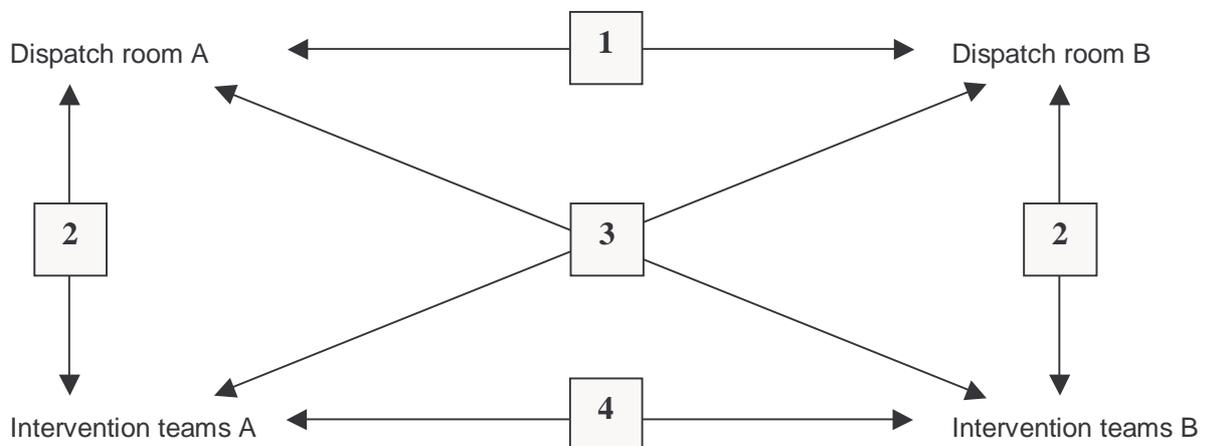# Appendix Operational research and development 6: Operational communication standard

This appendix gives the reader a more detailed view on the different schemes that were used to visualize the scenarios that should be played.
As well the communication schemes as the fleet map are described.

Description

Participating disciplines in the three countries agreed about a standardized way of thinking in communication procedures in case of cross border activities. Operational standard was made to manage cross-border communication and does not influence the national procedures.
The scheme below illustrates this way of thinking in the communication procedures.
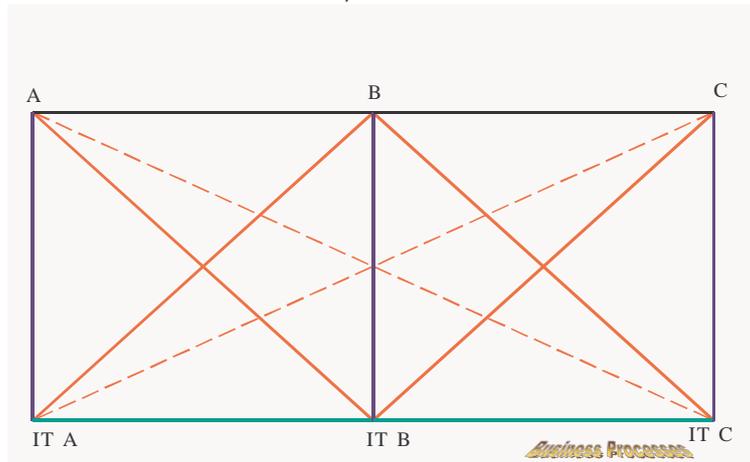

Explanation

(1) At first there is a contact between dispatch rooms from the different involved countries in case of cross-border activities.
(2) In basic the coordination of the intervention teams will occur from out their own dispatch rooms in each country. The dispatch rooms their selves keep frequently contact with each other (1) to keep informed about the incident.
(3) If necessary the dispatch room which is in charge of the incident (defined by the legal territory where the incident takes place), can connect foreign intervention teams directly under their command.
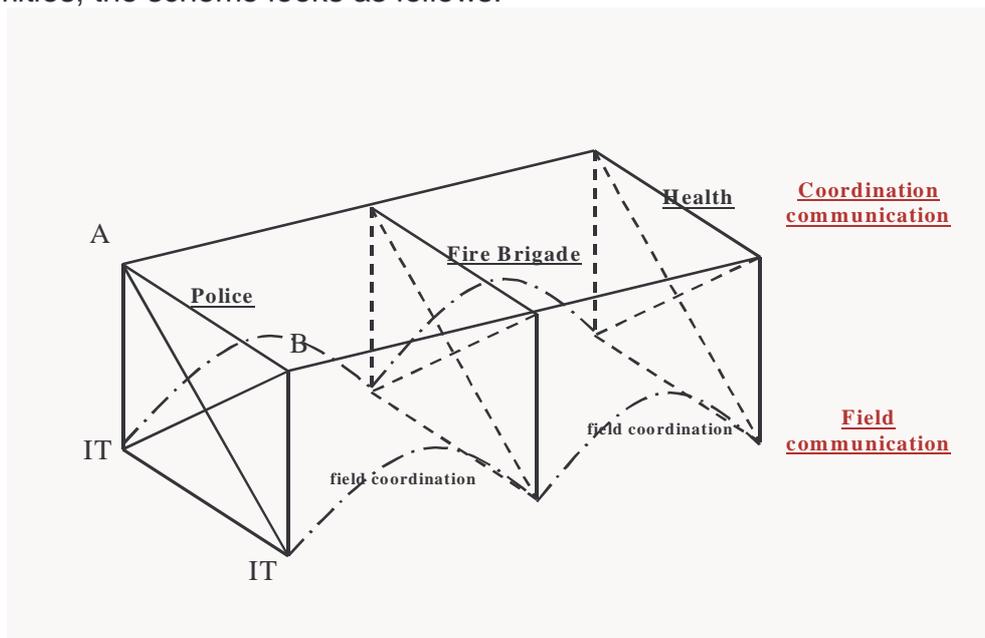(4) If necessary cooperating intervention teams from different countries can connect together.

Note:

To have an effective base for operating in such a communication scheme, a well-considered international fleet map is needed.

This standard scheme is valid for all disciplines. It is also valid for all sort of cases. If an event concerns the three countries, the scheme looks as follows

- in cases concerning simultaneously all three disciplines (fire brigade, rescue services and police services) like for instance the intervention in case of calamities, the scheme looks as follows:

Co-ordination communication:
Communication between the dispatchers who manage the communication.
Field communication:
Communication with and between the intervention teams
Field co-ordination:
Communication with and between the chiefs of the operation on the field

Requirements

The priority of an intervention team, no matter in which discipline, is the intervention itself. Effective communication is a determining factor of success in managing interventions. That is the reason why operational people are very demanding in these matters and why it was important to think about the general requirements concerning communication. These requirements are;

Simplicity

"Keep it simple" is a relevant keynote. In fact, simplicity means:

- A small number of devices
- As less talking groups as possible
- Limited number of device types
- Text on display being clear and easy to memorise (name of group, etc.) and direct indication of used network/group
- Easy handling of devices, no complicated adaptation/conversion when crossing the border line or a small number of steps to change the talking group
- Pre-programmed numbers for telephone call

Reliability

That means:

- No disturbance when crossing border
- Back-up solutions: always being in contact with someone
- Sufficient coverage on the field and in the buildings
- Acoustic sign in case of no coverage
- Ambience listening when emergency call and/or the possibility to locate the call.

Flexibility

That means:

- Multiple possibilities to program other foreign talk groups on the device or use of dynamic groups
- If co-ordination channel is occupied, easy way to build up a new one (one listening, other on demand)
- Easy to build up new channels on demand by use of the reserved channels

Immediate

That means:

- Small number of manipulations when crossing the border
- No delay to get in contact with foreign service when crossing the border
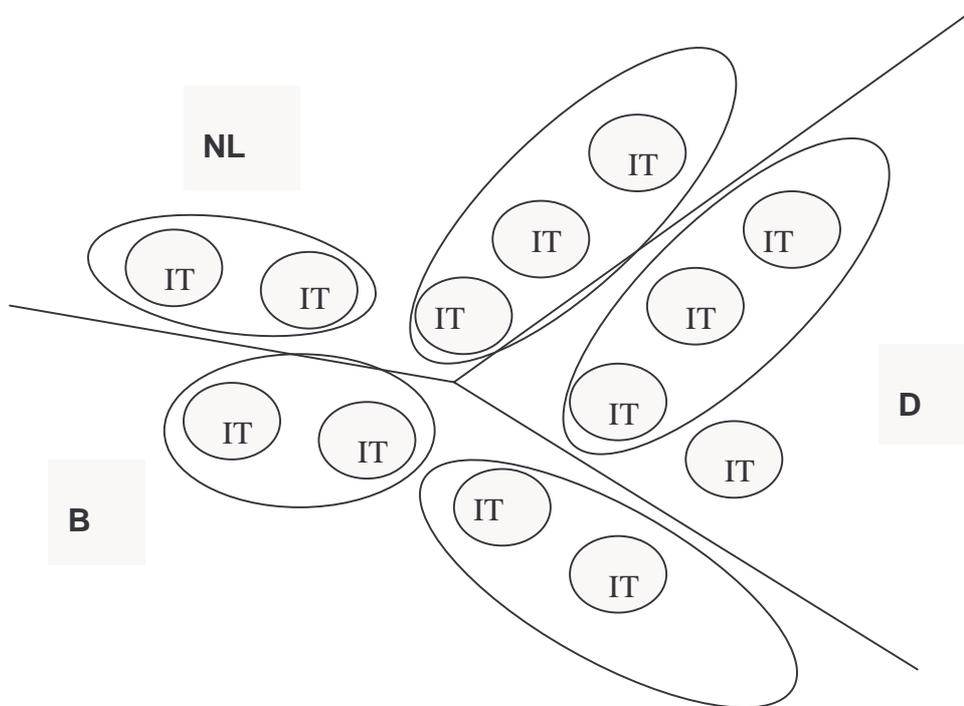- Short response time of device

Security

That means:

- Encryption is absolutely necessary for police services
- Authenticated standard cross-border identification and verification of the teams.

Workshop fleet map
The fleet map for a planned test needs 4 international talk groups.

But in reality we see that in the different countries a lot of intervention teams are operational and all are working on different channels by means of a lot of different despatching and talk groups. So an international structure that can be the base of an international fleet map of the border region has to be set up.

Description of the actual situation

Police situation
Cross-border situations are very hard to handle nowadays.
Between the police dispatching (Aachen, Eupen, Maastricht, Trier) an exchange of devices was made: each dispatching has one mobile device of the foreign country. When an unexpected cross-border operation starts, the dispatching makes a phone call to ask the other concerned dispatching to open their device on the concerned network. So each dispatching is made by simple phone call. When an event gets more complex, liaison officers are send to the leading control room to ensure the communication with its own country.

The agreement (KTS[1] network) exists between the Netherlands and Belgium and the Netherlands and Germany. On request the Dutch dispatcher activates a special base station so that a Dutch team can talk with a German team or with a Belgian team. Experience shows that this system is very complex to handle, does not function properly and takes a lot of time to built up.

---

[1] KTS = Korte Termijn Schengen Netwerk (Short Term Schengen Network)

Intervention teams have neither possibility to contact the foreign team nor the foreign dispatching. GSM's can be used, but this implies that no one other than the speaking teams can listen to what happens. Group communication is not possible.

For planned events handheld devices are exchanged between the leading officers.

Fire brigade and rescue services situation
The situation is nearly the same. Telephone and GSM are used. An exchange of handheld devices is made in some cases. There is no possibility for interventions teams to contact foreign teams or foreign dispatching rooms.

Conclusion
This brief description gives an idea of the complexity in managing cross-border situation nowadays. Operational people require an improvement of these situations for many years. But due to the different systems, it wasn't possible yet.

Scenario manual: approach
The members of each country were asked to base the description on real life cases in view to test what kind of different communication flows will be needed. At first, it was asked to concentrate in real life cases involving only one discipline at a time (monodisciplinaire scenario).
After this phase, all cases were put together on a spreadsheet and classified. 21 stories were listed and classified in 15 categories (see Appendix Operations 1: scenario manual).
In the following phase, one story per category was chosen to be developed in detailed scenarios in view to play them during tests. This agreement was reached by a consensus within the working group. The selected scenarios allow having a view on all-important aspects of the communication needs.
Of course, events involving simultaneously all disciplines (multidisciplinary scenarios) had also to be dealt with. All disciplines agreed that one complex multidisciplinary scenario based on a calamity case would be sufficient.

What is a scenario?
A scenario is always based on a realistic event, is a detailed description of the story and of all the communications that could occur. It is mainly composed of two parts: on one sheet with a description of the context of the scenario, the participants and the communications.
On a second sheet appeared a spreadsheet describing the operational actions, the kind of calls (group, individual etc.) and which were the possibilities classified from "not to have" to "minimal requirement". All these sheets from each scenario were put together. As we saw that nearly all concerns were "minimal required", we decided to examine how often "minimal required" appeared, to make it possible to put some priorities.

	Analysis							
communication in country B between	With	Individual call	Group call	Direct mode	Emergncy call	Data	Telephone connection	Encryption
A's police officers	other A in country A	MR	MR	MR	MR	MR	MR	MR
	other A in country B	MR	MR	MR	MR	MR	MR	MR
	A's Hq	MR	MR	MR	MR	MR	MR	MR
	B's HQ	MR	MR	MR	MR	MR	MR	MR
	B's police officer	MR	MR	MR	MR	MR	MR	MR
	A's PSTN	MR	MR	NA	MR	MR	MR	MR
	B's PSTN	MR	MR	NA	MR	MR	MR	MR
A's headquater	B's HQ	MR	MR	NA	MR	MR	MR	MR

Number MR	on 18 scripts							
communication in country B between	With	Individual call	Group call	Direct mode	Emergncy call	Data	Telephone connection	Encryption
A's police officers	other A in country A	9	12	8	7	7	7	8
	other A in country B	10	13	6	7	7	7	9
	A's Hq	13	16	1	15	13	13	12
	B's HQ	11	16	1	10	12	12	11
	B's police officer	10	14	9	7	10	12	11
	A's PSTN	6	6	0	1	6	11	6
	B's PSTN	3	5	0	1	5	10	6
A's headquater	B's HQ	10	17	0	1	16	9	13

Concerning the communication type, an agreement was reached to use only "group call" to allow the dispatching, and also the other teams involved to listen to what was happening. But it was also clear that for the future the other types would be required too for the daily work, as for instance phone call, individual call and the special mode DMO.

It was also agreed upon the requirement to dispose of data transmission, due to the language problem, for instance.

Another discussion was made on the concern of "encryption". Here it was agreed that encryption is a minimum requirement for police work. For the other disciplines it is not absolutely necessary.

These documents were used to prepare the tests and to foresee the necessary logistics for the tests.

Scenario development
Within this pilot, 15 scenarios (one per category) were elaborated according to this procedure (see Appendix Operations 1). The following step consisted in developing the scenarios in screenplays that could be used for tests.
Therefore it was necessary to write down all the content of the communications. This was the best way to be sure that all aspects were tested as for instance the communications between the networks and the simultaneous use of the four talk groups. Concerning monodisciplinaire scenarios, static and mobile scenarios were worked out as well as one "riot police" scenario. Moreover, one multidisciplinary scenario involving the three countries was elaborated.

All members of the WGBP agreed that these scenarios allowed testing of all the required communications flows.

Of course, in real life, nothing is previously written down, so that in the beginning of incidents there is always a chaotic phase. Everything is step by step well organised. In contrast to reality there is no really chaotic phase in the scenarios. But if everything works well during the tests, it can be assumed that critical situations could also be managed with help of the system.
In any case in chapter 6 it will be explained that an improvised scenario was run.

Four international talk groups – no integration in existing foreign networks
As mentioned before and according to the standard operational scheme worked out by the WGBP, the solution to test is based on four international talk groups that are programmed in addition to the national groups. This opportunity allows proving the connection between the three national networks and requires that every team or dispatching involved in an incident have to leave his home national network and to switch over to the international talk group.
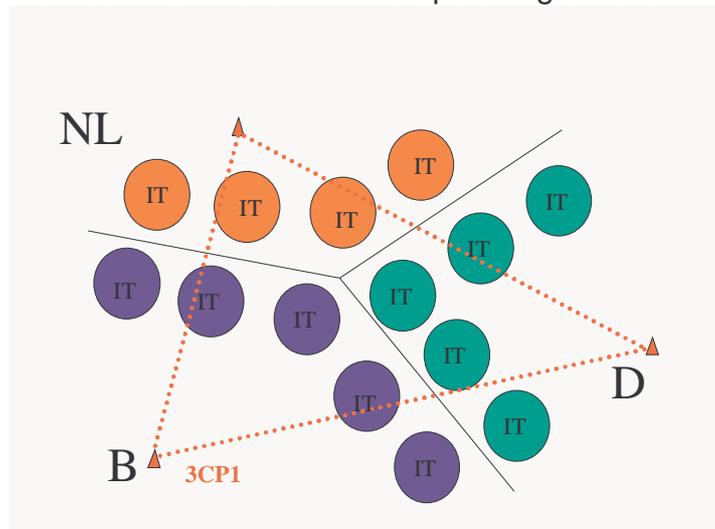In case of mobile situations as pursuits or observations, or even in cases of bilateral help during interventions after calamities, this solution is not recommendable. That's why the option to integrate in the foreign network and to communicate with foreign teams on their talk groups represents a real necessity from an operational point of view. Unfortunately, this option couldn't be tested for technical development reasons.

In the tested hypothesis, the four international talk groups were distributed as follows: one for the communications between the dispatching (3CP1); the three other one's can be used to manage the incidents. Not to forget: one talk group must always be open for listening in order to allow the announcement of unexpected cross-border incidents by the intervention team.
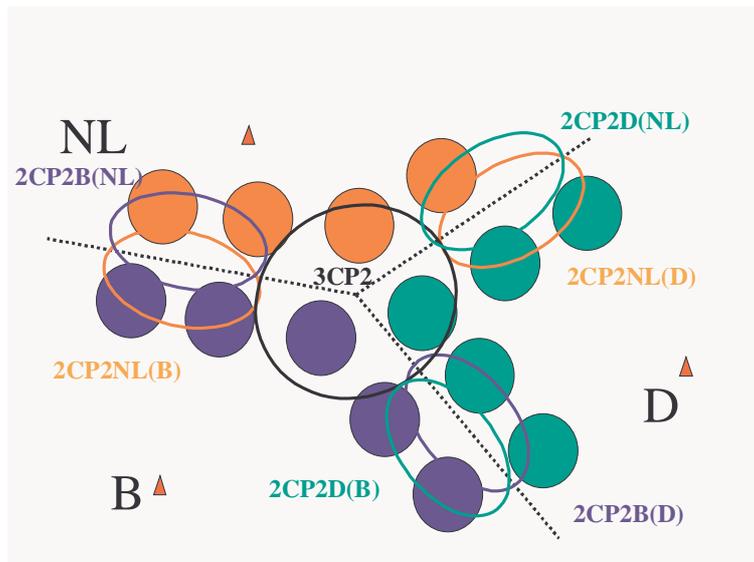
In that configuration, the dispatching have to have the four groups at their disposal and the other teams must have at least three groups at their disposal.

A possible communication plan in practice could be the following:
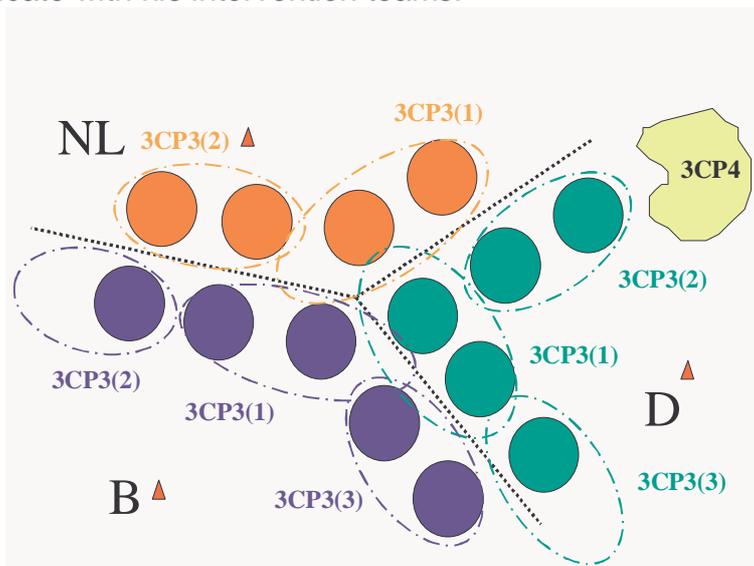 a. communication between the different dispatching on one talk group e.g. 3CP1

  b. communication between an intervention team that has crossed the border and has to contact his own dispatcher on an international talk group through the foreign network. This can be a "two country talk group" (2CP2) or even a "three country talk group" (3CP2)

c. communication between the intervention team and the foreign dispatching as well as the communication between two intervention teams of a different nationality. This can be done on the other international talk groups (3CP3 and 3CP4). The difficulty in this case will be the variety of talk groups in the border-area. Each service and dispatching uses his own talk group to communicate with his intervention teams.

From these communication schemes one can immediately derive that too many changes between groups are needed in the case of the use of open international talk groups based upon the interim interconnection.

Number of coordination groups needed

The question that raises is how many coordination groups are needed for managing all cross-border intervention cases. At least one group need to stay open always to allow the intervention teams to announce an unexpected cross-border event.

<u>In case of integrated dispatching (all disciplines) –</u>
<u>no integration in foreign group possible</u>

As the operation scheme shows, four groups are needed to make sure each kind of event can be managed.
Considering the extension of the Euregio Maas-Rhein, the system has to guarantee that it is possible to manage three cross border operations (one multi and two monodisciplinaire events or two multidisciplinary events) simultaneously. Without any possibility to integrate into foreign groups, a complete operational scheme has to be foreseen for each event. A reserve must also be foreseen. Therefore for 3 operations with 4 talk groups and with 1 reserve talk group plus the permanently open talk group means 16 international talk groups.

Operations	Disciplines	Talk groups	(Plus) Reserve talk groups	(Plus) International talk group	TOTAL talk groups
3	All	4	3	1	16

<u>In case of separate dispatch rooms per discipline –</u>
<u>no integration in foreign group possible</u>

Each discipline needs 4 groups at its disposal. In fact, in this case, the allocation of the groups for each event cannot happen as flexible as with integrated dispatching. To be sure, each discipline needs his own groups and needs an own reserve in the same amount.
So 3 operations with all disciplines with 4 talk groups plus a reserve of 4 talk groups per discipline and 1 permanently open talk group means 25 international talk groups.

Operations	Disciplines	Talk groups	(Plus) Reserve talk groups	(Plus) International talk group	TOTAL talk groups
3	All	4	12	1	25

<u>If integration in foreign networks is possible</u>

If integration in foreign groups is possible, once do not need as much international groups. As a matter of fact, once only need co-ordination groups for the heads of the intervention. All other units can integrate in existing groups.
In case of integrated dispatch rooms once will need 9 talk groups for 3 operations plus 1 permanently open talk group : 10 international talk groups.

Operations	Disciplines	Coordination talk groups	(Plus) Reserve talk groups	(Plus) International talk group	TOTAL talk groups
3	All	3		1	10

In case of separate dispatching rooms, once will need 2 extra talk groups in reserve besides the 9 coordination talk groups and the permanently open talk group: 16 international talk groups.

Operations	Disciplines	Coordination talk groups	(Plus) Reserve talk groups	(Plus) International talk group	TOTAL talk groups
3	All	3	6	1	16

These amounts are based on managing one multi- and two monodisciplinaire incidents at the same time or two multidisciplinary incidents.