Swedish Civil Defence and Resilience Agency

Interim report on government assignment

# Establishing the next generation mission critical communication system for public safety and civil defence

**Establishing the next generation mission critical communication system for public safety and civil defence**



Unit: Mission Critical Communications Unit

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# 1. Introduction

On December 19th, 2024, the Swedish Government tasked the Swedish Civil Defence and Resilience Agency, formerly known as the Swedish Civil Contingencies Agency, with establishing a new national communication system for public safety and civil defence[1]. The system is to be designed as a hybrid solution, utilising both government and commercial infrastructure.

Following the renaming of the Swedish Civil Contingencies Agency's (MSB) to the Swedish Civil Defence and Resilience Agency on 1 January 2026, the term "the Agency" will hereinafter be used throughout this report.

The prevailing geopolitical situation requires the Swedish Civil Defence and Resilience Agency to prioritise efforts to strengthen capabilities within civil defence. In addition, the Agency's own capability to maintain and conduct operations across the full threat spectrum – including war time - must be rapidly developed. In summary, this places further demands on the Agency to provide robust and modern communication systems and command-and-control support services to actors within Sweden´s total defence, both in peacetime crises and preparation for and during a heightened preparedness and war.

The government assignment is to be finally reported on 1 March 2027 and also delivered in two interim reports. The first interim report was submitted on 3 March 2025. This report constitutes the second interim report and presents the status of the assignment, further work, and identified needs as of March 2026.

In this report, the current communication system is referred to as Rakel Generation 1 (Rakel G1), and the new communication system is referred to as Rakel Generation 2 (Rakel G2). The Agency is generally continuing the full establishment of Rakel G2 and associated command-and-control support systems under the name SWEN (the Swedish Emergency Network).

[1] Fö2024/02071

# 2. Summary

Digitalisation is essential for rapid and cost-effective capability development within civil defence. The Government assignment to establish Rakel G2 is the central component of the Swedish Emergency Network (SWEN), aimed at strengthening command, control, and inter-agency coordination support. SWEN forms the digital backbone of the entire civil defence communication system and is a fundamental prerequisite for command, control, and collaboration in the event of accidents, crises, and war. The chosen system architecture for Rakel G2 ensures a high level of interoperability and scalability. By building on international standards and future-proof technologies, favourable conditions are created for the continuous adoption of market-driven innovation throughout the entire system lifecycle. Rakel G1 replaced more than 200 communication systems in Sweden. By making clear strategic choices and creating long-term predictability for user organisations, fragmentation of system solutions during the transition to Rakel G2 is avoided. This contributes both to socio-economic efficiency and to a cohesive framework for collaboration and command in total defence.

The Agency's overall assessment is that the establishment of Rakel G2 is proceeding in line with the strategic direction set out in Interim Report 1. Since that report, the fundamental infrastructural capacity has been implemented, including an operational core network, an operational radio access network (RAN), and established transmission solutions connecting the core network and data centres.

Against the background of the current geopolitical and global security environment, war constitutes the dimensioning threat scenario for Sweden´s total defence. The national communications system must therefore be designed and built to withstand prolonged, complex and severe societal disruptions.

Establishing Rakel G2 using commercial infrastructure requires that mission critical traffic can be prioritised over public traffic. The Agency has previously emphasised that reliance on commercial operators is directly contingent upon a clear regulatory framework for priority and preemption. At present, these regulatory conditions are still lacking, meaning that a fundamental prerequisite for the system is missing. This affects both the timeline for and the actual establishment of Rakel G2.

Access to dedicated radio spectrum in the 700 MHz band (see chapter 6.2) is a prerequisite for the core functionality of Rakel G2, as well as for enabling the complementary coverage expansion required to meet the objective of coverage equivalent to the current Rakel G1 system. At present, the issue of allocating dedicated spectrum is pending decision by the Swedish Post and Telecom Authority (PTS).

The Agency has called for a mandatory requirement for municipalities and regions to participate in Rakel G2. The Swedish Association of Local Authorities and

Regions (SALAR/SKR) have supported the position that mandatory use should apply for municipal and regional operations in areas such as public order, security, health and defence, in order to ensure a uniform national capability for collaboration and command within the total defence system.

The need for clear planning conditions and long-term financing is critical for the system transition. According to the current plan, all users are expected to have migrated to Rakel G2 by 2030, enabling the subsequent decommissioning of the current system, Rakel G1.

Any delays in the rollout of Rakel G2 would result in the Agency being forced to carry out extensive reinvestments in existing infrastructure to ensure continued operation of the system beyond 2030.

# 3. Summary of Interim Report 1

In March 2025, the Agency submitted the first interim report on the assignment[2].

In implementing the government assignment, the Agency chose to apply a collaborative model based on transparency towards relevant authorities, early involvement of user organisations, and effective cooperation with commercial stakeholders[3]. This approach entails a gradual build-up of capabilities, where voice communication is prioritised first, followed by video and data services. The aim is for user migration to begin in 2028.

Rakel G2 is being built as a hybrid solution based on a Multi-Operator Core Network (MOCN) architecture, combining a state-controlled core network with commercial radio access networks. The Agency has previously entered into agreements for both the core network and the radio access network, enabling the system to provide around 94 per cent nationwide geographic coverage for testing as of 2025. The architecture enables flexible and cost-effective deployment, using a layered model that combines resilience, coverage, and state control.

Of the allocated funds, approximately 85 per cent was planned to be used for infrastructure and technical solutions, while the remaining funds were reserved for project management, operational capabilities, and collaboration. The underlying principle was to apply public procurement and re-use existing state-owned infrastructure where possible. Protective security was emphasised as a critical factor, and the Agency is responsible for ensuring that critical components are managed in-house to ensure robustness and protection against undue exposure.

The interim report also emphasised that a fundamental prerequisite for Rakel G2 is the prioritisation of mission critical traffic in public networks, particularly in the event of major events, crises or terrorist attacks when public networks become congested. The Agency emphasised the necessity of a statutory obligation for operators to provide priority in public networks for mission critical communications.

The general premise was that the system should be dimensioned to handle societal crises, heightened preparedness and hybrid threats, with continuity and resilience as key guiding principles.

The interim report also highlighted that the Agency faces additional strategic decisions, including those relating to continuity, the balance between benefits and cost, and a detailed plan for the decommissioning of Rakel G1. Coordination with the Swedish Post and Telecom Authority and other public authorities was identified

[2] *Report on the assignment to establish a new communication system for critical societal actors,* MSB 2024-17523-3

[3] During 2025, user organisations were given the opportunity to test an initial version of Rakel G2, enabling early evaluation and prioritisation of further development.

as necessary to strengthen networks and resilience measures. A data-driven approach was seen as essential to maximise user benefits within existing financial constraints. Finally, the interim report described that the Agency is also working to implement the necessary solutions required ensure user organisations can smoothly carry out the transition from Rakel G1 to Rakel G2.

# 4. Geopolitical situation and challenges

## 4.1 Background to Rakel G2

The Rakel system was introduced in the early 21st century as the primary communication system for actors in public safety and disaster relief. Prior to Rakel G1, these actors used their own communication systems, which were not interoperable. This resulted in a fragmented communication landscape, with more than 200 different systems, creating significant challenges for coordination during major crises and incidents. As a result, in 2003 the Swedish Parliament decided to fund the deployment of Rakel G1 across Sweden to establish a national communication system for effective coordination.

Since then, there has been significant technological and societal development. This development has led to new needs for robust broadband communication, which is now increasingly crucial for actors to carry out their missions. The TETRA technology, on which Rakel G1 is based, is gradually being replaced and will eventually be phased out in most national communications systems[4].

To support actors´ needs for modern communication services in an increasingly digitalised world, new communication solutions are required that can handle real-time transmission of data and video. This was already noted in *Ds 2017:7 Communication for our common security*. This need increased further, as emphasised in reports submitted under the various assignments to the Agency to prepare for the establishment of Rakel G2, as well as in the government assignment (Fö 2024/02071) within which this interim report is now delivered.

## 4.2 Fundamental conditions are changing

The global security situation has deteriorated further. This is clearly reflected in the report *Foundations for total defence 2025–2030*[5] by the Swedish Armed Forces and the Swedish Civil Defence and Resilience Agency, which forms the basis for Sweden's planning and development of total defence during the period 2025–2030. The report describes the threat landscape as broad and complex, requiring a robust, flexible and coordinated total defence system.

[4] RAKEL is based on the TETRA standard (which now stands for Terrestrial Trunked Radio). One of the leading suppliers of TETRA equipment, Airbus Group, has currently made an official commitment to providing support for the technology until 2035.
[5] The Swedish Armed Forces and MSB (2025), *Foundations for total defence 2025–2030,* FM2025-19772:2 and MSB 2025-08877.

Based on this as one of the starting points, the Swedish Armed Forces and the Swedish Civil Defence and Resilience Agency have jointly developed seven dimensioning scenarios to support continued planning by relevant actors. These scenarios clarify the total defence system's need for robust command-and-control support and communications services. Within the framework of civil defence (including critical societal actors), there remains a significant and increasing need for a national communications system for robust and secure information sharing. This also includes the ability for civilian actors to communicate and share information with military units and commanders. Mission critical communication services are a fundamental prerequisite for effective civil-military cooperation, with Rakel G2 forming the foundation for this capability.

## 4.3 Increased need for robust command-and-control support system

The global security situation has further deteriorated since the previous interim report. Russia's full-scale invasion of Ukraine has increased tensions in Sweden's surrounding region. This development has led to a heightened risk level for both government agencies and critical societal services. At the same time, the threat landscape has broadened with increased risks of sabotage, influence operations and cyber-attacks. Incidents involving drones, both nationally and in nearby regions, have also been noted. In addition, from the threat of terrorism and violent extremism remains, which lead to serious consequences for society. At the same time, natural disasters such as extreme weather events, floods and forest fires have become more frequent, more complex and more widespread. Against this background, greater demands are placed on the ability to manage different types of crises. In summary, developments in the external environment have increased the need for a shared, robust command-and-control support system, in which Rakel G2 constitutes the central capability.

One factor to take into account is the experience from the war in Ukraine, where Russia persistently targets civilian infrastructure using both kinetic and cyber weapons. One of the priority targets in this effort is all parts of Ukraine's command-and-control capability (both military and civilian [6]) – and, as in all warfare, the least protected components are the easiest to disable. This means that the commercial parts of Ukraine's infrastructure are the most vulnerable to disruption. This clearly supports the continued development of Rakel G2 as a platform with national coverage and interoperability at national, Nordic and European levels.

The starting point for Rakel G2 is the everyday need to support critical societal actors such as police, rescue services, ambulance services, and the approximately

[6] MSB (2024), *Experiences from Ukraine – lessons learned for civil defence,* MSB2381.

700 organisations that currently use Rakel G1. In addition, these actors must be able to handle peacetime crises such as terrorist attacks, forest fires, floods, etc., when commercial networks may become overloaded. Mission critical communication services need to be dimensioned based on the requirements of war. Dimensioning Rakel G2 for war will also meet the actors' needs across the entire threat spectrum, where continuity, resilience and protective security are central guiding principles. In this context, the Agency emphasises the need for a statutory obligation for operators to provide priority for Rakel G2 – this is further discussed below in Chapter 6.

## 4.4 National and international interoperability

Sweden´s membership in NATO has fundamentally transformed its defence, affecting both military and civil defence. NATO accession has further clarified the need for closer cooperation between military and civil defence. Sweden´s and Finland's entry into NATO has not only impacted our countries, but also our other Nordic neighbours. We can now plan our collective defence within the Alliance in a completely different way. A key component of this planning is meeting the NATO Baseline Requirements (NBR), with its seven capabilities targets, where both civil and military defence must plan and operate based on shared premises. One of these baseline requirements is the capability for resilient civil communications systems.

Furthermore, the need for cross-border cooperation in Europe has increased in recent years to manage natural disasters and combat crime and terrorism. To improve the operational effectiveness of actors in public order, security, health and defence, the European Commission[7] announced in July 2024 its commitment to establish a new, modern, broadband-based European system for mission critical communications, referred to as the EUCCS[8] initiative. The objective is to connect all European PPDR[9] networks to enable cross-border communication and operational mobility across the entire Schengen area, similar to the solution that currently exists among Norway, Sweden and Finland in the TETRA network. Enabling interoperability of mission critical communication systems among PPDR actors in Europe strengthens total defence, facilitates civil-military cooperation, and a 'whole-of-government response'. Joining EUCCS places significant requirements on the robustness, security and resilience of the systems to their countries' PPDR actors.

Norway, Finland and Sweden have a long tradition of cooperation in civil preparedness. Swedish actors work operationally with their counterparts in Norway

[7] Von der Leyen, U. (2024), Europe's choice - Political Guidelines for the Next European Commission 2024-2029, p. 15. See also Von der Leyen (2024), Mission Letter to Magnus Brunner, Commissioner-designate for Internal Affairs and Migration.
[8] European Critical Communication System (EUCCS). The Civil Defence and Resilience Agency has been participating in this initiative for some time.
[9] Public Protection and Disaster Relief (PPDR).

and Finland on everything from combating organised crime to managing natural disasters. At present, Rakel G1 is connected to Norway's Nødnett and Finland´s VIRVE through the TETRA ISI standard[10]. This enables actors in Sweden to communicate with their Norwegian and Finnish counterparts via Rakel G1. All three countries are now undergoing the same transition from TETRA to broadband-based communication systems, albeit with different timelines. It is crucial for ensuring effective Nordic cooperation that cross-border communication function both during and after the transition to Rakel G2.

In addition to military command and control systems, the civil defence system must also have the capability for effective command and control, as well as communication across the entire operational area. A key prerequisite in this respect is the ability to communicate nationally between civil and military actors in Sweden, with our closest neighbouring countries and across Europe. Rakel G2 is being developed to provide these capabilities for Sweden. A coherent national communication system is today, to an even greater extent, a prerequisite for a strong total defence.

[10] Inter System Interface (ISI).

# 5. Status of the establishment of Rakel G2

## 5.1 Introduction

The first interim report of the assignment was submitted to the Government on 3 March 2025 and described the overall direction for the establishment of Rakel G2, including the selected system architecture, implementation model and planned phasing.

Since then, the establishment has entered an implementation phase in which the technical, organisational and security-related prerequisites have been gradually realised. This chapter presents the current status of the establishment, activities carried out, and the key decisions made to ensure that the objectives of the assignment can be achieved within the given financial and time constraints.

The establishment of Rakel G2 is being carried out in a gradual and controlled manner. During the period, the focus has been on:

- Ensuring that the chosen hybrid architecture works in practice.
- Establishing the fundamental services required to enable migration from Rakel G1 to Rakel G2.
- Creating structures for testing, validation and collaboration with user organisations.

## 5.2 Current status of the establishment

During 2025, implementation within the Agency has been organised into a consolidated program (Program G2), with responsibility for procurement, technical establishment, protective security, testing activities, and collaboration with user organisations. The program structure has clarified responsibilities, milestones and dependencies ahead of the upcoming phases of development.

The establishment of Rakel G2 is progressing gradually across three main dimensions:

1. **Networks and service platforms:** Establishment of core networks, radio access solutions and associated service platforms.
2. **Operational capabilities:** Development of operations and user support, establishment of functions for cybersecurity monitoring and incident management, as well as emergency operator capabilities.
3. **User groups:** Establishment of collaboration structures at multiple levels, along with implementation pilot and acceptance testing prior to migration.

The phased approach is intended to reduce risk, enable early testing, and ensure that the system meets coverage, capacity, priority and resilience requirements before migration beings.

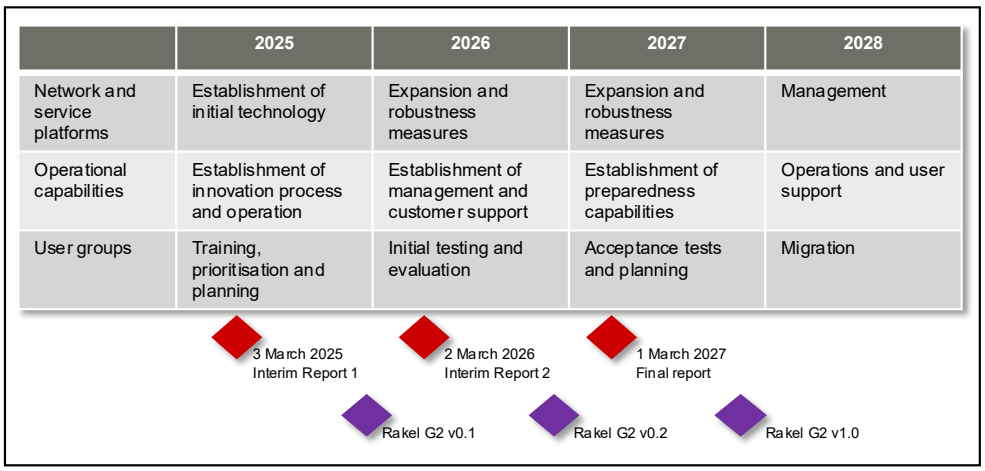


Figure 1. Gradual establishment.

The basic services planned to be available by late 2027/early 2028 will constitute the technical and operational foundation required to begin the migration from Rakel G1 according to plan.

### 5.2.1 Network and service platforms

As of the first quarter of 2026, the core components of Rakel G2 have been established. The dedicated core network procured in 2024 has been delivered by Ericsson and is now operational. The core network is partly operated by the supplier during a transition period, while the Agency is gradually building its own capability for operation and long-term management. This ensures both continuity during the establishment phase and a gradual increase in state control over the system's critical functions.

The commercial radio access network has been delivered by Telia and integrated with the Agency's core network in accordance with the previously described hybrid architecture. The chosen hybrid architecture has thereby been realised in practice. In the initial establishment phase, Rakel G2 provides approximately 94% nationwide outdoor coverage, enabling realistic testing and pilot activities together with user organisations.

Platforms for SIM management and necessary support systems are in place. During the period, the procurement of a migration solution has been carried out and its implementation has begun. The migration solution enables interconnection between Rakel G1 and Rakel G2 and creates the conditions for a controlled and gradual transition. Through the migration solution, user organisations can be migrated successively as their technical and organisational preparations are

completed, reducing risks during the transition and enabling a planned decommissioning of Rakel G1.

During the spring of 2026, limited testing begins together with selected user organisations, followed in autumn 2026 by broader involvement of a wide range of user organisations. The pilots are a vital part of the continued work to establish Rakel G2. The phased testing and deployment model aims to ensure quality, functionality and operational maturity before a wider migration is initiated.

### 5.2.2 Operational capabilities

In addition to the technical development, a gradual build-up of the Agency's operational capabilities for operations, security and user support is ongoing. During the establishment phase, parts of operations will continue to be handled by contracted suppliers, while the Agency progressively develops its own expertise and organisational structure for long-term management, increased control, and oversight over those elements that cannot be outsourced from a security protection perspective.

In parallel with this government assignment, the Agency is also bringing operations related to Rakel G1 in-house, creating conditions and future synergies for Rakel G2. As a part of this work, a network operations centre (NOC[11]) has been established. This function will be gradually brought into use during 2026. However, the overall operational capability will continue to evolve over time and will remain dependent on collaboration with market actors. In parallel, a function for continuous cybersecurity monitoring and incident management (CSOC[12]) is being established. This capability is also being built up step by step and is a key component for the long-term security architecture for the Agency's delivery, including Rakel G2.

Ahead of the tests and pilot activities planned for 2026, the operational functions required for implementation are being established. This includes a customer support function, workflows for the logistics of user equipment and solutions for subscription management. At this stage, the capability is scaled for testing and pilot operations and will be subsequently further developed as the system moves closer to broader deployment.

As part of the long-term development, a model for innovation and development work has also been introduced. The Agency has, among other things, entered into an agreement with Research Institutes of Sweden AB (RISE)[13] to develop a methodology for joint testing of components and evaluation of mobile user

[11] Network Operations Centre
[12] Cyber Security Operations Centre
[13] Cooperation agreement regarding Development Methodology, Ref. 25/105 (MSB 2025-05317).

equipment for mission critical communications, thereby strengthening quality assurance and future technological development in the field.

### 5.2.3 User groups

Part of the establishment is ensuring that Rakel G2 is developed in close cooperation with the user organisations and that the transition from Rakel G1 can be carried out in a structured and predictable manner. During the period, a cohesive collaboration structure has been established, including forums at strategic and tactical levels, as well as expert groups for specific areas of focus.

During 2025, 42 workshops were conducted across all six civil defence regions, with participation from a total of 469 user organisations. In addition, proof of concept testing was carried out with 19 user organisations during spring 2025, followed by a further 53 group-based concept tests in the autumn. This approach aims to gradually test functionality, gather needs and experiences, and build a shared understanding ahead of upcoming pilot operations and migration.

In parallel, preparations for pilot activities, the validation phase, and migration have started. This includes, among other things, guidance and support material for user organisations, structures for managing requirements, and planning of training initiatives. Through this work, the conditions are being created for a stepwise transition to Rakel G2 with a high degree of operational support.

## 5.3 Strategic choices and decisions made

In Interim Report 1, a number of fundamental strategic choices underlying the establishment of Rakel G2 were presented, along with several identified areas where further clarification and decisions would be required in the coming period. Below is an account of how these have been addressed and developed.

The fundamental strategic choices presented in Interim Report 1 remain unchanged and have guided implementation:

- MOCN architecture with dedicated core network connected to a commercial radio access network.
- Use of 3GPP standard as the technical foundation.
- Combination of dedicated spectrum in the 700 MHz band and public spectrum.
- Gradual build-up of in-house operational and monitoring capabilities to meet the requirements of security protection legislation.

The development during 2025–2026 has been carried out in accordance with these directions.

Interim Report 1 also identified a number of areas where choices and clarifications would be required. During the period, these have been addressed and specified as follows:

- **Prioritising between time, benefit realisation and cost efficiency**:
  During the establishment phase, trade-offs have been made with the objective of enabling migration according to plan. The time factor has therefore been a key driver in balancing benefit realisation and cost efficiency, without compromising fundamental security requirements. This strategic choice creates the conditions necessary migrate all user organisations to Rakel G2 before it becomes necessary to initiate life-cycle management of existing Rakel G1 systems[14], i.e. the ambition is to avoid such life-cycle management.
- **Identification of coverage enhancement in collaboration with user organisations**:
  The established collaboration structure at both strategic and tactical levels provides the basis for systematically identifying and prioritising geographical areas where coverage needs to be strengthened. This work will be carried out in dialogue with the user organisations and in relation to the available financial framework and resilience requirements.
- **Coordination with the Swedish Post and Telecom Authority**:
  Coordination of enhancement and resilience measures is conducted in dialogue with the Swedish Post and Telecom Authority, with the aim of ensuring that government and commercial efforts complement one another.
- **Dimensioning for heightened preparedness and war**:
  The previously stated strategic direction of dimensioning Rakel G2 to handle major societal crises, heightened preparedness, hybrid threats and armed conflict, remains guiding and influences priorities regarding capacity, resilience and geographical reinforcement.

In addition to the above, the following directions and measures have been decided or initiated during the period:

- The direction of the operations and management organisation within the Agency has been further specified, with a gradual build-up of key functions in-house, while the establishment phase continue to require support from contracted suppliers.
- Procurement of a migration solution has been completed and implementation has started, enabling interconnection between Rakel G1 and Rakel G2.

[14] Lifecycle management of Rakel G1 includes reinvestments estimated at approximately SEK 3 billion. This reinvestment can be avoided if the establishment of Rakel G2 enables the initiation of the decommissioning of Rakel G1 before the system requires lifecycle management.

- Procurement of radio access networks (RAN) for mission-critical traffic is ongoing, with the intention of signing contracts with two commercial network operators to increase redundancy and availability in the solution. Agreements are planned to be concluded during the year.
- Procurement of a system integrator is underway with the aim of ensuring cohesive integration and governance in a multi-vendor environment. Agreements are planned to be concluded during the year.
- Procurement of enhanced coverage has been decided as part of the long-term coverage and resilience strategy. Implementation is dependent on the allocation of spectrum licences from the Swedish Post and Telecom Authority, for which the Agency is awaiting a decision.
- A direction has also been established to procure specialised coverage solutions for specific needs, such as air-to-ground (A2G) and other tailored use cases.

The Agency's overall assessment is that the establishment of Rakel G2 follows the strategic direction presented in Interim Report 1, that previously identified strategic choices have been concretised, and remaining and upcoming issues can be managed in a structured and stepwise manner for the continued establishment until 2027.

## 5.4 Completed activities

Since Interim Report 1, the development of Rakel G2 has progressed from planning to implementation across several parallel tracks. The core network, integration with the commercial radio access network, as well as SIM infrastructure and associated support systems have been established and put into operation. This means that the baseline architecture for Rakel G2 is now operational and enables continued testing and pilot activities, marking the achievement of a key milestone.

In addition to the technical establishment, extensive market dialogues have been conducted ahead of future procurements, with the aim of ensuring competition, technical maturity and delivery capability. Within the area of user organisations, forums have been established and a large number of workshops and tests have been carried out, with the aim of creating broad national anchoring for future pilot and migration phases.

In parallel, extensive procurement activities has been carried out (Figure 2). Procurement of user equipment has been carried out to enable testing during 2026–2027. Procurements of radio access network (RAN) with mission-critical

requirements [15], system integrator, telematics platform[16] and MCX platform[17] have been prepared and initiated. Procurement of dedicated coverage solutions for specific needs, such as air-to-ground (A2G) and other tailored use cases, is being prepared. Procurement of capabilities to establish enhanced coverage in areas where commercial coverage is lacking has been decided and prepared through market dialogues as part of the long-term resilience strategy, with implementation dependent on the allocation of spectrum licences.

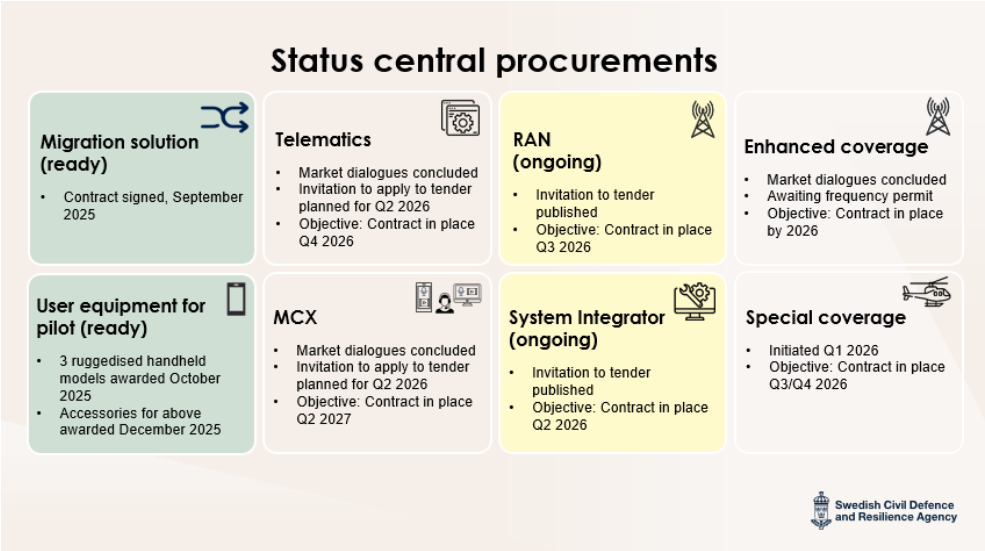


Figure 2. Status central procurements.

A key part of the transition from Rakel G1 to Rakel G2 is the procurement of the migration solution, which has been completed during the period. Implementation and deployment of the solution are ongoing. This enables interconnection between the systems and creates the technical conditions for a gradual and controlled migration.

The establishment of Rakel G2 involves a complex supplier structure where several systems and platforms must interact as an integrated whole. Against this background, procurement of a system integrator has been initiated. The role of the system integrator is to ensure end-to-end integration, coordinate deliveries between different suppliers, and ensure interoperability between the core network, radio access networks, service platforms, user equipment and operational systems. This is

[15] Mission-critical requirements refer to the technical conditions for the service to be reliable and available nationwide, regardless of the load from public users.
[16] A platform for transmitting and receiving data machine-to-machine over narrowband networks. Use cases may include, for example, include operational data, remote control and personal safety alarms.
[17] MCX services constitute the software-based platform that enables mission-critical voice, data and video with functionality equal to or greater than that of the current Rakel system. The procurement achieves a standardised and future-proof solution capable of handling group calls, emergency alerts and real-time video with extremely high requirements for speed and security.

a key prerequisite for the technical solution to function robustly and predictably in a mission-critical environment.

At the same time, international cooperation has been strengthened. A Letter of Intent has been signed with the Norwegian Directorate for Civil Protection (DSB) and Erillisverkot (Finland) for a joint application for funding under the EU Civil Protection Mechanism (UCPM), focusing on cross-border capabilities.[18] The Agency is also actively involved in the development of EUCCS, through participation in the European Commission's Mission Critical Communication Expert Group for Mission Critical Communications, ensuring that Rakel G2 is developed in line with the emerging European vision for mission critical communications.

Overall, during the period, the Agency has established the fundamental technical structure, initiated key procurements and built the collaboration structures required to enable operational use of Rakel G2 and a gradual migration from Rakel G1.

[18] MSB 2025-08366-3.

# 6. Prerequisites for continued establishment

## 6.1 Need for legislative changes

### 6.1.1 Priority in commercial networks

The Agency would like to emphasise that commercial networks, in their current form, do not constitute a fully adequate alternative for critical communications as long as regulator-defined legally mandated priority is not in place. Without a legally binding prioritisation of Rakel G2 traffic, the system's functionality cannot be guaranteed during serious incidents or periods of heightened preparedness, as the networks risks becoming congested by public traffic.

Establishing Rakel G2 using commercial infrastructure requires that its mission critical traffic can be prioritised over public traffic. The Agency´s assessment is therefore that the use of commercial operators is directly dependent on a clear regulatory framework for priority and preemption. The absence of these regulatory conditions constitutes a direct obstacle, impacting both the timeline and the actual establishment of Rakel G2. This issue has been raised in several previous studies on Rakel generation 2, as well as in Interim Report 1. Legislative proposals have already been submitted. The Agency intends to submit a formal request for legislative amendments regarding priority in public networks.

### 6.1.2 Mandatory use for municipalities and regions

In addition to priority in public networks, there is also a need for clarity regarding mandatory use. In its previous reports, the Agency has called for a mandatory obligation for municipalities and regions to connect to the developed and secure communication system, Rakel G2. The Association of Local Authorities and Regions (SALAR/SKR) has supported the position that there should be a mandatory requirement for municipalities and regions in the areas of public order, security, health and defence. However, there is still no decision regarding either mandatory connection or funding. Clear decisions on these aspects are needed to ensure that municipalities and regions have the necessary conditions to continue their preparations.

## 6.2 Decision on reserved spectrum in the 700 MHz band

Before establishment of enhanced coverage can take place, the Swedish Post and Telecom Authority (PTS) needs to make a decision regarding the allocation of

reserved spectrum in the 700 MHz band. Access to low- band spectrum is a prerequisite for building complementary coverage over large areas in a resource-efficient manner. Achieving the same level of coverage using higher frequency bands would require significantly more towers and base stations, as the propagation range is considerably shorter. By operating in the dedicated 700 MHz band, in combination with public spectrum, resilience and availability are achieved. The dedicated spectrum ensures functionality during overload situations, such as incidents in urban environments, festivals, unplanned events, and more, and is therefore a prerequisite for the system to be dimensioned to meet the demands of wartime conditions.

## 6.3 Interconnection with Norway and Finland

Interconnection with neighbouring Nordic countries is an important part of the work to establish Rakel G2. Rakel G1 is interconnected with Finland and Norway[19]. At present, there is practical operational collaboration between users in these countries, for example within emergency services. Work is ongoing to ensure that this functionality is also available in the next generation of system solutions. Sweden, Norway and Finland are at different stages in the deployment of the next generation of mission critical communication systems, which places high demands on coordination and joint planning. The Agency is actively working to ensure that current cross-border interoperability capabilities are maintained and further developed.

## 6.4 Conditions for user organisations

The transition from the current Rakel system to Rakel G2 (SWEN) is one of the largest technological shifts in Sweden. User organisations need clear guidelines in order to carry out the necessary preparations as efficiently as possible. A significant part of this concerns financial conditions.

The following illustrates the approximate scope of the transition to Rakel G2 for users:

- **More than 15,000 vehicles and mobile assets need to be upgraded:** Rakel G2 means that current Rakel terminals in police vehicles, fire and rescue vehicles, ambulances, buses, sea vessels and airborne units must be replaced.

[19] For various reasons (including different choices of system solutions/suppliers), it has not been possible to interconnect the three countries' systems with Denmark. As a part of the broader work on EUCCS mentioned in chapter 4, there is a wider collaboration on future interoperability.

- **Approximately 70 command and communication centers (CCCs/KC) need to be modernised:** Rakel G2 introduces new ways of working, a new technical architecture, real-time data and IoT –requiring upgraded platforms and infrastructure in command centers and national/regional/municipal communications centers.
- **Approximately 700 organisations need to carry out training and adapt working practices:** Rakel G2 represents a fundamental technological shift with new capabilities (voice, video, data, apps, real-time services), resulting in significant training and competence development costs.
- **More than 105,000 subscribers need new terminals and accessories:** Rakel G2 provides new capabilities (e.g. video and data) that require entirely new devices and accessories, leading to substantial procurement costs for all organisations.
- **More than 10,000 IoT and telematics devices must be replaced:** Rakel G2 enables modern 4G/5G-based machine-to-machine (M2M) communication, which means that all Rakel-connected IoT and telematics devices need to be replaced or upgraded.
- **More than 50 airborne and maritime assets require special investments:** The introduction of Rakel G2 entails replacing current Rakel investments that enable air-ground-air communication (AGA) and maritime situational awareness. This requires new hardware, integration, antenna solutions, and new certifications.

## 6.5 Long-term financing

The allocated funding in the 2025 Budget Bill (SEK 2.3 billion for the period 2025-2027) provides the conditions to begin the migration of users from Rakel G1 to Rakel G2. However, decisions are currently lacking regarding the financing of (i) capability enhancements dimensioned to meet wartime requirements, (ii) funding of operating costs for Rakel G2 until the system reaches full cost recovery, and (iii) the fee model. These needs are further described in chapter 8.

# 7. Implementation plan for continued establishment

## 7.1 2025-2027: Establish conditions to initiate migration

In line with the objectives set for 2027, the continued work in 2026 and 2027 is focused on ensuring the verification of functionality, operational maturity and the conditions necessary to initiate a gradual migration from Rakel G1 to Rakel G2.

During 2026, testing and pilot activities will be carried out with a broad range of user organisations. The purpose is to verify the system functionality and operational usability in a real-world operating environment. In 2027, a structured validation phase will be carried out, during which user organisations will assess whether the system meets their needs based on the experience gained from the pilot activities. This will form the basis for the gradual migration from Rakel G1. In connection with this, the planning for the decommissioning of Rakel G1 will be further specified.

In parallel, ongoing procurements will be completed and transition into delivery and integration phases. A key focus is to ensure that all technical components function cohesively in a heterogeneous environment comprising systems from a large number of suppliers. This includes integration between the core network, radio access networks, service platforms and user equipment, as well as the gradual stabilisation of the overall solution.

The operational build-up will continue during this period, including the establishment of a customer support function and further development of structures for operation and monitoring. Capabilities will initially be dimensioned for pilot and early use and will be progressively scaled as the system approaches broader deployment.

Work on resilience and capacity will continue in line with the previously stated direction. Procurement of enhanced coverage will be carried out once the requisite frequency licences are in place. Dimensioning for heightened preparedness and wartime conditions remains a guiding principle for prioritisation.

Cross-border cooperation with Norway and Finland will be further developed during the period, with a focus on interoperability during the transition from TETRA-based systems to broadband solutions.

Overall, the period 2026–2027 represents a transition from an established technical foundation to verified operational capability and preparation for the gradual onboarding of user organisations.

## 7.2 2028-2031: Completed migration and wartime requirements as dimensioning factor

### 7.2.1 Migration to Rakel G2 and decision decommissioning Rakel G1

Up to and including 2030, user organisations will be gradually migrated to Rakel G2. Once all users have been migrated, a decision can be made to decommission Rakel G1.

### 7.2.2 Wartime requirements as the dimensioning factor

During the period 2028-2031, further investments will be required in resilience-enhancing measures, transmission, and enhanced coverage to ensure that the system meets wartime requirements. The scope of these investments may be reduced to the extent that the Swedish Post and Telecom Authority´s initiatives to strengthen resilience benefit Rakel G2.

At present, there is no decision regarding funding for this phase. See chapter 8 for further details.

# 8. Financial framework and use of resources

## 8.1 Funding 2025-2027

In the 2025 Budget Bill, the Agency was allocated SEK 2.3 billion for the period 2025–2027 to initiate the establishment of Rakel G2. Decisions on long-term funding, both for the continued establishment and for providing the service to users, have not yet been made. The absence of a decision on long-term funding contributes to uncertainty among users regarding the transition to Rakel G2. At the same time, the Agency must be given long-term conditions to be able to enter into agreements with commercial actors that extend beyond 2027. The Agency also emphasises the need for additional investment funding to strengthen the resilience of the service and thereby ensure an acceptable level for user organisations.

In accordance with the government mandate, the Agency is to utilise commercial actors, which means that the focus lies on service delivery through public procurement and the integration of these services, rather than the acquisition of its own infrastructure. The Agency assesses that an appropriate contract duration for type of complex service delivery is between seven and ten. This entails agreements with durations that extend significantly beyond the current funding period announced by the Government (2027). A successful system transition requires stability both during and after the migration period.

## 8.2 Funding for dimensioning to meet wartime requirements

In the first interim report, the 'capability ladder' (Figure 3) for the rollout of Rakel G2 was presented, and the authority has assessed that, within the given financial framework, level 4 can be achieved. The next stage in the establishment of Rakel G2 is to strengthen resilience, with the objective of reaching levels 5/6. Achieving levels 5/6 requires continued expansion of dedicated sites where coverage is currently lacking is required, as well as investments in resilience-enhancing measures.

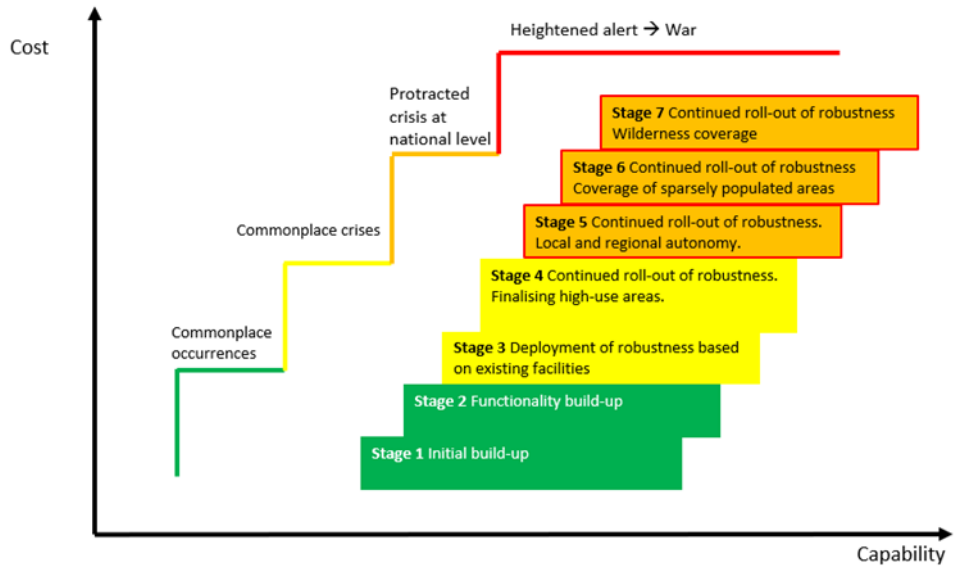


Figure 3. Development of Rakel G2 - capability ladder.

In the context of the Agency's expanded mandate, war constitutes dimensioning threat scenario for Sweden's total defence. The national communication system must therefore be dimensioned and designed to withstand prolonged, complex and severe societal disruptions.

The recent (winter 2025/2026) storms of Johannes and Anna highlight the need for a robust communication system. The storms resulted in power grids and telecommunications being disrupted in parts of Sweden. Rakel G1 remained fully operational throughout the entire period during which there were outages in power and telecommunications. Rakel G2 at level 4 of the capability ladder would have been disrupted along with other telecommunications systems. If communication for critical societal were not to function in such situations, it could result in damage to life, health and property and ultimately undermine public trust in society.

The initial funding allocated to the Agency for the period 2025–2027 to begin the establishment of Rakel G2 provides the conditions to reach level 4. To reach levels 5/6, expansion of dedicated sites is required in areas where coverage is currently lacking, as well as ensuring necessary backup power at specific sites.

## 8.3 Need for long-term funding

Under the current government mandate, appropriations-based funding is to cover the establishment of Rakel G2 until operations can be sustained through user fees. The Agency assesses that the system will reach full operational capability in 2030, provided that all current Rakel users have migrated to the new platform by that time.

This scenario assumes an uninterrupted allocation of funds at least through 2029, as well as the implementation of a financing model that ensures sufficient fee revenues starting from 2030. To ensure continuity in the establishment process, there is therefore a need for appropriated funds to also be allocated for the fiscal years 2028 and 2029, no later than in connection with the 2027 Budget Bill.

The overview below shows the estimated costs through 2035 (Table 1). It should be noted that the overall cost level is expected to remain the same regardless of the chosen financing model (fee-based or appropriations-based). At the same time, the Agency emphasises that there is a degree of uncertainty regarding the actual costs for certain contract areas, as the relevant procurements have not yet been finalised.

**Table 1. Costs Rakel G2 2026–2035**

| Million SEK | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|---|---|---|---|---|---|---|---|---|---|---|
| Staffing costs | 40 | 50 | 70 | 70 | 70 | 80 | 80 | 80 | 80 | 80 |
| Operating costs (rent, electricity, transmission) | 20 | 20 | 20 | 20 | 30 | 30 | 30 | 30 | 30 | 30 |
| Contracted services | 420 | 845 | 810 | 860 | 875 | 880 | 925 | 710 | 675 | 725 |
| Enhanced coverage | 0 | 300 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total through capability level 4** | **480** | **1,215**[20] | **900** | **950** | **975** | **990** | **1,035** | **820** | **785** | **835** |
| Capability level 5/6 | | | 1,000 | 1,000 | 800 | 800 | | | | |
| **Total through capability level 5/6** | **480** | **1,215** | **1,900** | **1,950** | **1,775** | **1,790** | **1,035** | **820** | **785** | **835** |

The total costs to capability level 4 refer to the costs accruing over time if the Agency carries out the government assignment with the allocated funding of SEK 2.3 billion. Capability levels 5/6 refer to the investments required to reach the next stage in the capability ladder.

### 8.3.1 Summary of needs for establishment up to level 4 of the capability ladder

The Agency estimates that the allocated appropriation funding of SEK 2.3 billion will enable achievement of level 4 in the capability ladder. The estimated cost of the Agency's financial commitments arising from entered contracts amounts to SEK 7.3 billion for the period 2028–2035.

### 8.3.2 Summarised needs for the next stage: investments to reach level 5/6 of the capability ladder

To reach capability levels 5/6, additional appropriations of approximately SEK 3.6 billion are required during the period 2028-2031 for investments in resilience-

[20] The planning assumes that in 2027, as in 2026, the Agency will be able to utilise the full appropriation balance.

enhancing measures, transmission and enhanced coverage. This is in line with the Agency's previous reports. The investment needs may be reduced provided that the Swedish Post and Telecom Authority's (PTS) investments in resilience-enhancing measures benefit Rakel G2.

The time required for planning, preparation and procurement to enable these investments is estimated at 9 to 12 months. This means that the Agency needs to receive a decision on the funding allocation already in connection with the 2027 Budget Bill in order to carry out the investments in 2028-2031 as requested. A later decision would lead to delays in the planned timeline, as user organisations are likely to wait to migrate to Rakel G2 until the system meets their needs for coverage and resilience (see chapter 8.2). Such a delay would also mean that Rakel G1 would need to remain in operation for a longer period, which would necessitate life-cycle management measures to maintain the system beyond what was originally planned. This is further described in chapter 8.4 below.

## 8.4 The need for long-term funding also affects Rakel G1

The need for clear planning conditions and long-term financing is critical for the system transition. According to the current planning period, all users are expected to have migrated to Rakel G2 by 2030, enabling the subsequent decommissioning of the current system (Rakel G1).

If decisions on long-term funding is delayed, this will result in delays in the rollout of Rakel G2. Consequently, the Agency would need to carry out lifecycle management of the existing Rakel G1 infrastructure to ensure its continued operation beyond 2030. The existing technology in Rakel G1 reaches its technical end-of-life/support at the end of 2030[21]. To guarantee continued secure and robust communication, extensive lifecycle management would therefore be required, including complete replacement of all TETRA-based infrastructure. The implementation timeline for such a replacement is estimated at 4–5 years, as the work must be coordinated with the needs of stakeholders operating 24/7 and the requirement for uninterrupted service.[22]

The estimated need for initial reinvestments in Rakel G1 amounts to approximately SEK 3 billion. In addition to this, there are annual operation and support costs of SEK 800–900 million. The Agency emphasises that long-term decisions regarding

[21] At the time of writing this report, the technology (mainly base stations) has already reached *end-of-sale*, however, the Agency retains a limited stock of spare parts.
[22] Lifecycle management is a natural part of a service's lifespan. The current timeline for the establishment of Rakel G2 provides an opportunity to avoid making this reinvestment in Rakel G1. If users have migrated to Rakel G2, then Rakel G1 can instead be decommissioned.

Rakel G2 are a prerequisite for making financially responsible and appropriate decisions.

Furthermore, the costs of maintaining Rakel G1 (both reinvestments and ongoing operation and support) would mean that the State incurs expenses to sustain functionality that, according to plan, is to be phased out – while simultaneously bearing the costs for Rakel G2. Maintaining Rakel G1 is considered necessary if the timeline for Rakel G2 is delayed. Otherwise, critical societal actors risk being left without functional mission critical communication for a period of time. However, Rakel G1 will not contribute to the necessary modernisation of total defence command-and-control capabilities; achieving this requires Rakel G2.

## 8.5 Funding for user organisations

A successful establishment of Rakel G2 requires the Government to ensure long-term and sustainable funding. This is a prerequisite for user organisations to have reasonable conditions to plan and carry out their preparations. In previous reports, the Agency has emphasised that the introduction of the next generation of mission critical communication systems entails significant investment needs for municipalities, regions and government agencies alike. Early and clear decisions regarding the financial framework are therefore essential. Investment needs include, amongst other things, the procurement of new terminals, adaptations of command and communication centers, installations in vehicles, and more.

In addition to the direct investment needs, the Agency wishes to highlight that robust funding is a fundamental prerequisite for the approximately 700 user organisations nationwide to allocate personnel for training, methodology development, and exercises. Given the current security situation and the needs of civil defence, secured funding is essential to ensure that all actors can achieve the intended operational capability in the new system.

A financing model that ensures economic viability will help ensure Rakel G2 becomes the cohesive and robust command-and-control system required by total defence. In contrast, a lack of financial predictability risks leading organisations to delay their investment decisions. In the long term, this could undermine national coordination capabilities and slow down the implementation plan. There is also a significant risk that numerous actors will start developing their own solutions, leading to reduced interoperability across society. Ultimately, this would threaten national coordination capability.

The need for long-term predictability and a sustainable funding model has been emphasised repeatedly by user organisations. Most recently, this was raised by the

Association of Local Authorities and Regions (SALAR/SKR) in a letter to the Ministry of Defence[23].

Against this background, the Agency proposes that the Government instruct the Civil Defence and Resilience Agency to, in cooperation with relevant stakeholders, investigate and develop a model for future fee levels and funding. This work should be conducted in close dialogue with the Government Offices and relevant stakeholders to ensure an appropriate and broadly anchored solution.

[23] MCF 2026-02156

# Establishing the next generation mission critical communication system for public safety and civil defence

Interim report on government assignment

Swedish Civil Defence and Resilience Agency