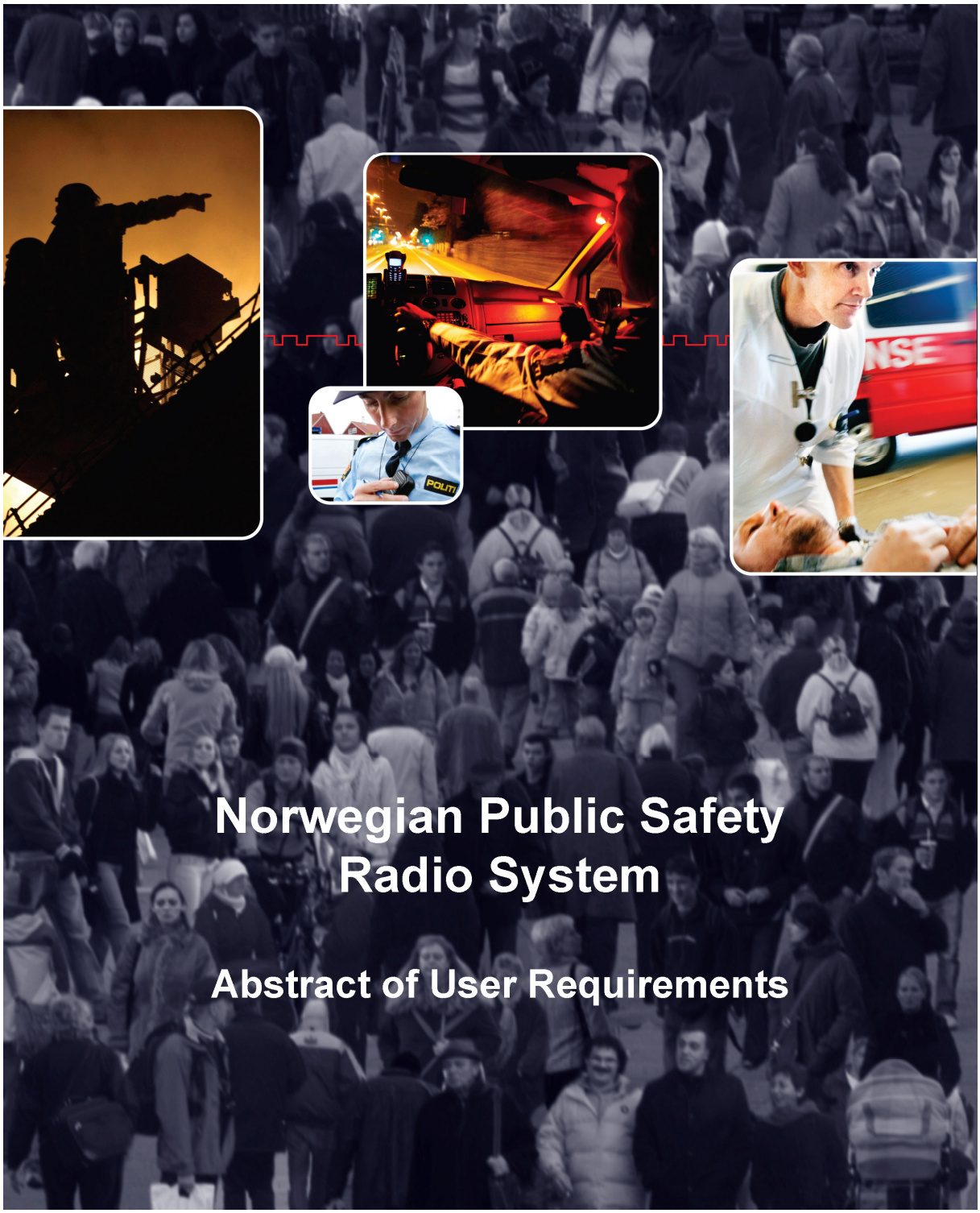


Norwegian Public Safety Radio System

Abstract of User Requirements

The Public Safety Agencies in Norway have specified high-level functional requirements to a new Public Safety Radio System. This document represents an abstract of these requirements. Detailed functional requirements for the Public Safety Radio System will be described in the tender documents. Descriptions in the tender documents may differ from descriptions in this document. This document has no formal status in the procurement process.

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1. Introduction

A new, shared digital mobile radio system (the 'Public Safety System') for public safety organisations is to be implemented in Norway.

It is recognised that the tendering process for such a system represents a significant cost for bidders. This document describes the anticipated key requirements for the system and is intended as interim guidance for potential bidders only. It will allow potential bidders to evaluate their technology against the anticipated requirements and help them to decide whether it is relevant for them to start to prepare for the subsequent tendering process.

The Norwegian Public Safety Radio Project (hereafter referred to as 'The Public Safety Project') emphasises the following:

- It should be noted that the subsequent tender documents will specify the formal requirements in more detail and may be different from those indicated in this document.
- This document does not specify which requirements will be mandatory or how the requirements will be prioritised.
- No information about procurement strategy, rollout or operational organisation is given in this document.
- The document does not include requirements related to rollout and organisation

Users of public safety mobile radio systems have a fundamentally different set of functional requirements from users of commercial mobile networks. The Public Safety Project has specified a set of key requirements that the new system must support. These requirements are stated as technology neutral functional requirements, independent of whatever radio network technology is proposed. These requirements have been compiled by the three Public Safety Agencies - Fire, Police and Health in a project team within The Norwegian Ministry of Justice and the Police (JD).

The procurement process for a new public safety system in Norway will be open to all relevant technologies that can meet the functional requirements. The selected system solution must satisfy the key requirements, and also have potential for future expansion and the introduction of new functionality in the future.

The requirements given in this document are grouped into the following areas:

- Network services, including radio coverage, security, operations and maintenance
- Radio terminals, including different types of radio terminals, functionality and accessories
- Control rooms
- Additional services and application interfaces
- Documentation.

This document also describes various scenarios that illustrate the need for mobile communication in different situations encountered by the Public Safety Agencies. The requirements listed later in the document are intended to address these scenarios.

2. Description of the Three Public Safety Agencies

2.1. Fire Brigades

The main responsibility of the Fire Agency is to protect life, health, environment and material goods against fire, explosion and accidents.

Each municipality is responsible for organising its own Fire brigade, and there are currently about 400 local Fire and Rescue Services. The largest municipalities have full time employed fire fighters, but most local Fire and Rescue Services have part time Fire brigades. There are about 12,500 fire fighters in the country, 77% of which work part time. Both full time and part time fire fighters are involved in different actions where they need different kinds of radio equipment. The municipalities fund the respective fire emergency control centres (known as 110-centres).

There are 24 fire emergency control centres in Norway that receive emergency calls made by the public to the 110-emergency telephone number. The control room operator calls out the Fire brigades and coordinates the rescue operations.

The public safety system must support the Fire Agency's requirement for call-out of their personnel. The system also has to support group communication between groups of fire fighters, the control room operator and the other Public Safety Agencies. Furthermore the system will be an important and integrated part of the equipment that is used by the Fire Brigades during daily operations. The system must also support automatic vehicle positioning and data communication with mobile units.

2.2. The Police

The main responsibility for the Police is to maintain law and order, prevent crime, protect citizens and investigate crimes.

The Police Department of the JD and The National Police Directorate (NPD) constitute the central management organisation within the Police. NPD is responsible for managing and administering the districts and the special law enforcement entities with a total of 11,000 employees. There are 27 Police districts in addition to the following special law enforcement entities:

- The National Criminal Investigation Service (Kripos)
- Police Data and Equipment Service (PDMT)
- The National Police Academy (PHS)
- The National Authority for Investigation and Prosecution of Economic and Environmental Crime (ØKOKRIM)
- The National Mobile Police (UP)
- The Police Foreign Unit (PU)
- The Border Commissioner.

In addition the Police Security Service (PST) reports directly to JD.

The Police districts have each established their own emergency control centres to satisfy their need for consistent operation and coordination of resources within their districts. The

emergency control centres control incidents, allocate staff to tasks and, receive emergency telephone calls (112-calls) from the public. Computer systems in the emergency control centres support the operational service. Administration of the legacy radio networks is done locally in each Police district, whereas the technical operation is handled by PDMT.

The emergency control centres and the operational units exchange information over the radio networks. Mostly the networks are used for group communication where everybody can listen to all radio communication within the district. At the emergency control centre telephony is integrated with radio through an operator panel. A new, shared digital radio system must satisfy the need for secure group communication. Furthermore the network must have sufficient capacity and sufficient security for the increasing use of mobile data services.

2.3. Health

The main responsibility of the Health Agency is to provide specialist and primary health care services to the general public.

Within the Health Services the radio network is used for the coordinated control of different Health Service resources and to coordinate these with the other Public Safety Agencies and other authorities. This includes the alerting of on-call health personnel.

The Health Services are organised partly at a state and partly at a municipal level. At the state level, the country is split into five Regional Hospital Trusts: North, Middle, West, South and East. The Regional Hospital Trusts are responsible for providing specialist health services (e.g. the hospitals and the ambulance service). Emergency telephone calls from the public (i.e. 113-calls) for the specialist services are routed through control rooms called Emergency Medical Communication centres (AMK - Akuttmedisinsk Kommunikasjonssentral), which initiate the necessary actions and coordinate the services. The municipalities are responsible for the provision of primary health care through the county health services. Requests for the local health services go mainly through local municipal GP (General Practitioner) on-call centres (LV-centre).

AMK- and LV-centres follow up requests from the public, and alert health resources using the radio network. Each AMK-centre (possibly in coordination with other control rooms) alerts resources within hospitals or between hospitals, alerts ambulances and other collaborating services, and monitors ambulance progress until the patient is in hospital.

3. Scenarios

The document includes a set of operational scenarios that illustrate the need for mobile communications within the Public Safety Agencies. The requirements listed later in the document, are intended to cover these scenarios.

The scenarios are divided into two categories, routine incidents and major incidents (including special events etc.). Routine incidents occur daily whereas major incidents are less frequent. These scenarios illustrate that requirements related to major incidents may be considered as more important than others. Each scenario includes functionality that in general can be used in all scenarios, such as positioning, database enquiries, file transfers etc.

3.1. Routine Incidents

3.1.1. Emergency Calls from the Public

All the scenarios include communication between the following parties:

- the public
- the emergency control centre
- mobile response unit(s).

A public call is routed to one of the emergency control centres (11x) and the 11x operator answers the call. The 11x operator then records the key details of the incident and then assigns tasks and alerts the mobile response units. The 11x operator at the emergency control centre needs to communicate independently with all or some of the related mobile units, depending on the severity of the incident. There may also be need for the mobile response unit to communicate directly with the caller.

3.1.2. Traffic Accident

This scenario describes a situation where all three Public Safety Agencies are involved.

One (or several) emergency control centres receives a telephone call from a member of the public. The 11x operator then informs the other emergency control centres and response units. The emergency control centres can transfer the geographic position of the incident to the rescue units. The first response unit to arrive at the scene will typically report back to the emergency control centre and thereby to other response units. If an accident requires actions over a wide area or necessitates the diversion of traffic at the scene, then communication will normally be done by radio. The emergency control centres receive reports from their units and coordinate the activity.

The scenario illustrates the need for all response units to communicate with their emergency control centre at the scene of the accident as well as whilst travelling to and from the incident. An agency must be able to communicate internally with its own staff as well as with the other Public Safety Agencies at the scene of the accident illustrating the need for flexible group communication independent of geographical location and agency affiliation. The mobile response unit may need to transfer data, for instance maps, technical drawings of houses, pictures from the scene, database enquiries or text messages. The response units' geographic positions will continuously be transmitted to the emergency control centres. After an assignment is completed, the response units will complete incident reports in the field and transfer these to the emergency control centre.

3.1.3. Industrial Accidents

An industrial accident is another example that requires simultaneous involvement from all three Public Safety Agencies. There will be a lot of communication within each agency, most likely coordinated by the emergency control centres, as described above. In such a situation it is often necessary to transfer data, for example by downloading files and querying databases.

3.1.4. House Fire

A fire in a private house will require the same communication procedure as in traffic and industrial accidents. In addition closed group communication may be needed for 'smoke divers' (the firemen equipped with breathing apparatus that actually go into the burning building). Direct radio communication between the 'smoke divers' (i.e. not involving fixed

radio infrastructure) will most probably be used in order to ensure reliable radio coverage within the building. In the case of a fire in a sparsely populated or remote area, outdoor radio coverage may not be satisfactory. In such cases a solution that can provide a temporary improvement of the outdoor network coverage, (e.g. a gateway) will be needed.

3.1.5. False Alarms

In places like airports, false alarms (e.g. fire) are frequently activated. However, all three Agencies must assume that all alarms are real, and act as if an incident were developing. This means that priority mechanisms and sufficient capacity must be available in the shared digital radio network.

3.1.6. Wide Area Operation

The Police and Health have resources that operate across wide areas. Typical examples are the National Mobile Police (UP), the Ambulance services and the Air Ambulance Services. These units need continuous communication with the control rooms and with other groups within their own organisation. This is so that they can respond to situations that occur as well as to report back information e.g. the status of ambulances with patients in transit. This necessitates a requirement for both coverage and capacity throughout the whole country as well as seamless functionality independent of geographical location.

3.1.7. Foot Patrols

An important activity for the Police is patrolling the streets by foot, especially in densely populated areas. Foot patrols need continuous communication with the control room of the Police as well as with other patrols. Good indoor and outdoor radio coverage to hand portable radio units is therefore necessary.

3.2. Major Incidents and Special Events

Major incidents are unplanned events whilst special events are planned. During planned or unplanned events, routine incidents, as described previously, will continue to occur.

The following describes some typical major incidents (unplanned events):

- Flooding - this will typically require some increased capacity over a wide area for the period of the incident, as well as the need for short term additional local capacity at various ‘hotspots’. Examples are the flooding in the South-eastern part of Norway in 1995 and in the Oppdal-area in autumn 2003.
- Severe weather causing damage to infrastructure requires action from the Public Safety Agencies over a wide area. The network services must be available under such conditions. An example was the hurricane that hit Western Norway in 1992.
- Accidents at sea, aeronautical accidents and bus and train accidents may create the need for communication over large search areas, and at the same time cause high traffic levels at the scene of accident. Examples of this are the train accident at Åsta and the marine accidents of the Sleipner and Rocknes. At Åsta about 600 persons from the Public Safety Agencies, the Norwegian Defence and other organisations took part in the emergency operation.
- Big fires or explosions require large and concentrated emergency operations. For example the city fire in Trondheim and the train accident and associated propane fire at Lillestrøm train station involved a lot of emergency personnel.
- Extensive forest fires, such as the fires in Bergen in 2003, require effort from all Public Safety Agencies for several days. The number of emergency personnel in need

of radio communication was not too demanding for the forest fire in Bergen, however that would not be the case for an incident that took place in a more remote area.

The following scenarios cover special (planned) events:

- Protection of visiting Very Important Persons (VIPs), such as heads of state, visitors to the Nobel peace prize ceremony, ministers of Foreign Affairs, NATO meetings etc. During such events secure exchange of information between the Public Safety Agencies is required.
- Control of large crowds of people in local areas, e.g. major sports events or concerts, requires extra capacity for relatively short periods.
- Control of events over larger areas such as *Birkebeinerrennet* (ski race in the mountains), during political demonstrations, and on celebration of the National Day, 17th of May, there is a need for priority mechanisms and increased capacity.

4. High Level Requirement and Definitions

4.1. Mobile Communications Requirements for the Public Safety Agencies

The mobile radio communication system is an integrated part of the Public Safety Agencies' support systems for daily communication and coordination of resources, as well as during severe incidents and catastrophes. In addition, the radio communication system is important for the personal safety of the personnel within the Public Safety Agencies who, by the nature of their work, are exposed to dangerous situations.

As well as the core Public Safety Agencies, other organisations that are responsible for emergency preparedness related tasks (such as the civil defence, electric power suppliers etc.) are also involved.

The overall emergency and rescue service needs to handle requests from the public, alert response units on-call and follow up emergency situations or whenever the public needs assistance from the Public Safety Agencies.

The mobile communication network must fulfil the need for the Public Safety Agencies to communicate under circumstances where public communication systems are out of service and where the need for communication and teamwork is crucial for effective handling of the crisis.

4.2. Definitions

Term	Explanation
11x	A common term for the emergency control centre's telephony numbers, i.e.110 (Fire), 112 (Police), 113 (Health)
Air interface	The air interface delivers network services, over the radio bearer, to all places within radio coverage.

Term	Explanation
Call-out	A service that is used to alert emergency response personnel within Health and Fire: • A *Call-out alert* is sent from the emergency control centre, over the air interface to the radio terminal of each involved participant, generating a predefined radio terminal response (e.g. display message and alert tone). • The alert is followed by a live, simultaneous *Call-out speech message* from the emergency control centre to all involved radio terminals. • Each participant will be able respond back to the emergency control centre by selecting between predefined *Call-out acknowledgements* on their radio terminals.
Call-out alert	See Call-out
Call-out acknowledgement	See Call-out
Channel (traffic channel)	A measurement of the capacity of voice and data traffic. A channel can transfer a single two-way (duplex) call between two participants (point to point call) or a single one-way (half duplex) call between an unlimited number of participants (group call).
Control room	A generic term for all types of communication centres administrating the resources in an Agency, e.g. AMK-centres (emergency medical communication centres), local Fire brigades, local Police, LV-centres etc.
Critical radio sites	Radio coverage will be provided by a number of base stations located at radio sites. Approximately 20% of these radio sites are defined as critical sites, giving either wide geographic coverage or coverage in densely populated areas.
Down time	Down time is the period when coverage and network services are unavailable in areas where coverage and network services would normally be available.
Dynamic user group	A group of users that can be created and deleted without physical connection to radio terminals that are affected by the change (the change is typically made over the air interface).
Emergency control centre	A control room that receives emergency telephone calls from the public (also known as 11x centres).
End-user	A person in the Public Safety Agencies who operates a radio terminal or an application with access to the network services.
Gateway	A device that can extend the normal radio coverage locally to units that are outside the normal coverage area. A limited subset of network services may be offered to the units in the extended coverage area.
Integrated communications control system (ICCS)	A system that provides control of both radio and telephony calls, usually from a single integrated terminal at each control room operator console.

Term	Explanation
Key network elements	Functional units in the fixed infrastructure that are critical to the delivery of network services. Such elements are for instance switches, routers, central databases, base station controllers and encryption servers.
Line interface	The line interface delivers network services and may also allow control of network services. The line interface is available at defined locations. The end-user has access to services from the line interface using different applications such as ICCS.
Network services	Network services are the complete set of communication services that the Public Safety Agencies need, e.g. voice and data services that have different requirements for the quality, capacity and control.
Payload	User or network traffic that is transferred between users of the communication system (voice or data).
Safety alarm	An alarm, which is activated on a radio terminal (usually by operating a dedicated emergency button) and which is sent with high priority over the network to other users.
Set-up time	The time from when an end-user initiates a service (e.g. a voice call or short data call) until that service is ready for use e.g. when a voice conversation can start or when a short data message has been sent.
Short data	Generic term for short data messages (e.g. text and status messages).
Uptime	Uptime is the period during which the coverage and network services are available in a given area.
User	A user is an identity with specific rights to network services. A user accesses network services through radio terminals or various applications across the line interface. A user can be either an individual person, a job function or a machine.
User group	Radio network users with a common group identity having specific rights to network services.

5. Requirements

The key functional requirements are described in this section.

In the subsequent procurement process, the Tenderer will be asked to state how these and other requirements will be implemented. The Public Safety Project is aware that at present there is no technology that can fulfil all requirements. Some requirements may be mandatory, and failure to comply with such requirements may rule a bidder out from the bidding process. Some requirements will be part of the baseline delivery whereas others may be optional.

As stated earlier, the detailed functional requirements for the public safety system will be described in the tender documents. These may differ from the high level requirements that are given below.

5.1. Requirements for Network Services

5.1.1. Network Services

1. The network services shall be available via the air interface (radio coverage) and line interface.
2. A radio terminal of a pre-defined user shall be able to receive network services via the air interface[1].
3. Up to 50,000 users shall be able to access the network services simultaneously (over air interface and line interface).
4. The air interface and the underlying infrastructure shall be dimensioned so that all Public Safety Agencies can carry out their tasks without experiencing unacceptable delays or blocking (for both voice and data calls). The network shall be dimensioned to maintain functionality and security during operational use.
   The level of traffic on the network shall be monitored continuously such that any bottlenecks can be immediately addressed.
5. The network services shall be provided in logically separated virtual networks. It shall be possible to define users and groups of users in each virtual network.
6. It shall be possible to define several thousands user groups including groups that include all defined users.
7. It shall be possible to contact all users with access to the network services by addressing a group of users or by aggregating several user groups.
8. It shall be possible to restrict each user's access to the network services in terms of:
   - geographic location (e.g. based on current calling party's current location).
   - the users that they can communicate with
   - functionality (which services are needed).
9. There shall be priority mechanisms supporting different priority levels to users, groups of users and network services.
10. It shall be possible for network services with higher priority to interrupt ongoing network services of lower priority.
11. All voice calls shall be set-up and proceed without noticeable delays and with good voice quality, irrespective of call duration.
12. Short data consisting of up to 250 characters shall be delivered quickly between users.

[1] If a supplier proposes to provide network services using more than one network, then the services shall be seamlessly delivered to the user as if they came from a single network.

13. Data services, e.g. database lookup and transfer of documents and photos with a size up to approximately 10kB shall be transferred within 30 seconds from the instant that transmission is initiated by the calling party. A medium level of error correction is assumed for this requirement.
14. Data services requiring higher capacity, such as documents, images, high resolution images and low-resolution video clips (up to 30 seconds) with a size of up to approximately 450kB, shall be transferred within 30 seconds from the instant that transmission is initiated by the calling party. A medium level of error correction is assumed for this requirement. The service shall be introduced into densely populated areas within 3-5 years of the first rollout area becoming operational.
15. All data transfers shall be identified so that data can be traced within the system. It shall be possible for the called party to automatically acknowledge that data has been received.
16. A user within a group of users shall be able to speak to all other users within the same group (i.e. voice group call).
17. A user within a group of users shall be able to transfer short data to all other users within the same group (i.e. short data group call).
18. A user shall quickly be able to register as an active member of a particular group of users (in order to receive the services of that group), provided that the user has been pre-defined as a member of the group.
19. When a user is currently registered as an active member of a group, the call set-up time shall be negligible.
20. It shall be possible for a user with appropriate access rights to a group to be included in an ongoing session of that group (e.g. late group entry).
21. It shall be possible for a user to monitor several groups of users simultaneously (e.g. group scanning).
22. Duplex (two-way) voice calls shall be supported.
23. The user shall be able to receive short data during an ongoing voice call.
24. The user shall be able to send short data during an ongoing voice call.
25. Voice calls to or from a user with ongoing data transfers shall not terminate the data call. It is acceptable for the data transfer to be suspended for the duration of the voice call and then to be automatically resumed.
26. A user shall be able to make duplex voice calls to the fixed and mobile public telephone networks.
27. It shall be possible from the public telephone network to make a duplex voice call to a user on the public safety system.
28. A user shall be able to make a duplex voice call to fixed subscribers on the Public Safety Agencies' internal telephony networks (PABX) and vice versa.
29. A user shall be able to send high priority call-out alerts to another user or group of users.
30. A user who receives a call-out alert shall be able to send a Call-out acknowledgement to the sender.

5.1.2. Coverage

In this section, the baseline coverage is given in requirement 31, with the other requirements related to the provision of various coverage enhancements. The subsequent tender documents will state exactly what coverage is required and whether each coverage requirement is mandatory or optional.

31. The baseline coverage requirement is for good speech and data coverage in the following locations:
    - **Indoor** hand held coverage in the largest cities and within a radius of 5 km around the local fire stations.
    - **Outdoor** hand held coverage in other densely populated areas and in 80% of the total geographic area.
    - **Outdoor** vehicle coverage along 100% of classified and county roads, as well as 90% of all municipal and private roads.
32. In addition to requirement 31, good speech and data coverage shall be provided in the following locations:
    - **Indoor** hand held coverage in all densely populated areas.
    - **Outdoor** hand held coverage along all classified roads and county roads, in addition to 90% of all municipal and private roads.
33. Coverage shall be provided inside selected tunnels.
34. Coverage shall be provided for helicopters anywhere in the country (Ground-air-ground coverage).
35. Mobile coverage solutions (e.g. transportable base stations and/or repeaters) shall be provided to allow local coverage to be provided in up to five locations simultaneously.

5.1.3. Security

36. The baseline security requirement is that the system shall prevent undesired eavesdropping or manipulation of any payload that is being transferred, including voice and data.
37. The system shall support end-to-end encryption of payload.
38. The system shall support encryption of the air interface.
39. The system shall support mutual authentication between the network and the radio terminals.
40. Key network elements and critical radio sites shall be secured against physical access from intruders.
41. Components where the payload can be monitored shall be secured against physical access from intruders.
42. Any sensitive information that is stored outside the Public Safety Agencies control rooms (for instance in voice recorders) shall be encrypted.
43. The following back-up electricity power is required as a minimum for different component categories:
    - 96 hours for key network elements and critical radio sites.
    - 12 hours for 60% of the radio sites.
    - 4 hours for the remaining radio sites.
44. The system shall have mechanisms for detecting ”jamming” (deliberate transmissions made by third parties on Public Safety Agencies radio channels in order to prevent access for legal users).
45. The system shall have mechanisms to reduce the consequences of ”jamming”.
46. The system shall include mechanisms that reduce the consequences of errors in key network elements and transmission lines.

47. A radio site shall support group communication within its local coverage area, even when transmission line failures occur or when there are faults in the key network elements (e.g. base station fallback).
48. It shall be possible for authorised personnel remotely to activate the microphone in radio terminals, without this being indicated at the radio terminal.
49. It shall be possible to temporarily disable and permanently exclude radio terminals from the network whenever unauthorised use is suspected.
50. The support system for encryption administration shall include the following features:
    - Secure key generation
    - Secure key distribution (manually and over the air interface)
    - Version and validity control

    The features shall only be available to personnel responsible for the public safety system security.

5.1.4. Operations and Maintenance

In terms of the operations and maintenance procedures, there will be specific requirements related to availability of network services (availability and down-time).

51. An access control system for operations and maintenance personnel shall be provided.
52. Operations and maintenance activity that includes changes of parameters and configurations shall be logged and made available to the Public Safety Agencies on request.
53. A billing system shall be provided for internal traffic as well as for connection to external networks (e.g. public telephony networks).
54. There shall be a tool for configuration and control of various user priorities and rights.

5.2. Radio Terminal Requirements

55. Suitable radio terminals shall be available that support the network services.
56. There shall be at least two independent radio terminal suppliers.

5.2.1. Types of Radio Terminals

57. Radio terminals shall be offered for permanent installation in vehicles or buildings. These radio terminals shall have higher output power than hand-held radio terminals.
58. Robust hand-held and mobile radio terminals shall be offered. These radio terminals shall withstand shock, dust, temperature extremes and moisture.
59. Radio terminals shall be offered that can be used in explosive atmospheres (e.g. intrinsically safe).
60. Light portable radio terminals, that do not restrict movement, shall be offered (similar to modern GSM telephones).
61. A mobile solution shall be offered that can expand network coverage to other radio terminals in the locality that are outside regular radio coverage (e.g. gateway type solutions).
62. It shall be possible to extend direct communication between radio terminals independent of regular radio coverage (e.g. using a radio repeater).

5.2.2. Radio Terminal Functionality

63. The speech quality shall be good even in the presence of a high level of background noise.

64. It shall be possible to activate a safety alarm at the radio terminal in a simple, unambiguous and discrete way.
65. There shall be radio terminals available that support direct communication from a user to a user group outside regular radio coverage (e.g. direct point-to-multipoint communications between radio terminals without using the infrastructure).
66. An active radio terminal (i.e. connected via the air interface) shall be able to receive call-out alerts irrespective of the current mode or user activity on the radio terminal.
67. When receiving a call-out alert, the radio terminal shall activate a predefined response related to the type of alarm.
68. After receiving a call-out alert, the radio terminal user shall be presented with a number of options for replying Call-out acknowledgements, for example 'attending', 'not attending' or 'wait for my response'.

5.2.3. Radio Terminal Accessories

69. The offered radio terminals shall have suitable physical interfaces for accessories, including speech and data accessories.
70. The offered radio terminal accessories shall be suitable for Public Safety Agencies' operational use.
71. Hand-held radio terminals shall be delivered with a selection of chargers for 230VAC and 12VDC.

5.3. Requirements to Control Rooms

72. Network services and configuration services shall be available via the line interface.
73. The line interface shall be provided at each control room.
74. The delivery shall include an Integrated Communications Control System (ICCS) at each control room, connected via the line interface, which can be used to access network services and carry out network configuration.
75. The ICCS delivery at each emergency communications centre shall include a given number of operator consoles. It shall be possible to expand the number of operator positions later on.
76. The local municipal GP on-call centres (LV-centres) and all emergency control centres shall be able to receive safety alarms.
77. The operator at the control rooms shall be able to monitor and break into ongoing group calls.
78. The Public Safety System shall support voice recording where the operator at the emergency control centre is monitoring or taking part in the call.
79. It shall be possible to record and replay all calls within the public safety system, including calls where the operator is not involved.
80. It shall be possible to forward emergency calls from the public to a radio terminal in the public safety system.
81. Radio and telephony calls shall be administered from the ICCS at the control rooms.
82. ICCS shall support standard telephone functionality.
83. ICCS shall have an interface to e-mail, GSM-SMS and GSM-MMS.
84. In the initial phase of the project it shall be possible to communicate with both the new digital public safety system and the existing analogue radio systems, from the same ICCS terminal. The interconnection of the ICCS with the current analogue radio networks shall not degrade any of the functionality of these analogue radio networks.
85. Information about service-affecting faults in the radio network shall be forwarded to the control rooms.

86. A network monitoring system that can give real time statistics about the performance of the network shall be provided in some control rooms.
87. A subscriber management system for administration of user rights, group definitions and establishment of dynamic user groups, shall be provided in some control rooms.
88. A radio terminal programming and configuration system shall be provided to allow the Public Safety Agencies to configure their own radio terminals, including the definition of user and group privileges and authorisation to use the various network services.

5.4. Requirements for Additional Services and Application Interfaces

89. Short data messages that are addressed to a user who is temporarily unavailable shall be stored (for up to 30 days) and then transferred to the user as soon as he is available.
90. Radio terminals shall be offered that can be interfaced to screen-based terminals (e.g. a PC) with alphanumeric keyboard. A standard interface (e.g. USB) shall be used.
91. Radio terminals shall be offered that can be used for basic data applications without the need for additional accessories.
92. Key network elements shall have open standards interfaces.
93. The network services for data transfer shall be based on open standard protocols (e.g. IP, TCP, UDP, ICMP).
    The network services shall support data compression.
94. The offered system shall be able to calculate the geographic positions of user radio terminals and present their positions to third party applications (e.g. external GIS systems).
95. In order to support the transfer of information from various different central systems (that use different protocols) to standard radio terminals in a uniform manner, a Wireless Application Protocol (WAP) platform or similar shall be provided.
96. A system for storing and forwarding voice messages (‘voice mail’) shall be offered.
97. The scope of delivery to the Fire Agency shall include command and control functionality, replacing the current command and control room applications.

5.5. Documentation

98. The supplier shall provide all necessary technical system documentation and user documentation as well as test documentation (test procedures and results).
99. The supplier shall keep all relevant documentation updated throughout the duration of the contract.

5.6. Other requirements

100. The offered system shall satisfy current Health, Environment and Safety (HES) requirements.
101. Before contract signature, the supplier shall, at the customer’s request, demonstrate any offered service in an operational network.
102. The offered solution and services shall be based on public available standards.