MS must be able to operate with subscriber classes handled separately per SwMI.
- 21) The MS can handle different alphanumeric text services per SwMI and are pre-programmable in the MS per SwMI