



Tools of ISITEP to increase interoperability

ISITEP 2nd User Forum

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Net Technologies



- ISITEP intends to provide a solution to achieve interoperability on technical, operational and users level.
- Operational and user interoperability is mandatory for joint operations and joint forces
- **SP6 will develop tools to support this operational and user interoperability**



- **European cross border Police cooperation, cases requiring joint forces or any other common operations** is an effective/required approach for improving citizens' security
- **Sharing resources for Disaster Relief** at European level improves effectiveness of fire fighting, civilian protection, medical and rescue operations
- **Cooperation on the field requires:**
 - Interoperable communications at service and voice level
 - Jointly agreed procedures
 - bi/multilateral agreement in place
 - Trained PPDR forces
 - Fast decision making of jointly operated PPDR

Interoperability Enabling Tools

- **Net Technologies** will lead the design and implementation of these tools
- The validation of their functionality and performance will be demonstrated in the 5 defined demonstration cases covering all possible operational scenarios

Multi Agency Demo: Norway –Sweden cross border cooperation

Airplane Disaster at Geneva Airport: Swiss-French PPDR cross border cooperation

VIP Protection Service: In Brussels, when foreign delegations arrive to Brussels and many organizations are involved

Joint Police Surveillance Patrol: National Police and Civil Guard with Madrid Police, Basque Country regional police, Catalanian regional police.

Police Hot Pursuit :At Germany-Belgium-Holland border police cross border cooperation

The following tools will be developed and tested

- Dimensioning Tool
- Terminal Training Tool
- Operations Training Tool
- Operations Cost Estimations Tool

- And the development of a European Business Model for roaming implementation

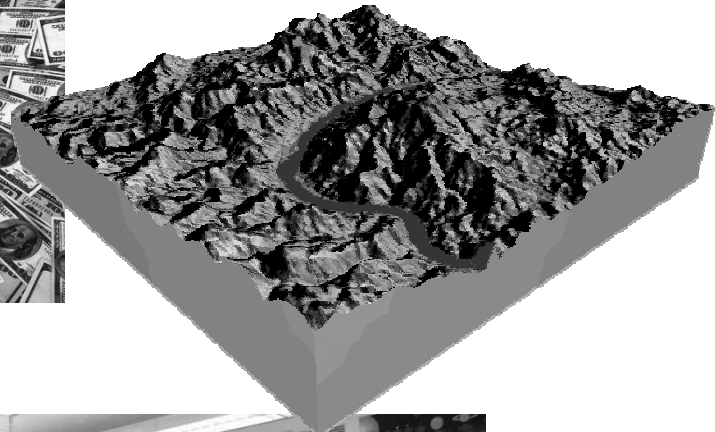


SO WHAT , WE HAVE SEEN THAT BEFORE . WHERE IS THE INNOVATION ????

What is the difference ISITEP tools offer?

All These Dimensioning & Training Tools require.....

- **Expensive licences**
- **Physical Classroom**
- **DEM or DTM Models**
- **Trainers**
- **Administration Support**
- **Time**





In real life, the situation is

A member or a force that needs to be deployed to an unknown terrain

- ✓ Does not have time
- ✓ Does not have calm to study
- ✓ Does not have patience to setup and deal with fancy graphics
- ✓ Does not have the luxury of «running» a complex software
- ✓ Does not have the luxury to ask an expert
- He needs live , synchrony tools that will be able to provide him help
- In any place
- He needs to decide fast
- He needs to understand procedure
- He needs to be able to take decision

Web Based
Applications

That will use
open source
Data

Containing
encapsulated
information

Easy to use
and access

Will be
expandable

Dimensioning Tool

- A radio dimensioning tool which supports the decision makers in crisis situation to develop a solution in a disaster area.
- Assists the validation and verification of the designed ISI interconnection solution required for the specific scenarios
- The dimensioning takes into account input for the “disaster area”, such as
 - type of first responder forces, existing infrastructure in the area (BS, nodes, etc), traffic resources, bandwidth requirements etc;

The tool gives the required network elements in order to cover the needs of a disaster area for coverage and operations

It also gives the cost of the various options of the proposed network



- It is a simulation Tool for:
 - Assisting Engineering efforts towards Wireless Networks Design.
 - Assisting Engineering efforts in preliminary radio network design calculations.
 - Providing reliable input to decision makers for cost control handling.
 - Using existing TETRA/TETRAPOL equipments with provision for future developments
 - Takes into account the networks in proximity
 - Providing in a time-efficient manner, accurate network dimensioning estimations for complex wireless network deployments.

- ◆ An easy to use tool for network demensioning.
- ◆ A fast, based on open data, solution to the radio planners /communication officers or operations responsables to decide number of TBS and orther elements needed, their location and cost of deployment in order to cover a particular area of crisis.
- ◆ Receives input related to the “disaster” area, such as the number and the type of first responder forces that are expected to operate in the area, as well as information related to the existing infrastructures (e.g. Type of TBS, core network etc)
- ◆ Based on google earth map
- ◆ It is a web based tool easily accesible however considering all aspects of radio dimensionng and planning.
- ◆ will allow for the validation and verification of the designed ISI interconnection solution and their respective infrastructure and radio resources required for the specific demonstration scenarios.

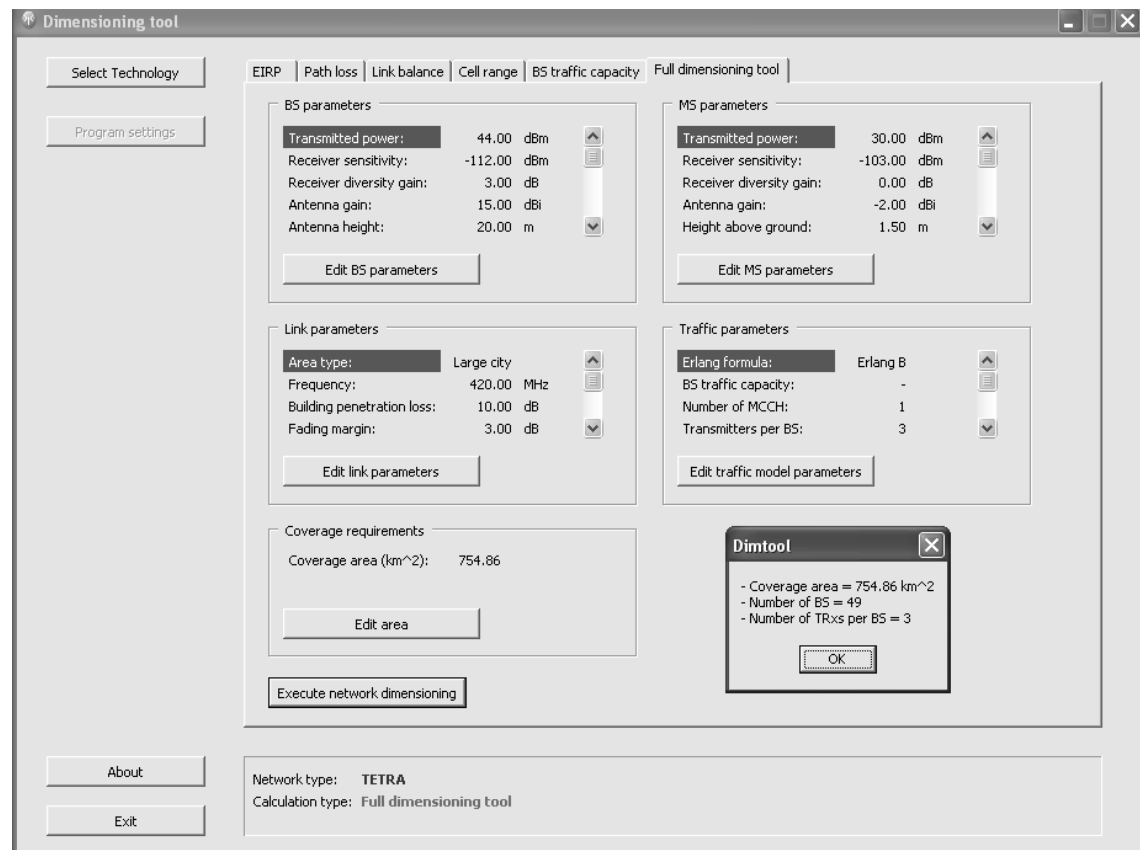
Functional Description - Highlights

- Automatic BS and MS parameters loading from a complete database comprised of actual manufacturer's equipment data.
- Simultaneous execution of the network dimensioning calculations for multiple areas of interest.
- Parameters input and results output provided in tabular format for ease of use and reporting
- Area of interest visualization on web-based maps and graphical coverage boundaries definition
- Preliminary network cost estimate based on actual manufacturer's data

Functional Description – Sub Tools

- Different functions are organized into several Sub-Tools :
 - EIRP Calculator: Equivalent isotropically radiated power (EIRP) calculations for both UpLink (UL) and DownLink (DL) directions
 - Path Loss Calculator: Calculations of Path Loss as a function of various parameters (e.g. Distance, Mobile Station height, Base Station height, etc)
 - Link Balance Calculator: Quick and reliable link balance estimations and proper selection of equipment in both BS and MS sides
 - Cell Range Calculator: Calculations of BS cell range taking into account numerous BS, MS and Link parameters.
 - Traffic Calculator: Performs different types of traffic calculations according to the selected technology.
 - Network Dimensioning Tool: Provides reliable estimates of the number of network elements requisite to fulfil both coverage and traffic requirements.

Integration of all sub-tools into one, that calculates the required number of BS, Sectors and Transceivers that fulfil both coverage and traffic requirements of a certain area.



Dimensioning tool

Select Technology | Program settings

EIRP | Path loss | Link balance | Cell range | BS traffic capacity | **Full dimensioning tool**

BS parameters

Transmitted power:	44.00 dBm
Receiver sensitivity:	-112.00 dBm
Receiver diversity gain:	3.00 dB
Antenna gain:	15.00 dBi
Antenna height:	20.00 m

Edit BS parameters

MS parameters

Transmitted power:	30.00 dBm
Receiver sensitivity:	-103.00 dBm
Receiver diversity gain:	0.00 dB
Antenna gain:	-2.00 dBi
Height above ground:	1.50 m

Edit MS parameters

Link parameters

Area type:	Large city
Frequency:	420.00 MHz
Building penetration loss:	10.00 dB
Fading margin:	3.00 dB

Edit link parameters

Traffic parameters

Erlang formula:	Erlang B
BS traffic capacity:	-
Number of MCCH:	1
Transmitters per BS:	3

Edit traffic model parameters

Coverage requirements

Coverage area (km ²):	754.86
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Edit area

Execute network dimensioning

About | Exit

Network type: **TETRA**
Calculation type: Full dimensioning tool

Dimtool

- Coverage area = 754.86 km²
- Number of BS = 49
- Number of TRxs per BS = 3

OK

Target Area

Coverage Area is defined either manually or using markers above the area of interest. Google earth maps are used

- **Outputs Overview**

- EIRP UL/DL
- Path Loss
- Received Isotropic Power
- Maximum Allowable Path Loss for UL/DL
- Link Balance
- Cell Range
- Grade of Service (GoS)
- Trunking Efficiency
- BS Traffic Capacity
- Required number of traffic channels

- Minimum Number of BS required for a certain area
- Minimum Number of Sectors required for a certain area
- Minimum Number of Transceivers required for a certain area
- Indicative BS locations visualization
- Preliminary Equipment Cost estimate



ISITEP Terminal Training Tool

- A tool to train TETRA/TETRAPOL users to all possible terminals that they will use when operating in other country with different terminals than those they use in their own organizations
- A web-based application that emulates the terminals used by all different security forces
- Translation capabilities, which allow users to have their own language
- Improves transnational common operations

- A software tool which emulates the functionalities of the user terminals employed within all different security forces participating in the demonstrations.
- It aims to help officer **on the move who does not have the luxury of a classroom** to familiarize with hand held to be used.
- It contains initially a small number of **Selex/Airbus/Sepura and Motorola** handheld terminal
- The tool offers a user-friendly training capability to end users that visit a foreign European country and will potentially need to use an otherwise unknown to them TETRA/TETRAPOL terminal.
- The terminal training tool integrates all enhanced terminal capabilities developed within SP5 in order to facilitate their use by the corresponding end users.



Operations Training Tool

a tool to educate and train the end users on the organization structure, methods and procedures that foreign PPDR forces employ in particular crisis situations

input to the tool from National PPDR authorities

supports the interoperability of European PPDR forces in technical, operational and organizational level

efficient cooperation with foreign colleague

- A tool to educate and train the end users on the organizational structure, methods and procedures that foreign PPDR forces employ in particular crisis situations.
- The tool will have the relevant info originating from all PPDR forces involved, stored in a database that through a user friendly GUI will be easily accessed by Police, Fire Brigade and other agencies officers, to facilitate the more efficient cooperation with their foreign colleagues.
- A web-based tool for officers on the move or in the field that help them to familiarize other countries PPDR operational procedures

- Estimates the cost of operations as well as the general financial impact in several crisis situation cases.
- A first tool for OIC to have a potential financial impact .
- Main activities of this tool are designed to be :
 - Cost estimation of the performed operations of different PPDR forces across borders and benefits that the interoperability solution will imply
 - Analysis of the financial impact in specific cross border crisis situations and benefits that the interoperability solution will imply
 - Estimation of CAPEX and OPEX for TETRA/TETRAPOL networks upgrades to support new interoperability features
 - Pros and Cons analysis of the combination and use of different communication standards (TETRA, TETRAPOL)



Business Model for Roaming

- Business model for implementing the roaming between PPDR forces in European countries and the enhancement of cross border collaboration between them.
- Main activities of the model are:
 - Identification of main business goals
 - Identification of main business issues and organizational weaknesses
 - Determination of target customer segments, distribution channels and relationships
 - Determination of core capabilities
 - Determination of partner network
 - Determination of cost structure and revenue model

Benefits from Tools

- Common operations of various PPDR forces
- Fast and cost effective network design in disaster areas
- Cross borders operations efficiency
- Educated and well trained users
- Advanced equipments
- Users have terminals with their own language when abroad
- Speed, reliability and efficiency of users/PPDR forces operating in a foreign area
- Roaming capabilities



Thank you very much for your attendance

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