

ISITEP

D7.2.1 - DEMONSTRATOR PLAN, REQUIREMENTS

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Programme:	Inter System Interoperability for Tetra-TetraPol Networks
Project Acronym:	ISITEP
Contract Number:	312484
Project Coordinator:	FINMECCANICA
SP Leader:	FNM

Document ID N°:	ISITEP_D7.2.1_20160209_V1.1	Version:	V1.1
Deliverable:	D7.2.1	Date:	09/02/2016
		Status:	Approved

Document classification	Public
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Approval Status	
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REVISION TABLE

Version	Date	Modified Pages	Modified Sections	Comments
0.01	15-06-2015	All	All	Text added
0.02	01-07-2015	All	All	Text added
0.05	26-08-2015	All	All	Final reviews
1.0	31-08-2015	All	All	Minor type corrections, final layout
1.1	09-02-2016	All	All	Updated according to the remarks of the Commission after the 2 nd Annual Review

Publishable extended abstract

This document describes the draft scenario of a cross border police hot pursuit, the participants, and needed technology.

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1. INTRODUCTION

1.1. Main objectives of ISITEP

One of the main objectives of ISITEP is to test the theoretical schemes and projects, especially concerning the use of a uniform and standardized international communication in real operations or events.

Therefore it is a basic need to practice some scenarios with and by the end-users in real time environment, the Field Training Exercise. Before we can organize some scenarios, it is advisable to have a draft in which all items, concerning the Field Training Exercise, are published. The draft is not only for the exercise itself but is also a checklist for the team in charge of the exercise, e.g. practical arrangements, contacts, maps,... Further, it can be used to compare the different (inter)national laws and the own national procedures (medical, disaster management, riot control...). These rules and procedures must be known by the responsible when there is a cross-border action, even when it is only an exercise.

1.2. Objectives WP 7.2

The Germany-Belgium-Holland border is of extremely interest in public safety cooperation due to the expected benefits. WP7.2 aims to demonstrate the feasibility of a police cross border cooperation scenario using the ISITEP frameworks (procedures, network technology, terminals and supporting tools) and assessing the associated benefits.

In order to reach these objectives the next tasks are assigned to WP 7.2

Task 7.2.1 Demonstrator plan and requirements:

The task will focus on:

- Demonstrator concept and test plan
- Definition of key performance indicators
- Definition of target performances
- Definition of specific requirements

Task 7.2.2 Demonstrator design:

The task is focused on:

- Scenario design and description
- Test procedures
- Scenario technical design (specifying architecture, updated of software hardware architecture, procurement, terminals)
- Security configurations

Task 7.2.3 Demonstrator implementation and test first run:

The task is focused on:

- Event organization and dissemination activities

- Verification of supporting tools (training, dimensioning tool, business evaluation tool)
- Scenario network Implementation and preparation
- Scenario terminal implementation and preparation
- Scenario services implementation and preparation
- Technology pre-test
- Evaluation of performances at start up
- Scenario execution
- Test results

Task 7.2.4 Demonstrator implementation and test second run:

The activities are similar to task to the first run (task 7.3.3)

Task 7.2.5 Demonstrator follow up:

The task is focused on:

- Evaluation of technology (terminal/network) performance
- Evaluation of procedures
- International Panel appraisal
- Lessons learnt
- Updates on ISITEP framework
- Dissemination activities

This document is the Deliverable of Task D 7.2.1.

2. DEMONSTRATOR PLAN

2.1. Demonstrator general objectives

The WP7.2 objective is to show the interworking between Dutch, German and Belgium networks. Due to the unavailability of these operational networks for the trial, this will be mimicked by deployment of test networks from three different vendors, equipped with ISITEP capabilities. This second 'Three Country Pilot' will be a small scale cross border field exercise where the procedures for a joined operation between police organizations from the three countries will be played out.

It is expected that the Hot Pursuit scenario execution will benefit from earlier test practices (Three Country Pilot, Schengen) conducted by these three nations.

Resources from police, supported by the control rooms will participate and receive assistance from resources from the neighbouring countries. Thus the exercise is a realistic cross border scenario. More specifically, the scenario includes a hot pursuit of a getaway car across the three participating countries. The scenario will imply TETRA (Netherlands) - TETRA (Germany) – TETRA (Belgium) communication over ISI gateways which allows for interoperability and migration of terminals.

2.2. Specific WP objectives

Procedures between involved agencies are already in use and periodic training sessions are organized between end users. So, the trial aims to demonstrate the use of technology to support the procedures and assess the benefits that can be taken from the innovation developed within ISITEP framework, such as:

- Verification of the ISITEP procedures
- Demonstration of cross border collaboration guidelines in action
- Demonstration of ISI gateway functionalities
 - Demonstration of roaming capabilities of terminals
 - Continued connection with native emergency room in foreign networks
 - Communication with foreign groups in connected (foreign) networks
 - Demonstration of migration capabilities of terminals
- Evaluation of enhanced terminals
- Final assessment on procedures, technologies and tools and performance evaluation
- Lower management costs mobile terminals and handhelds
- Better management solutions, safer and more flexible
- Easier access for guest users
- Easier to block unwanted users

2.3. Involved agencies

In this scenario the police organizations of the Netherlands, Germany and Belgium are involved, in particular in the area in proximity of the 'Three country Point' near Vaals in the south of Dutch Limburg, to describe the operational procedures, legal aspects to consider and to actually act as participants in the Field Training Exercise.

The (in Dutch) Expertgroep C2000, an international coordination group, gathering on a regularly basis to maintain and improve cross border facilities and procedures to support cross border communications between these countries is also involved. They cooperate in describing the scenario, especially in the use and needed necessities for the Tetra networks, like which emergency rooms will be active in the Field Training Exercise and what kind of communication channels will be needed.



2.4. Approach

The ISITEP demonstrator will be part of the small scale field exercise. This implies that personnel from the three participating countries participate (The Netherlands, Belgium and Germany) in a realistic scenario for cross border collaboration in this region. The local end-user organizations will plan the scenario and playbook in detail, but the main framework is already decided.

This main framework describes the situation of an armed robbery followed by a hot pursuit. The scenario is used to describe the cross border radio communication between police forces. Cross border communication can mean the connection of police forces with their own control room while they are active across the border. It can also mean the communication between the police forces of The Netherlands, Germany and Belgium including one or more control rooms.

- Armed robbery, in country I
 - Emergency room sends police car A
- Robbers drive with high speed to nearest border
 - Police co-driver gives description to emergency room, pursuit starts
- Getaway car crosses nearest border, closely followed by police car A
 - Police co-driver ask emergency room country I to inform emergency room country II and asks for instructions
 - Emergency room country II sends police car B communicating on international radio channel X to take over pursuit, asks emergency room country I to instruct police car A to switch to international radio channel X and takes over the coordination
 - Emergency room country I follows communication on international radio channel X
- Police car B takes position behind getaway car
 - Co-driver police car B gives update to emergency room country II
 - Emergency room country II dismisses police car A
- Getaway car drives to border country III, etc., etc.
- In country III the pursuit stops at a road block

The hot pursuit will require the local agencies to request assistance from police across the borders to render aid. Specific locations of the incidents are not yet decided. Number of participating resources from police is to be decided.

The demonstrations will be conducted following a detailed playbook and end-users will follow the cross-border procedures supported by radio terminals and known common cross-border functionalities in the networks.

The date for the field exercise will be scheduled in Q2 of 2016.

2.5. Talk Groups

To support the execution of the Field Training Exercise there is need for talk groups to support:

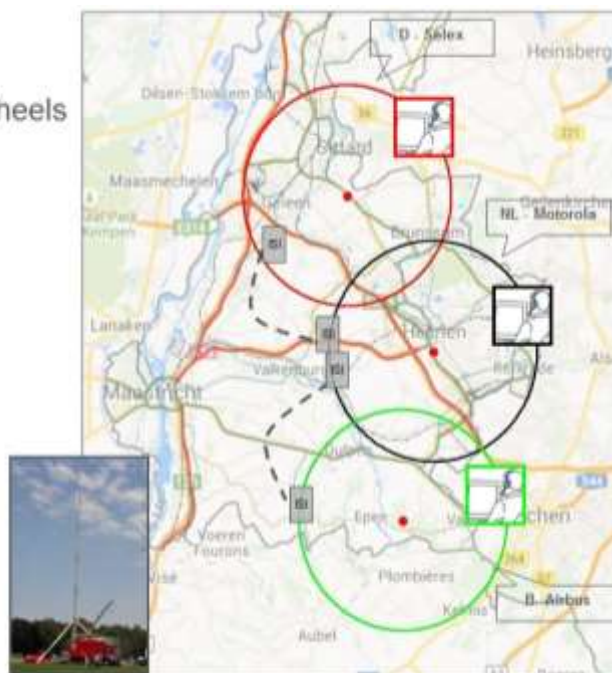
- International Coordination Group Emergency rooms B – D – NL
- International Operational Group Police cars B – D – NL
- National Operational Talking Groups B – D – NL
 - with the possibility to couple them with International Operational Group
 - able to roam manually between the different networks;

2.6. Test Environment

With the industrial partners involved there is reached a commitment about the test environment.

In the Field Training Exercise three TETRA networks from three different manufacturers will be connected, each representing one of the participating countries. An overview of the draft configuration of the networks is given in the picture below.

- Tetra Trial Network (3x)
- 1 NOW = Network On Wheels
 - 1 antenna 30m
 - 1 Carrier
 - 1 Dispatch control panel
 - Radius = 7,5 km
 - Use of Mobiles (no handportables)
 - 2 ISI gateways (- -)



The advantage of positioning the three networks on Dutch territory is that the support (location, power supply, IP-connections, etc.) can be delivered by one Service Provider (C2000).

The agreement includes:

- Roaming between Motorola and Selex is possible
- Roaming between Motorola and Airbus is possible
- Roaming between Selex and Airbus is not available
- Motorola and Airbus are able to provide prototype (5) handheld for the test (the network is initially dimensioned for mobile coverage; Motorola and Airbus investigate to provide mobiles for the test)
- Selex is able to provide prototype mobiles for the test;
- Suppliers Motorola and Airbus will use test facilities in their own premises; locations are Copenhagen and Helsinki
- Selex will provide a truck (Network on Wheels) for the test; they investigate whether to use test facilities in Florence or to provide the network on site in the Netherlands
- Each of the three 1 carrier sites in the Netherlands test area will be connected to the test facilities via an IP
- International Coordination Group Emergency rooms B – D – NL
- International Operational Group Police cars B – D – NL
- National Operational Talking Groups B – D – NL, with the possibility to couple them with International Operational Group
- Able to roam manual between available networks when driving out to another country
- Emergency calls

2.7. Test strategy

The test strategy for WP 7.2 has four stages:

1. Supplier testing of all Test Network components (ISI gateways, dispatch control panels and mobiles).
Supplier testing of ISI gateways is described in D 4.7.1 Gateways integration and testing plan. The implementation and testing of the dispatch control panels and the mobiles is out of scope of the ISITEP program, but are absolutely necessary to perform the Field Training Exercise.
2. Service Provider testing of all Test Network components (ISI gateways, dispatch control panels and mobiles).
3. End-user education, training and testing to prepare them for the Field Training Exercise.
4. Go/no Go decision on readiness for Field Training Exercise.

This strategy may be subject to change and refinement during Task 7.2.2. Harmonization of test strategies in WP7 should also be investigated (see also section 2.8).

2.8. Relationship with other work packages

Being a small scale exercise utilizing an end-to-end ISI solution, this demonstrator will draw on work from several work packages within ISITEP. The ISI gateway (WP 4.2) will be demonstrated.

As main input the following deliverables will be used:

- End-user requirements (D2.3.2 End user requirements document)
- Field Training Exercise checklists and ISITEP radio procedures (D2.1.2 Usage Candidate Scenarios)

In addition the applicable deliverables from the subprograms SP 3 -6 will be taken into account.

The demonstration and test approach will be coordinated during Task 7.2.2 among the various ISITEP demonstration activities and related work packages. (WP71: Multi Agency Demo, WP73: Airplane Disaster in Geneva border, WP74: Joint police surveillance patrol, WP75: VIP protection service).

The results of WP 7.2.1 will be used for the WP7.2.2 demonstrator design.

3. KEY PERFORMANCE INDICATORS

The focus of the WP 7.2 evaluation will be put on the end-users assessment of the ISI functionalities and procedures and does not include an in-depth technical evaluation. The supporting industries should support tri-national radio groups between users from Belgium, Germany and The Netherlands.

The evaluation plan will be based on the three main key Performance Indicators (KPI) as described here below.

3.1. Added value of ISITEP in a tri-nation cross-border hot-pursuit scenario

Although the hot pursuit scenario demonstration will be fully scripted, the expectation is that it provides sufficient experience data to assess the operational added value of an ISITEP solution for cross boundary hot pursuit operations.

The main operational tasks that are supported by the ISITEP solution are:

- 1) **Inform** on a cross border level relevant police forces and control rooms on the current situation (Cross border situational awareness)
- 2) **Coordinate** the cross border hot pursuit operation.

The main overall performance criteria related to these tasks are:

Criteria	Clarification
Task result	To what extent does the use of ISITEP improve the result of a specific task (i.e. inform/coordinate) compared to the current non-ISITEP situation?
Speed of task execution	To what extent does the use of ISITEP speed up achieving the result of a specific task (i.e. inform/coordinate) compared to the current non-ISITEP situation?
Ease of task execution	To what extent does the use of ISITEP reduce the difficulty of a specific task (i.e. inform/coordinate) compared to the current non-ISITEP situation?

A further division into sub tasks can be identified for the hot pursuit operation which are:

- 1) Assignment of police car to the robbery incident by the emergency room;
- 2) Inform local police car from local emergency room and vice versa
- 3) Coordination process to take over the hot pursuit from car A to car B at border crossing (involves informing and coordination with remote emergency room and local and remote police cars)
- 4) Dismissing of police cars by dispatch centers

3.2. Efficiency of functional radio procedures

The efficiency of the radio procedures will be evaluated during the execution of the hot-pursuit scenario. Efficiency criteria for this evaluation are closely related to usability aspects in order to avoid (unnecessary) repetitive tasks by end-users, to avoid terminal operating as much as possible in busy and stressful moments and to avoid mistakes.

Efficiency criteria:

- 1) Limited number of required terminal/work station manipulations;
- 2) Simplicity of procedures;
- 3) Robustness of procedures to handle unexpected events;
- 4) Easiness to operate terminal/work station;
- 5) Number and nature of errors made by operators

3.3. Evaluation of mandatory and desirable functional requirements

For the hot pursuit scenario a subset of the ISITEP priority 1 end-user requirements (as defined in D2.3.2) is mandatory, while other end-user requirements are set desirable or not necessary.

The list of the individual requirements and the relevance for the Hot Pursuit scenario is added in chapter 5.

Prior to the start of the hot-pursuit scenario the availability and correct functioning of the mandatory and desirable functions will be checked.

Evaluation criteria will be related to the quality of the group calls:

- 1) Voice quality
- 2) Delay between pressing PTT button and call set-up

4. DEFINITION OF TARGET PERFORMANCE

The target performances of the key performance indicators will be defined as improvements compared to the current non-ISITEP situation. As a baseline situation several hot-pursuit scenarios have been conducted with the current operational Cross Border Communication technology between Belgium, Germany and Belgium.

A detailed test and measurement plan will be worked out in task 7.2.2.

4.1. Added value of ISITEP in a tri-nation cross-border hot-pursuit scenario

As target performance a clear added value of ISITEP is needed as outcome of the overall assessment by experienced end-users on one or more of the following criteria:

- 1) Task result
- 2) Speed of task execution
- 3) Ease of task execution

4.2. Efficiency of functional radio procedures

As target performance the functional radio procedures should be assessed as efficient with regard to the criteria as listed in section 3.2.

4.3. Evaluation of mandatory and desirable functional requirements

With regard to availability and correct functioning of ISI functionality the target is that all mandatory designated functionalities (See Annex 5.1) are available.

5: ANNEXES

5.1 Annex: Requirements and their relevance for the Hot Pursuit scenario

ID	Title	Requirement for hot pursuit demo
I-EUR-FUN-1	ISI channel trunking	Mandatory
I-EUR-FUN-2.a	Registration in another network than its home network	Mandatory
I-EUR-FUN-5.a	Migrating subscriber profile in the visited network.	Desirable
I-EUR-FUN-5.b	Several Migrating subscriber profiles in the visited network.	Desirable
I-EUR-FUN-10.a	Automatic Migration Performance	Mandatory
I-EUR-CNF-4.a	Terminal - permitted network	Desirable
I-EUR-FUN-12	Air Interface Encryption	Mandatory
I-EUR-FUN-13	End to End Encryption transparency	Mandatory
I-EUR-FUN-15.a	ISI Individual speech call	Mandatory
I-EUR-FUN-16.a	ISI Individual speech call – migrated user and home dispatcher	Mandatory
I-EUR-FUN-16.b	ISI Individual speech call – migrated user and user in home network	Desirable
I-EUR-FUN-16.c	Individual speech call – two migrated users	Desirable
I-EUR-FUN-16.d	Individual speech call –migrated and local users	Mandatory
I-EUR-FUN-17.a	ISI Individual speech call from telephone PSTN	Not necessary
I-EUR-FUN-18.a	Individual speech call to telephone PSTN	Not necessary
I-EUR-FUN-19.a	ISI Individual short data service	Desirable
I-EUR-FUN-20.a	ISI Individual short data service – migrated user & home dispatcher	Desirable
I-EUR-FUN-20.c	ISI Individual short data service – migrated user & user in home network	Desirable
I-EUR-FUN-20.e	Individual short data service – two migrated users	Desirable
I-EUR-FUN-22.a	ISI Group speech call – users belonging to one network	Mandatory
I-EUR-FUN-22.b	ISI Group speech call – users belonging to several	Mandatory

	network	
I-EUR-FUN-23.a	Joining a statically linked group	Mandatory
I-EUR-FUN-23.b	Joining a statically linked group – migrated and local users	Mandatory
I-EUR-FUN-23.c	Joining a statically linked group – user rights	Desirable
I-EUR-FUN-25.a	Group addresses used for statically linked groups	Desirable
I-EUR-FUN-26.a	ISI group speech call – migrated user	Mandatory
I-EUR-FUN-27.a	ISI group short data message	Desirable
I-EUR-FUN-28.a	ISI emergency group status message to dispatchers	Desirable
I-EUR-FUN-31.a	ISI group short data message to home network	Desirable
I-EUR-FUN-31.b	ISI group status message to home network	Desirable
I-EUR-FUN-32.a	Joining a local group – migrated user	Desirable
I-EUR-FUN-32.b	Local group – migrated and local users	Desirable
I-EUR-FUN-32.c	Local group – user rights	Desirable
I-EUR-FUN-33.a	Local Group speech Call – migrated user	Desirable
I-EUR-FUN-34.a	Local Group short data message – migrated user	Desirable
I-EUR-FUN-35.a	Local Group Status message – migrated user	Desirable
I-EUR-FUN-36.a	Status message toward a local group of Dispatchers – migrated user	Desirable
I-EUR-FUN-37.a	Local Combining of a statically-linked group with one or more local groups	Desirable
I-EUR-FUN-49.a	Emergency call to a pre-defined local group	Desirable
I-EUR-FUN-50.a	Positions sending to home network	Desirable
I-EUR-HUM-1.a	Terminal MMI - display of MCC and MNC	Mandatory
I-EUR-HUM-2.a	Terminal MMI - Migration Mode Selection	Mandatory
I-EUR-HUM-3.a	Terminal MMI - CLIP	Mandatory
I-EUR-HUM-4.a	Terminal MMI - TPI	Mandatory
I-EUR-HUM-10.a	Reflex pre-defined group selection	Mandatory
I-EUR-FUN-54.a	Mobility TETRA-TETRAPOL	Not necessary
I-EUR-FUN-56.a	Dynamic Functional Numbering	Mandatory
I-EUR-FUN-57.a	GPS Location Assisted Numbering	Desirable
I-EUR-FUN-58.a	Enhanced Message Exchange	Desirable
I-EUR-FUN-59.a	Procedures for visiting user	Desirable