NOKIA

Public Safety Procurement Process

Operating Models

Contents

1 Operating Models

The communication networks of public safety organisations are traditionally owned and operated by individual user organisations and do not allow communication between different agencies. The reasons why several dedicated and overlapping private networks were previously chosen include the different communication needs and different types of economic and operational resources in the various user organisations. The biggest reason, however, is that the technology was not available to provide communication networks that could be shared securely and effectively by several authorities. This is no longer the case.

TETRA is a modern digital communication standard that enables several organisations to share the same physical network infrastructure, while providing each agency with its own Virtual Private Network (VPN). This shares the investment and operating expenses between all the participating organisations and enables them to communicate with each other by arrangement when necessary. TETRA technology also offers lots of new functions compared to older, dedicated systems. This improves the operating efficiency of user organisations and reduces both initial investment and operating costs.

There are three main operating models for shared authority networks:

- Government owned network – Government operated network (Go-Go)
- Government owned network – Company operated network (Go-Co)
- Company owned network – Company operated network (Co-Co)

This document describes the arrangement in which the government owns the network infrastructure but an external subcontractor takes full responsibility for operating the network and providing telecommunication services to meet the requirements of various authorities (Go-Co). Existing examples of this type of network include A.S.T.R.I.D. in Belgium and VIRVE in Finland.

1.1 Government owned and Company operated (GO-CO) networks

The Go-Co operating model - in which the government finances the network investment and selects a commercial operator to run it or sets up an organisation to implement, operate and maintain the network - is often the most cost-

effective. The government can arrange finance at low cost and the private operator has the skills to operate the network. This arrangement requires fewer resources from government. It can also allow the government to select the most effective, dynamic and secure operator by inviting competitive tenders from several candidates.

The Go-Co model is attractive for the private operator too, because the operator does not need to make the big network investment by itself, lowering the company's financial risk. In addition, the government can force authority organisations to use the single shared network and thereby guarantees a big enough customer base for the operator.

2 Purpose

The purpose of the Public Safety Procurement Process document (and associated slide set) is to study a nation wide public safety project step by step.

The main objective is help readers understand what kind of parties are involved in a public safety project, what their roles and responsibilities are and how they

can influence the decision making process.

The most useful lesson is understanding the key concerns and selection criteria used by all the parties involved. What made them agree and make the decision to go on at each stage? By understanding these factors and providing the support to address the concerns of various players, we can radically speed up the process. The wheel has already been discovered – it's a waste of time and money to do it again!

The study also looks at the project over time, describing different phases and how long each of these took.

The roles of people, departments and administrative entities are illustrated in the form of a map of power.

Studying this material will enable the reader to analyse their own project in a similar way and make country-specific modifications to the process. Furthermore, by identifying which stage in the process they have reached, the reader can make use of the lessons learned in the Public Safety Procurement Process described.

3 Public Authority Radio Network (PARN)

The Public Authority Radio Network, or PARN, is a jointly operated radio network covering the whole country. It is used by several public safety and security authorities, including the police, fire brigades, ambulances, civil defence, frontier guards, defence forces, customs, prison administration, social & health services and road administration.

Each user organisation, or part of an organisation can keep its communication private where necessary by using the Virtual Private Network (VPN) facility.

The network infrastructure is flexible and allows for co-operation between different authorities, either using pre-programmed connections or, if the nature of a joint operation so demands, via temporarily defined connections.

The PARN is operated by a Dedicated Operator (DO), which is an external company owned entirely by private shareholders or a company in which the government may hold a minor share.

There is typically only one network infrastructure supplier but several terminal vendors involved.

4 Procurement process

4.1 Procurement Process in nutshell

Start Up:

-Project initiation

-CAB (Communication Advisory Board) sets objectives for a public authority radio network

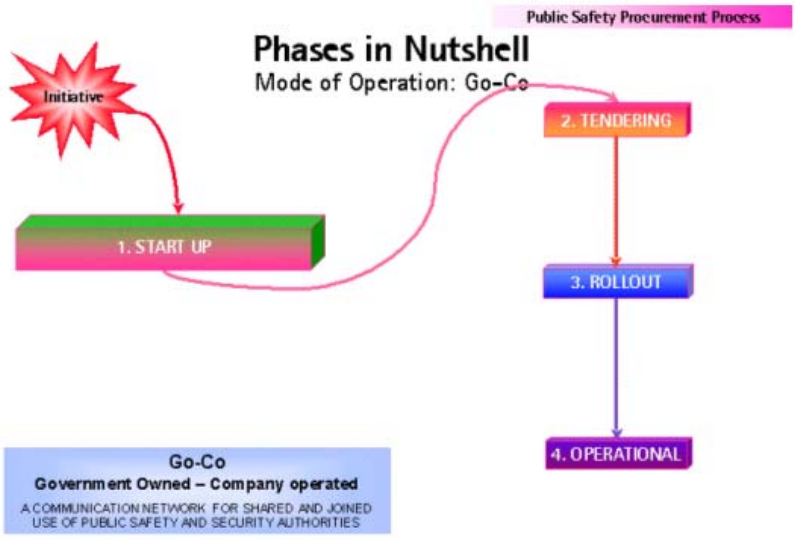
-CAB presents the demand for an authority network to Ministries (MOC, MOI, MOF)

- Political decision approved

- Initial budget proposal submitted to Ministry (MOF).

Budget – PASSED by Ministry

PARN Working Group established



Tendering:

- RFI prepared and submitted to Operator candidates by PARN Working Group
- Responses evaluated and Dedicated Operator (DO) selected by PARN Working Group
- Contract signed between DO and PARN Working Group
- RFQs prepared and submitted to network infrastructure suppliers by DO
- Network infrastructure supplier evaluated and selected by DO
- Contract signed between DO and Infrastructure Supplier

Rollout:

- Implementation of network begins
- Terminal vendors' products evaluated by PARN Working Group and DO
- Terminal Value Added Reseller (VAR) selected by PARN Working Group and DO
- Terminal Frame Agreements signed together with selected vendors and PARN Working Group
- Terminal Logistic Agreement signed between VAR and PARN Working Group
- Terminal Supply Agreement signed between VAR and selected Vendors
- DO operative structure determined by PARN Working Group
- Training services for end users established by DO and PARN Working Group

Operational:

User organisations start to use the network.

5 Start up phase

5.1 From initiation to start up of the project

A key driver is the state of the analogue private networks currently serving many public organisations, including the police, fire service and border authorities. These will be outdated in the next 3 to 10 years and will not meet future communication requirements.

The Communications Advisory Board (CAB) sets objectives for the public authority radio network according to environmental and authority requirements. The CAB then presents its demands to the Ministry (Ministry of Transport and Communications) stating the reasons why a nation wide public authority radio network should be built:

First of all full co-operation between authorities under field conditions, for example at the scene of an accident, is impossible using separate analogue communication networks. The authorities need a common field communications system. Each agency should have its own managed virtual private radio network and they should be able to co-communicate via a single physical radio network.

The second reason is financial. The objective is to get a very good radio network in terms of maximum coverage and quality at minimum cost. User organisations each have their own virtual radio network and share a single physical network. This network needs to be operated by an external company and the authorities act merely as users. Authorities have enough to do managing their core responsibilities without managing a radio network. A shared network also allows some overlapping services to be started, such as dedicated emergency service centres.

The network should also continue to operate in unexpected situations, so it must comply with EMC specifications, offer built in redundancy in its structure and transmission and so on.

These arguments should generate political commitment from the Ministries (MOC, MOF) as well as finance for the project.

Once the Ministries have agreed the proposal and granted the finance for the PARN project, the PARN Working Unit will be established under the guidance of CAB.

5.2 Start up of the project

The PARN organisation is set up with the PARN Board working under Ministry (MOI, MOC) control. The Board comprises the most important heads of user organisations covered under different Ministries, such as:

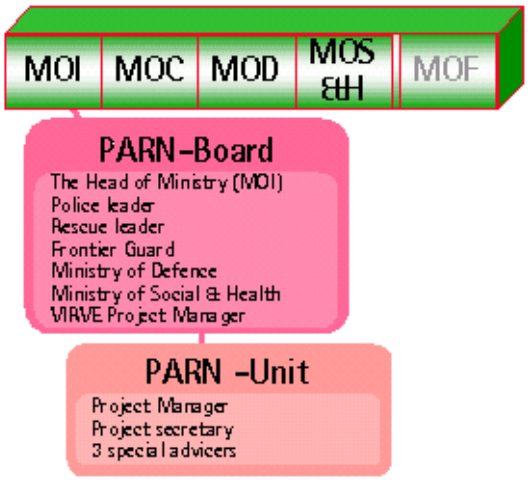
Ministry of Interior: police, fire and rescue, frontier guards, customs, and aviation

Ministry of Transport & Communication: road and navigation administration, state railways

Ministry of Defence: defence forces

Ministry of Social & Health Care: state hospitals, ambulance services, and social workers

The PARN Unit works under the PARN Board and has 5 employees. The PARN Unit has overall responsibility for the project.

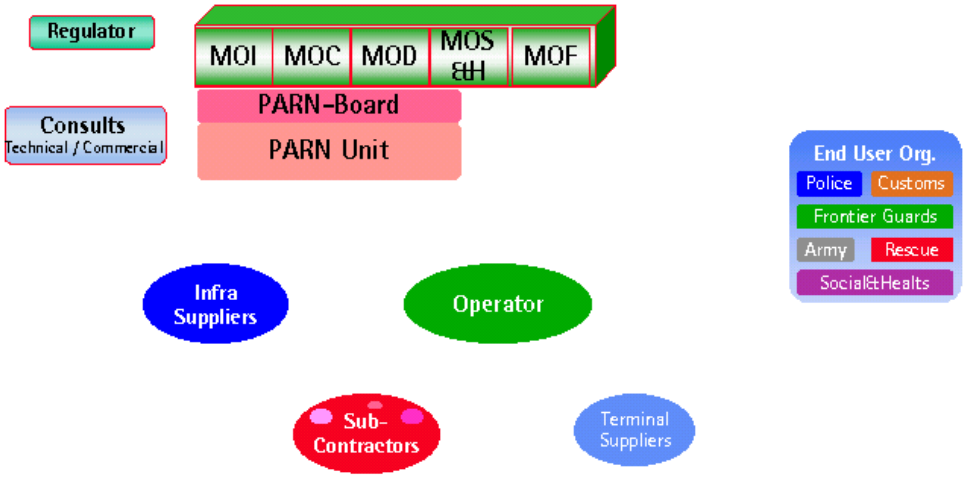


MOI=Ministry of Interior

MOC=Ministry of Communication & Transport

5.2.1 Big picture – parties involved and invited

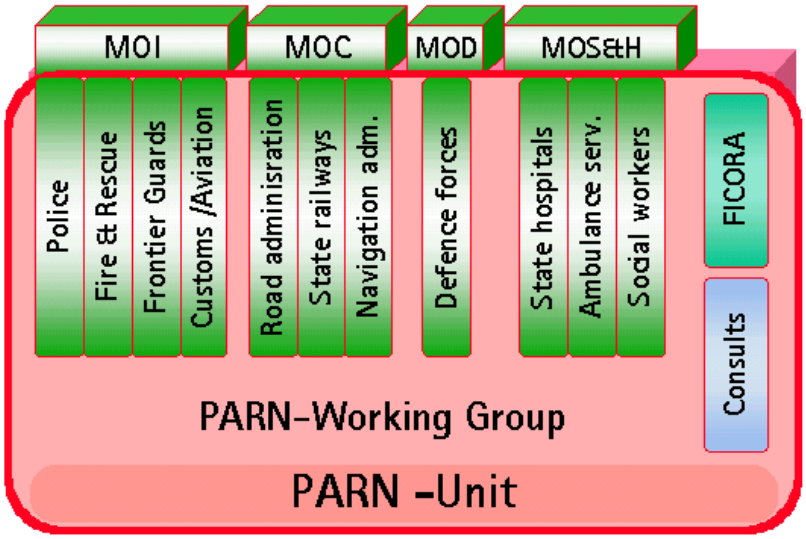
One of the first jobs of the PARN organisation (Unit and Board) is to figure out which organisations should be invited to be users of the PARN network. The state regulator also needs to harmonise frequency allocation. The team then needs to draw up a list of the external companies and services that will be needed to complete the project.



Members of PARN working group

The PARN Unit establishes a PARN Working Group with members from all user organisations. The Group sets the objectives for the public authority radio network according to environmental and authority requirements.

In addition, the Communications Regulator Authority is naturally invited. Technical and commercial consultants are also asked to join at this stage. The technical consultants prepare an initial network plan for the RFI and commercial consultants address all commercial issues.



5.2.2 Map of power

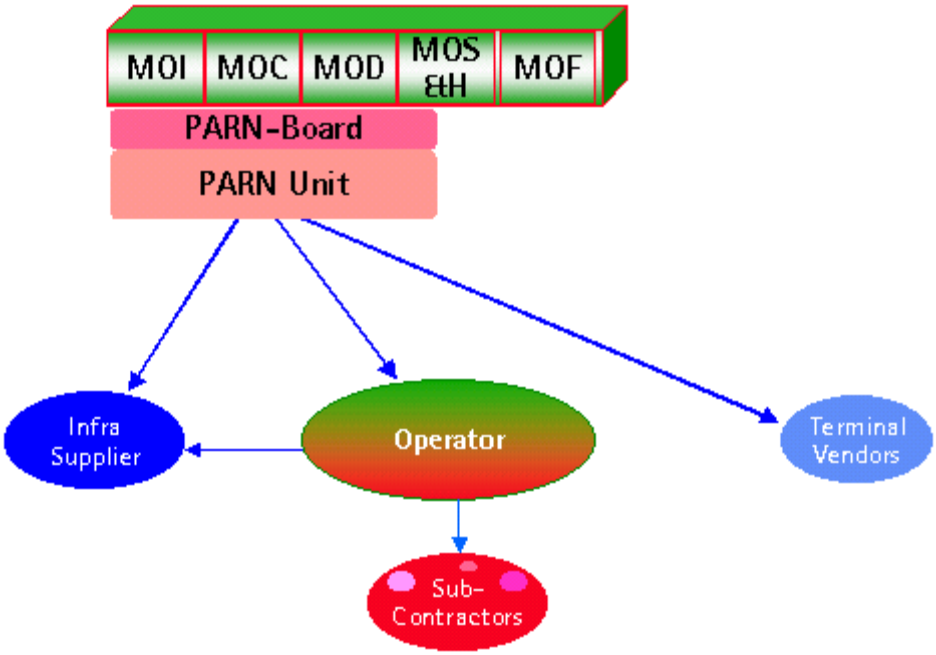
The PARN organisation (Board and Unit) wields the most power in project-related issues. The PARN organisation makes all the main decisions relating to both the infrastructure and terminals (logistic procedures, maintenance, etc.).

The operator also has a lot of responsibility and the PARN Unit drives and monitors the operator's performance, reporting its results to the PARN Board. For example, the operator decides which subcontractors to use.

5.2.3 Operator Responsibilities

The operator has total responsibility for network planning, implementing the infrastructure in co-operation with the supplier, site acquisition and leasing, transmission arrangements and leasing (including connection to other networks) and overall responsibility for the technical operation of the network according to the terms of its contract with the Ministry.

The operator typically orders many of these services from sub-contractors to comply with its responsibilities.



5.2.4 Mode of operation

The roles and responsibilities of the operator are extremely important in a public authority radio network that must improve national safety. The network should continue to operate in unexpected situations by complying with EMC specifications, having redundant structure, transmission etc). A lot of sensitive and confidential information (data) will also be carried over the network. The PARN organisation therefore concludes that the network cannot be operated by a purely commercial operator (i.e. PTT, GSM).

For these reasons a new company is constituted as the DO (Dedicated Operator) of the PARN network. The main responsibility of the DO is to manage the technical operation of the network. The DO is initially 100% owned by a Commercial Operator (GSM). The CEO is appointed from the Ministry of the Interior and the Managing Director from the GSM Operator.

It may be that a Ministry owns shares in the DO, but it must be less than 50% or the mode of operation is Go-Go (Government owned-Government Operated).

5.2.5 Financing of the project (investment, operation)

Financing of infrastructure:

The Ministry of Finance will grant a dedicated budget to the PARN Unit for the PARN project according to a budget structure proposed by the Ministry of the Interior or Ministry of Communications.

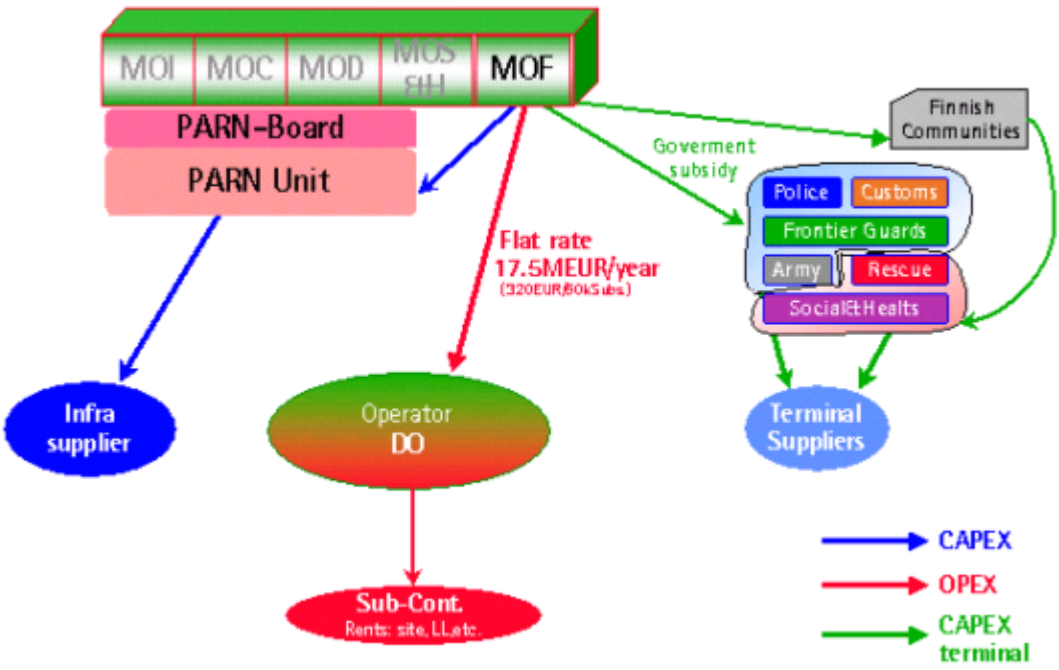
Financing of terminals:

The Ministry of Finance will grant budgets for terminal purchases by user organisations. There may be different categories of terminal finance, for examples:

- User organisations such as the police, customs, frontier guards and army will get a dedicated budget for terminal investment. They will order the terminals according terminal logistic procedures from a terminal vendor (later it was decided to use a terminal value added reseller, Terminal VAR).
- Fire & rescue as well as social & health organisations could make terminal investments according to priorities set out by the Board of Communities, because the grant budget is part of the state's total support to communities.

Financing of operation:

The Ministry of Finance will grant the annual budget for use of the PARN network according to MOI's or MOC's proposal. For example, an annual flat fee per user could be on a level of 320EUR annually, assuming that there are 50 000 – 60 000 users in the PARN network. This makes a total of around 16-19MEUR annually.



6 Tendering phase

There are two different tendering rounds:

- RFQ for operator candidates

- RFQ for infrastructure suppliers

The first RFI (Request for Information) is submitted for to the candidates for operator. Once the Dedicated Operator (DO) is selected, its responsibility is to prepare an RFQ (Request For Quotation), in co-operation with PARN, and submit it to infrastructure suppliers.

6.1 RFI

The technical consultants, together with the PARN Unit, carry out the network dimensioning for the RFI.

The TETRA standard is the public authority radio network standard approved by the EU and best satisfies the requirements laid down for PARN.

Another reason for choosing TETRA is that the terminals will be cheaper and better quality because it is an open standard. In legacy systems the terminals are tied to the systems supplier and different authorities needed to have a complete package (system and terminals) from the same manufacture, leading to lower volumes and higher prices. Also the development work that goes into each proprietary system is bound to put up the price.

Having an open standard means there are several types of terminal available from several suppliers, with more competition arriving in the market all the time.

Free competition brings two benefits: there will be both price competition and a choice of products on the market, so users are able to choose the terminal that suits them best. The users, not the device manufacturer, control the range of devices and applications they use.

6.2 RFQ

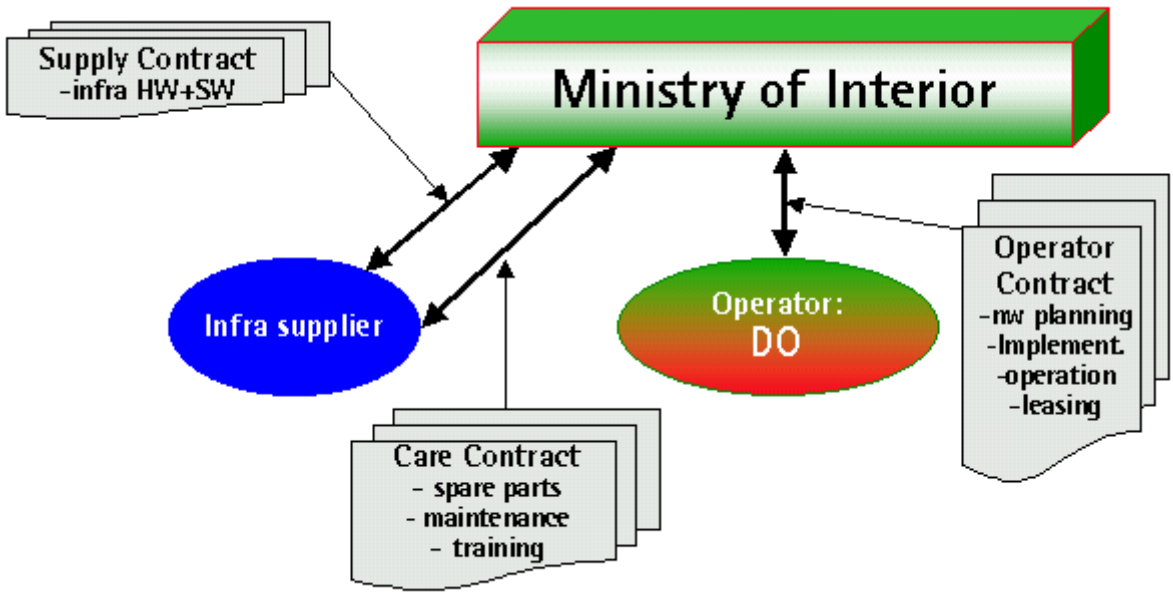
RFQs are prepared and submitted to the Dedicated Operator (DO). This is a huge responsibility for the DO, but it can use subcontractors agreed by PARN.

The DO evaluates the offers and selects an infrastructure supplier. Even though the DO performs the evaluation the contracts will be signed between the infrastructure supplier and PARN at Ministry Level.

6.3 Contracts signed

6.3.1 Operator Contract

This is between the Ministry and Dedicated Operator (DO) and concerns the network planning, implementation and commissioning, leased network



elements, supervising deliveries from subcontractors, technical operation and providing support for user organisations.

6.3.2 Supply Contract

This is between the Ministry and Infrastructure Supplier and concerns the supply of infrastructure and the terms of delivery. The Ministry agrees the order of the network elements proposed by the DO and the Infrastructure Supplier is in charge of deliveries to the DO.

6.3.3 Care Contract

This is between the Ministry and Infrastructure Supplier concerning the maintenance of network elements, spare parts and training of the DO's technical personnel in terms of implementation, commissioning, testing, maintenance and management of the network and all its elements.

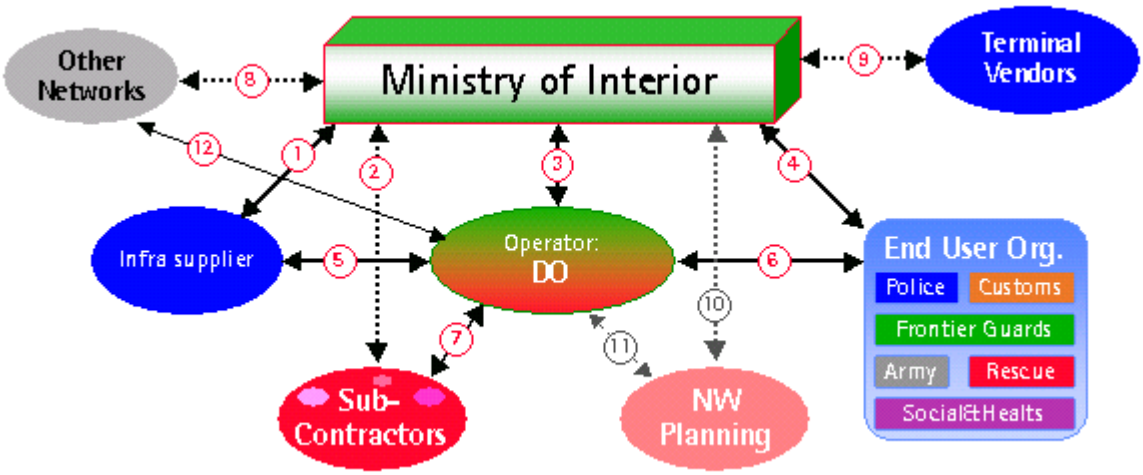
6.4 Shares of responsibilities

From here onwards the Ministry of the Interior will simply be referred to as the Ministry, the technical operator as the DO, the infrastructure supplier as the Infra Supplier and the terminal Value Added Reseller as the Terminal VAR.

The Ministry will be responsible for the network infrastructure investment and in principle the user organisations will be in charge of terminal investment.

The user organisations in the PARN network include the police, rescue services, frontier guards, defence forces, and social and health care units.

The picture below illustrates the different parties and their responsibilities.



1. The Ministry chooses the infrastructure supplier (according to PARN working group recommendations) and will agree the terms of delivery. The DO will receive all the required items, such as antennas, base stations, switches and software, as well the all network management related systems. The Ministry will order the system from the Infra Supplier, and the Infra Supplier will be charge of deliveries and reports to the Ministry on all delivery-related issues, such as time schedule and content. This is covered by the supply agreement.
2. The Ministry will agree the principles behind subcontractor's agreements (transmission, sites and so on) and the detailed contracts will be signed between the DO and subcontractor (ref.7).
3. The Ministry will agree together with the DO about network planning, implementation, commissioning, leased network elements, supervising the delivery of the subcontracted network elements, technical operation and user organisation support functions. This is covered in the Operator Contract.
4. The Ministry will set the budget for the user organisations' usage of the network. The fee will be agreed between the Ministry, the DO and user organisations annually. PARN users are responsible for financing radio terminals, developing data applications and improving the knowledge of users about the right way to use TETRA networks.The Ministry and Infra Supplier sign the Care Agreement concerning the Infra Supplier´s responsibility regarding maintenance and spare parts support to the DO. It also covers training of the DO's technical personnel in the implementation, commissioning, testing, maintenance and management of the network and all related elements and tools (HW & SW). The DO is responsible for supervising the Infra Supplier´s activities and commitments according to the supplier contract and care agreement signed by the Ministry and Infra Supplier.
6. The DO is responsible for setting up a help desk for user organisations according to signed framework agreements. The DO and the user organisations maintain the list of provided services and the DO is responsible for developing the billing system, which must be capable of managing transactions both internal and external to the PARN network. User organisation is responsible to manage own operation (i.e. dynamic group numbering by dispatcher).
7. The DO is responsible for defining the necessary subcontractors' equipment and services and proposing the order to the Ministry. After Ministry approval, the DO signs agreements with subcontractors.
8. The Ministry decides which other networks (PSTN, GSM, Navigation Radio network, etc) will connect to the PARN network and agree the terms of connection fees.
9. The Ministry specifies which terminals may be used on the network and signs a frame agreement with these terminal suppliers. The Terminal VAR will sign the supply agreement with these approved terminal

suppliers and the Ministry and Terminal VAR will sign a logistic agreement concerning the parameterisation and maintenance of terminals, along with end users' training. They also take charge of the whole ordering and delivery process. The DO is not responsible for maintaining terminals.

10. The Ministry will sign the network planning agreement with the Technical Consultant (only applicable in the RFI phase).
11. The DO will have overall responsibility for network planning (coverage and capacity) and is allowed to use sub-contractors (Technical Consultants).
12. The DO will be responsible for negotiating the connection agreements between PARN and external networks and is in charge of the operating the agreements, including competition analysis.

7 Rollout phase

The number of different implementation phases involved varies mainly according to the total area to be covered. Nevertheless, there are a few points worth mentioning:

It is crucial to have a big enough pilot phase in terms of coverage area and functionality. The number of base stations to be implemented during this phase should be at least 15 % of the total number of BS and should have at least two switches. This makes it possible for all the user organisations to adequately test the wide range of new functions available with the Digital Authority Radio Network and to agree the smooth and rapid migration from old, out-dated systems.

Once the user organisations are convinced about the new services the rollout should be carried out as fast as possible to reduce the total cost of the project. This is because there is no need to maintain the two different radio networks in each user organisation once the rollout is complete. Running the two in parallel increases operating costs dramatically and decreases the operating efficiency of users.

The implementation schedule could be:

I-phase (1st year): 20% of total number of Base Stations

II-phase (2nd year): 50% of total number of Base Stations

III-phase (3rd year): 30% of total number of Base Stations

The network elements are delivered by the Infra Supplier and the implementation work is carried out by the DO and its subcontractors.

7.1 Terminal Agreements Signed

During the rollout several terminal-related issues need to be determined, such as:

- terminals approved for use in the network
- terminal logistics (parameterisation, etc.)
- terminal purchase process (terms of delivery)

7.1.1 Terminal Frame Agreement

This is between the Ministry and agreed TETRA Terminal Vendors and concerns the portfolio of terminals and accessories that may be used in the network (features supported and/or allowed), the terms of the purchasing process, the development of technical features in line with system development and the terms of warranty.

7.1.2 Logistic Agreement

This is between the Ministry and the Terminal VAR (Value Added Reseller). According to the agreement, the Terminal VAR will be responsible for the terminal logistics and all related areas, such as supplier agreements, wholesale business, distribution channels, installation of accessories and 3rd party application equipment, as well as the training of end users.
The Terminal VAR will also produce supplementary services for users. These include leasing, financing, maintenance, the setting of parameters and first line help-desk function for end users. By the time the network has been completed, there have to be enough Terminal VAR outlets throughout the country equipped with help desk functions to serve the end users.

7.1.3 Terminal Supply Agreement

This is between the Ministry and the Infra Supplier and concerns the terms of delivery for terminals and accessories, the terminal portfolio, prices, spare parts, maintenance and first line help desk for the Terminal VAR's outlets.

7.2 Financing the investment in terminals

The Ministry will grant a budget to user organisations for terminal purchases. User organisations such as the police, customs, frontier guards and army will receive a dedicated budget for terminal investment.

Fire & rescue, social & health organisations must compete for funding with other community investments, because the grant budget is part of the state's total support for communities.

7.3 Financing of operational use

The Ministry will reserve a budget for the cost of all the invited user organisations using the network. The number of users is estimated to be approximately between 50 000 and 60 000 users and the Ministry will pay the DO the flat rate of 17.5 MEUR (~320 EUR per user) for the use of the network in the first fully operational year.

At the end of that first year, the DO will send invoices to user organisations, which will require payment at the end of the third operational year. The billing structure will include a 75% flat rate, taken from the reserved 320 EUR per person and 25% according to the level of network usage (voice & data services). So at the end of the third operational year each user organisation will be charged 240EUR/year + usage, referring to the average usage of a single user during the second operational year. This arrangement has been agreed between PARN and the DO in order to control the traffic in the network and introduce new services (SDS or IP-based applications) according to the specific requirements of the authorities.

8 Operational Phase

The following chapters describe issues such as:

- Dedicated Operator operative structure
- Training services
- Dedicated Operator access rights into user organisation databases

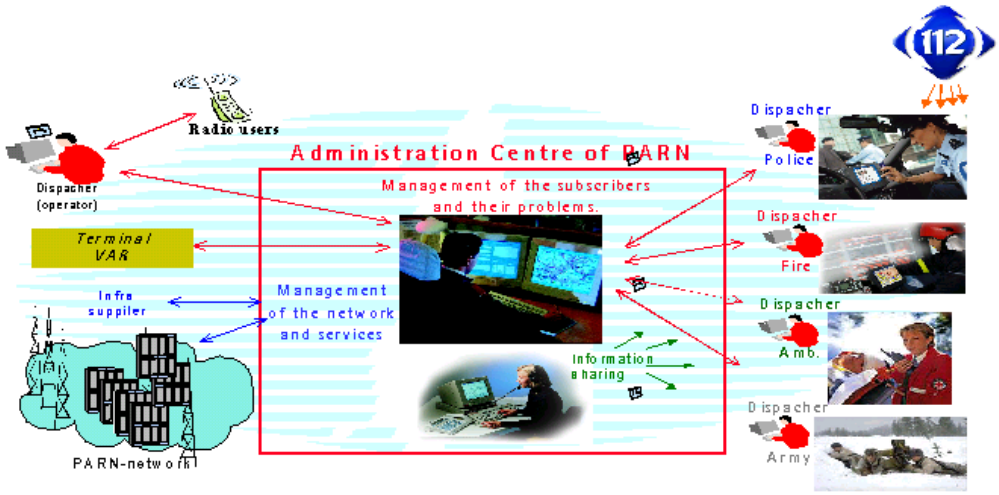
These have to be resolved and managed before the PARN network can be taken smoothly into operational use.

8.1 DO Operative Structure

The DO's Administration Centre for the PARN Network is responsible for problem management. In network construction work, the Administration Centre plays an important role in the support of field operations. If there is a fault or disturbance, the Administration Centre also plays an important role in providing customers with information and keeping them up to date 24 hours a day.

In addition to network management, the Administration Centre has several duties related to the customers, such as the maintenance of subscriber management and supplementary services. In the operational phase, the Administration Centre's operations will become increasingly customer service oriented, as several additional services (applications) will be take into use.

Informing customers in every situation, as well as listening to them, is extremely important to the Centre and customers must be made aware of any changes in the network.
The Administration Centre facilitates the round-the-clock management of the entire network and informs customers quickly if there is a fault, particularly those with potential consequences for operations. The management of quick repairs is vital to keep the network in a stable state.



The DO Administration Centre is in operation 24 hours a day in order to ensure that the users of the network are kept informed about its status.

8.2 Training services

The Terminal Value Added Reseller (VAR) provides the basic training to end users. This includes how to use terminals, basic functions, accessories, etc. In order to improve field personnel's effectiveness during an operation, several training centres must be established. These will define the common communication processes used internally by all user organisations.

Special schools are required, such as:

• Police School

• Frontier and Coast Guard School

• Army Signal School

In addition of these there must be one school where the different authorities will be trained to perform emergency duties in co-operation with each other in the most effective way.

8.3 Other issues to be agreed

- Which type of subscriber data should be managed by the user organisation and which by the technical operator (DO)?
- Network management in normal use and in problem situations:

Does the DO have unrestricted access to customer databases?

Priorities on capacity bottlenecks and other problem situations.

Who has authorisation to make decisions and what information will be needed?

- Budgeting and invoicing the internal costs of the PARN network.

9 PARN network Evolution

Naturally, the system will never be finished. As the technology, TETRA standard and applications develop, there will be a continuous construction phase that focuses on providing services that suit public authority use even better.

10 Conclusion

10.1 Parties involved and their concerns

The table on next page describes which parties were involved in the PARN procurement process, in which stage they took part and what their responsibilities and roles were.

The most useful aspects to note are the **key concerns** and **selection criteria** of all the parties involved. What made them agree and make the decision to proceed at each stage? By understanding the **concerns** of the various players we can provide support that is appropriate to each audience and phase. In this way we can speed up the process and make the nation safer and more secure.

10.2 Benefits of Government owned, Company operated (Go-Co) public authority network

Key Benefits to Operator

- It is possible to grow with PS modernisation (customer base, applications)
- It is cost efficient because is exploits the synergy of existing infrastructure and know-how
- The shared network/virtual networks set up offers a big enough customer base to justify the usage fee
- The public sector offers a stable and non-risk business with a solid customer base
- New business opportunities arise from providing new services to user organisations according to their specific needs.

Key Benefits to Government and User Organisations

- Service fees are affordable and competitive compared to other commercial service providers
- The service portfolio can be tailored according to the needs of public safety users
- The finance is flexible, according to the usage of services or investment or a combination of these (no huge state investments)
- It is cost effective for users to concentrate on their duties while an external operator concentrates on their core competence of running the network
- Fast rollout yields significant cost saving during the migration from old analogue to new digital services (no long political debate)

Audience	Phase	Main resp. / roles / behaviors	Key Concerns / Selection Criteria	Other issues
POLITICAL LEVEL	1,2			
Goverment		Ownership of project team	Objective is to improve public & national safety	
Ministry of Interior		Establish project team (whom will be invited/joined).	End users security policies and performance is key challenge, not profitable network operability (like GSM).	
Ministry of Transport & Communications		Ultimate decision makers.	Create public service with public funds (tax payer money).	
Ministry of Defence		Make the GO decision	Improve co-operation of authorities as well as across country borders.	
Ministry of Social & Health		Budgeting the project.	Shared network infrastructure should enabling manageable VPN for all user organization.	
Ministry of Finance		Sign off the project.	Shared cost and value of ROI (business benefits in terms of national safety).	Common Emergency Center for all user organization.
Civil Servants			Implementation time	
Parlament			Political Impact	
			Prestige	
VIRVE Organization	All	Drive project	Do NOT make money -profit and ROI not relevant	
VIRVE-Board & -Unit		Define user needs	Satisfaction of user needs -->Power game between different user organizations (Police having highest priority, then Border Guards, Fire...)	Seek for full consensus among all involved parties.
VIRVE Working Group		Draw up specification	Timescales to implementation	
		Create tender	CRITERIA DRIVEN! (Meeting specified requirements)	
		Negotiate deal	Reliable vendor and operator.	Avoid risk -better wait than a risk.
			Service availability	Standardization & evolution of
		Select/recomend consortium (infra supplier, operator & terminal suppier)	Selection of the BEST system (in tech point of viewIin user & operator perspective).	Consultants often hired to clarify and specify details (shares or even transfer of responsibilities).
User organizations	1,4	Shared networks: - access rights & operational management.	Full control of own communication & applications (VPN privacy): - operation vs. technical management / Congestion management / Capacity sharing.	Group communication 70-99% of all communication.
		Migration from old radio system.	Management of own radio- and workstation-users.	Number of groups: 100-30000
		Day-to-day management of dispacher systems.	Should improve working groups effectiviness.	Numbering planning (inside own frame).
		Command & Control system functionality.	Cost of service (month / annual cost) and cost of terminal -Financing from?	Recording.
		Security has top priority.	Reliability / Availability.	
			Power game between other user organization.	
			Influences power to operational level.	
			Terminal logistic, terminal parametering, training of new terminal & functionality.	

Audience	Phase	Main resp. / roles / behaviors	Key Concerns / Selection Criteria	Other issues
Police		Mission critical duties. Actual operation outside the vechicle.	Personal safety and security. Coverage area, Accessories.	
Fire		Alarming of volunteer fire brigades. Task management in field with handportables + applications.	Flexible re-grouping , paging system replacement(volunteer alarming). DMO usability (smoke diving), Coverage area & Accessories.	
Border Guards		Cross border communication. Isolated coverage areas. Challeges for enviromental spec.	IOP Coverage area. Air to ground communication.	
Customs				
Army				
Social&Healths		Time critical operations. Close co-operation to other PS users. Operations led by doctor (based in hospital).	Secure & reliable communication to upper management levels (doctor).	Challenging for EMI/EMC. Challenging for data transpotation.
Alarm Centers		Common Alarm Center service for many	Authorisation access rights into the databases.	
Field personels -in general		Use of equipment day-to-day	Learning how to use terminals -Simplicity. How will it make my life easier? Impact on daily routine & tasks. Speech quality -getting voice heard.	
CONSULTANTS	1,2	Act's like refugee.	Satisfying client needs.	They assigment continues if the winning solution is proposed.
OmniTele + LocNet		Influential in drawing up RFI/RFQ (technical, commercial, operational) Assist in selection procedures for operation, infrastructure and / or handsets. Bring in expert knowledge	Keeping up to date on technical development Needs support of all parties concerns (refer Comitee, End users & Operator concerns).	
OPERATOR	2,3,4	Network management (fault, performance, configuration, etc.)	Reliable reputation as an operator in terms of technical and financial.	
EV oy		Autentication / Encryption settings. Radio- and network resource planning. Definition of virtual privat networks. Numbering planning. Cross-communication method planning. Turn key responsibility of implementation. Helpdesk for user organizations.	GoS better than GSM, "last network in service" Availability better than 99,96%, reduntant structure. TCO (Total Cost of Ownership) as well as ROI(Return on Investment). Secure & stabile business (goverment basis, no churn) -low risk level ARPU(Average Revenue per User) and revenue potential (applications). Are users/goverment willing to pay from Value Addeed Services?	Billing system. Number of application partners.
SUB-CONTRACTOR	3,4	responsibility of implementation. Technical support for operational issues.	Reliable vendor: delivery and rollout time. After sales support. Realistic evolution path. Synenergies to mainstream technologies & business.	References.
Sonera Primatel, Unibase epstar				
VALUE ADDED RESELLER	4	Handset procurement process.	Terminals availability (number of models, logistic, after sales, accessories)	With strong TETRA player VAR have access to market.
Telering		Terminal parametering & distribution. Application/accessories implementation. Training of users. Helpdesk for end users.	Easiness of terminals & parametering tools. Multiple source of vendors (now and future) + evolution. Training packages and brand support from vendors. Extra revenue potential from accessories & application implementation.	Standard