

Attachment B-1

Description

Contract Change Note 050

LANTERN Service Expansion

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Attachment B-1**Description: LANTERN Service Expansion****1. Purpose**

This proposal provides the price for the deployment and support of LANTERN Service Expansion. It follows from the successful LANTERN pilot, which has been in operation since November 2006.

The purpose and overarching objective of the LANTERN project is to provide police with portable fingerprint capture and results from searching the Unified National Collection via a secure wireless link. It features:

- Efficient capture of fingerprint details suitable for identifying an individual in an operational environment;
- Real-time searching of the unified fingerprint collection held on IDENT1 with timely responses to aid the officer in their decision making process.

CCN014R2 “LANTERN Pilot Phase 2 – Implementation Phase” and the follow-on extension of service CCN014R2A proved the viability of the LANTERN Concept of Operations, including its operational human-computer interface and the interface with Central facilities housing the unified fingerprint collection. It validated the technical approach and business case for LANTERN through the use of ten (10) pilot Forces equipped with one hundred (100) hand-held Mobile Fingerprint Readers (MFR) to assess workload implications for the fingerprint matching capacity.

Based on user feedback concerning usability of the solution and validation of the business process model, and on the fingerprint matching capacity requirements for a larger operational deployment of LANTERN, an expansion of the scale of the pilot was exercised and is being implemented under CCN040. It doubles the number of MFRs to two hundred (200), and deploys them to an additional ten Forces for a total of twenty (20).

2. Scope

This description indicates the scope of services covered by the proposed price. It provides an expansion of LANTERN service to a greater number of police forces throughout England and Wales, making fingerprint identification readily available to more officers in the pursuit of their duties. This involves procurement of additional MFRs, with spares and warranty service, and implementation of customised MFR software designed to meet requirements unique to LANTERN. It also requires expansion of the Central facilities where fingerprint data is maintained and searches are performed. Higher capacity computational resources will be implemented to process a larger workload of searches. Refinement of the detailed design, development, integration, and implementation services will be provided for the expansion, including deployment and support for the added MFRs.

The features required for LANTERN operation have been previously developed under the aforementioned pilot (CCN014R2). The proposed LANTERN Service Expansion makes full use of the existing baseline of capabilities, refining them to ensure robust operation on a larger scale, and expanding their use to a larger user community.

In order to meet the expected workload increase from MFR deployment to a larger number of users, the centralised capacity to perform fingerprint searches and return useful and timely responses to LANTERN-equipped officers is also increased through the addition of kit such as search engines. The search engines are comprised of matchers using specialised algorithms similar to others used in IDENT1 but tailored to optimise them for the unique two-index-finger searches of LANTERN.

Software hosted on servers manages the search/match functions, performs fingerprint feature extraction, and provides a web-based interface through which the mobile devices communicate with the Central facilities. Two

Central facilities each provide similar functions, enabling sharing of search load and continuity of operation in case of planned or unplanned interruptions in service at one of the sites.

The LANTERN matching resources and associated servers are dedicated to LANTERN operations, so search performance is not subject to variations due to workload of other search services.

The Central architecture is modular, so the capacity can be augmented as MFRs are added or if workload rises for other reasons. This proposal enables price points to be ascertained for various quantities of added MFRs, and the corresponding Central services are provided as needed for the MFR quantity.

2.1 Architecture

The LANTERN Service Expansion architecture is depicted at a high level in Figure 2-1 below.

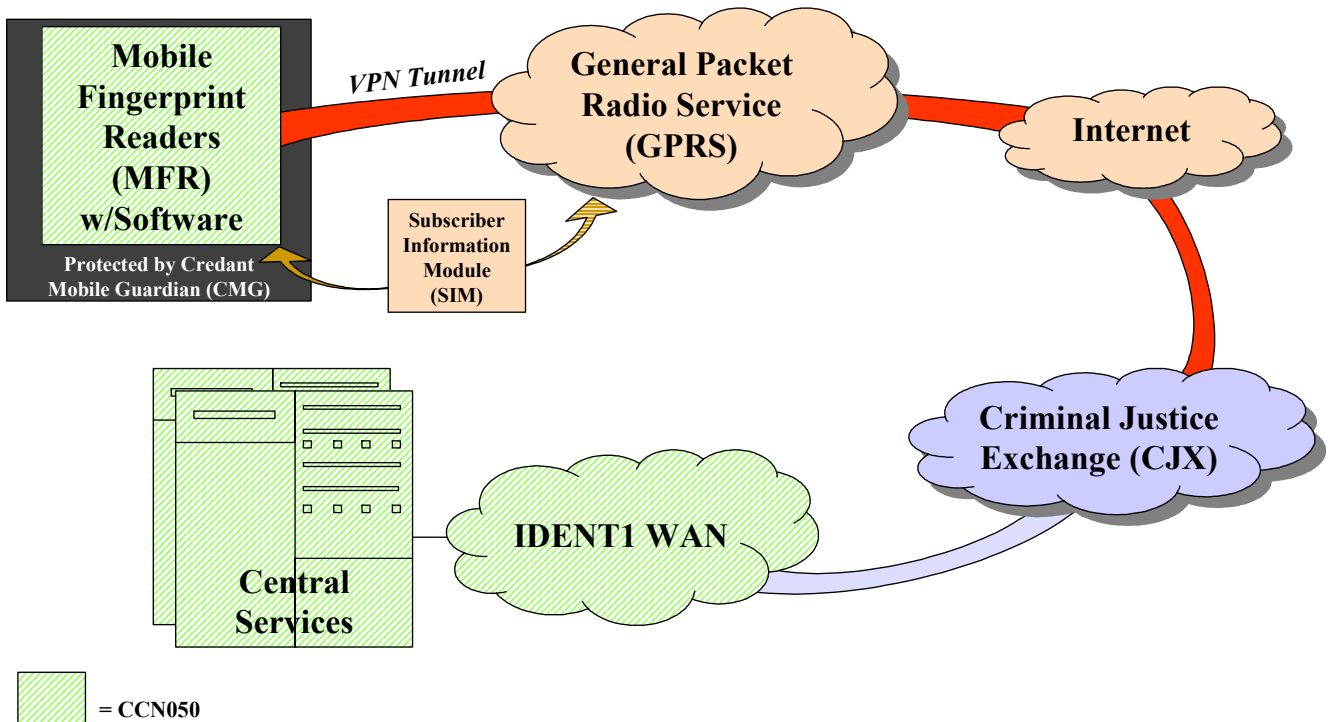


Figure 2-1 LANTERN Service Expansion – High Level Architecture

The MFR uses the C&W SRAS client software, namely Credant Mobile Guardian (CMG) to encrypt data at rest and Aventail virtual private network (VPN) software to provide protection to the data in transit. The MFR is secured with a single device-level PIN number. Transmissions are carried over GPRS communications provided under existing carriers used by each Force. LANTERN operates with all of the four leading carriers used by Forces. The user initiates a secure socket layer (SSL) VPN session without further authentication. Messages are passed securely over the Internet to the SRAS VPN concentrator. The VPN tunnel ends at the concentrator, which is located on the CJX. The VPN checks certificate validity against a certificate authority accessing a certificate revocation list (CRL). Based on the device level cert, the message is decrypted and passed through the CJX/IDENT1 gateway into IDENT1. There, the LANTERN Central facility processes it, performs the requested fingerprint search, and returns a response via the same path.

This proposal provides for fingerprint identification services to be provided from a variable number of hand-held MFRs rolled out to Police Forces without restrictions on quantities per Force. Deployment distribution can be defined according to Force needs. The MFRs previously provided under the pilot will continue in service under the terms of their existing contract (CCN014R2A or CCN040).

The rate of deployment will be raised from the current 20 MFRs per week at 2 Forces to meet the greater volumes of the LANTERN Service Expansion. Using the current resources and procedures as a baseline, staff allocations and multiple shifts will be combined with procedure improvements that raise productivity to sustain MFR build and deployment at greater rates. It is a key objective to deploy to the Forces as fast as practicable so the value of LANTERN begins to accrue as soon as possible. Specific scheduling of deployments to each Force will be subject to agreement with the Authority and the Forces.

Service including implementation, deployment and operation of the MFRs and Central facilities is included for a period of three (3) years from start of the contract. Extensions beyond the period of performance and technical refresh of MFRs will be provided through the change control process upon the Authority's request.

The LANTERN Service Expansion adds to the dedicated LANTERN matching subsystem residing on the IDENT1 SIS. Its database is updated from the IDENT1 database to keep it current as changes are made to the Unified National Collection. The matching subsystem provides print-to-print searches of index fingers against composite prints in the database. It is not required to search multiple registrations, nor fingers other than index fingers (numbers 2 and 7). The capacity and matching response times are summarised in the LANTERN Performance and Scalability Report (CCN014R2-20.2-1.0). The Central search capacity is based on analysis of usage statistics collected during the LANTERN Pilot Phase 2 - Implementation Phase. It defines the matcher capacity as a function of the number of MFRs deployed. That capacity is less than would be needed for the unlikely worst case in which every MFR submitted a search at exactly the same time, but is greater than the capacity required to only keep pace with the mean search request rate averaged over a long period of time. That is, it allows for limiting queues to short lengths to permit fast response times in the face of any reasonable expectation of peak loads.

2.2 Approach

The general approach of the LANTERN Service Expansion is in four (4) strands:

1. Customisation of the third generation SAGEM RapID to meet LANTERN MFR requirements
2. Refinement of the existing functionality of the Central software and its interface to the MFR
3. Boosting centralised search capacity
4. Strengthening of the process infrastructure providing build and support services.

The approach for the first two strands is shown in Figure 2-2. The figure shows an Incremental CDR, which covers any changes to the pilot design. The changes in design and processes are to provide a more robust LANTERN infrastructure commensurate with the larger scale of operations. The LANTERN Service Expansion does not propose changes in design to add new functions, but rather to strengthen the implementation of existing LANTERN functions. Integration of the MFR with GPRS and the SRAS software takes place in the UK, while MFR/Central integration and test takes place in parallel in the US. After the Central interface is proven (factory test in the IDENT1 Fairfax facility to test the device functionality and Central search functionality without SRAS), then the complete integration is performed in the UK.

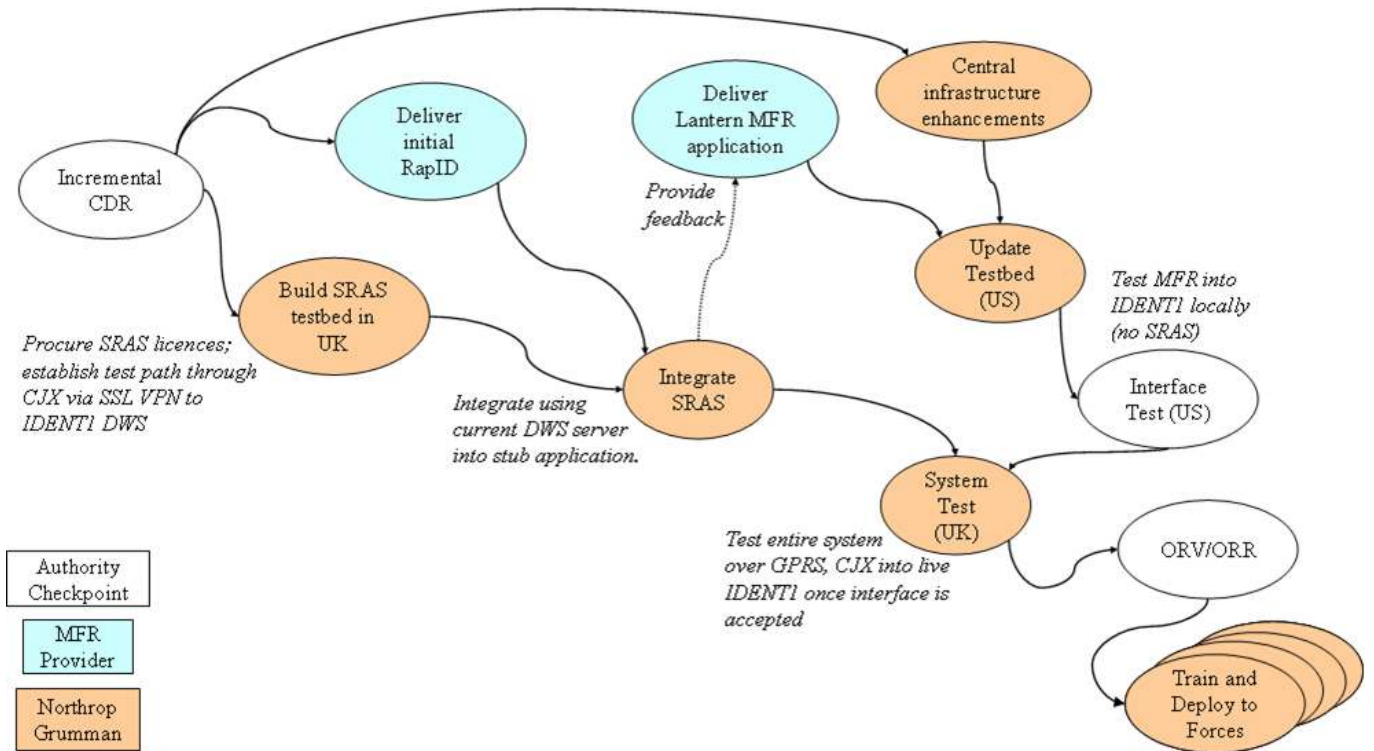


Figure 2-2 LANTERN Implementation Approach

Northrop Grumman will test the LANTERN functions including the communications infrastructure. The system test will run against the production IDENT1 data on the LANTERN KBMs seeded with a few individuals to allow testing using searches returning respondents and those with no respondents. At the completion of the system test and subsequent review, the phased rollout will commence as set out in a schedule to be agreed. The Fairfax test bed will be updated to reflect the operational configuration.

2.3 Pricing Structure

Northrop Grumman has designed its commercial offer to the Authority to enable them to tailor the procurement to fit an undisclosed budget. The approach used segments the fixed cost (not dependant on quantity) and the variable costs (depended on the quantity of MFRs and service). This is a logical approach because the costs of the MFRs and of the corresponding matchers to process their search volume represent a major share of the total cost.

Fixed costs include non-recurring and recurring costs incurred for project activities regardless of MFR quantity and provides for technical engineering, development, and program management to support the Service Expansion over the contract term. The majority of these fixed costs will be expensed in the first year to move the LANTERN capability from a Pilot to an Operational Service delivery. The fixed costs cover development of refinements to the existing LANTERN functionality, and first article verification activities of integration and test. Fixed costs also cover the implementation of a more robust project infrastructure suitable to support the expanded scale of operations of the LANTERN Service Expansion.

Variable costs include a wide range of costs incurred per the incremental deployment of the MFR quantities. Variable costs include not only the MFR itself, but also the Central upgrades along with the matchers (KBM kit and software licences) needed to process the higher search volumes expected from a larger number of MFRs, and the associated labour to prepare and support the deployed MFRs.

The unit cost per MFR is lower at higher quantities due to economies of scale, wider amortisation of fixed costs, and progressive discounts from our suppliers.

Some non-recurring activities are necessary to move beyond the waivers and compromises that were accepted for the pilot, and into a more expanded deployment. These include changes in the Certificate Authority and user level authentication, extension of load balancing to use resources most efficiently, resolution of operational issues that were identified during pilot usage, and consolidation of LANTERN metrics to enable more effective use even as the data grows. A mix of fixed and variable costs cover activities to continue and strengthen the services provided to ensure successful LANTERN operations including Service Desk incident response and management, as well as trouble ticket escalation needed to resolve problems. Deployment of new MFRs is supported by integration, testing, build, installation and commissioning of MFRs and Central resources.

To keep training and service economical in the face of an enlarging scale of operations, we have included development of computer-based training (CBT), which can be replicated inexpensively on CD for the additional Force IT and trainer personnel, and an enhanced distributed support model to handle the scale of the larger and more dispersed complement of MFRs.

The approach has been planned for compatibility with future implementations that may be dictated by even larger deployments, added functionality or extended period of service. These include such activities as:

- Source selection and certification of multiple MFR types
- Supplanting of GPRS as the wireless link for LANTERN
- Central facility upgrades of space, power and HVAC
- Extension of service period beyond the proposed period of performance
- Technical refresh of the MFRs
- Implementation of new desirable LANTERN functions such as photo capture or GPS geo-location
- Instantiation of service level requirements (SLR).

Because of the complexity and number of issues that require further discussions between Northrop Grumman and the Authority, these are not priced at this time.

The costing is based on a contract start date of 1 April 2008, and a period of performance of 3 years concluding on 31 March 2011. Services from the full MFR quantity desired must be ordered at the outset in order to allow the economies on which the pricing is based.

3. Component Provision

3.1 Mobile Fingerprint Readers (MFRs)

Mobile Fingerprint Readers (MFRs) from SAGEM Sécurité (SAGEM) have been used in the LANTERN pilot. The first generation MR100 was criticised for losing its software load when the battery was allowed to run flat by failure to recharge it promptly. The second generation MR100b solved that problem by storing software in a non-volatile memory. The third generation is offered for the LANTERN Service Expansion. It also uses non-volatile memory, and adds an industrial grade PDA computer to the handheld unit. It uses a modem that is integral to the PDA rather than an external peripheral. This measure will avoid problems of compatibility between the modem and the operating system. It also has a camera, which opens future opportunities for operational benefits such as local facial image capture to link subjects to searches, transmission of photos from LANTERN to Central facilities for further uses such as facial recognition or sharing with a facial image database (e.g., FIND).

An alternate MFR source, Cross Match Technologies, Inc. (Cross Match), was evaluated during CCN009 "LANTERN Pilot Phase 2 - Specification Phase". It was offered as an option under CCN014R2, but was not exercised by the Authority.

A plan for certification of multiple MFRs has been discussed with the Authority, but is not proposed for this phase of LANTERN. Northrop Grumman offers to discuss with the Authority its role in this important endeavour. We believe that development of multiple MFR sources can result in risk reduction and substantial

cost savings, especially at large MFR quantities, because it will improve procurement stability and encourage price competition. The non-recurring cost for this is not included in the price for the LANTERN Service Expansion.

3.2 Secure Infrastructure

One of the Authority's challenges in providing mobile identification has been the incorporation of a security infrastructure providing authentication and a secure communications path for the mobile environment. A secure infrastructure is required for police mobile communications and is not limited to LANTERN Pilot Phase 2. As part of PNN3, Cable and Wireless (C&W) implements such an infrastructure (Secure Remote Access Solution – SRAS) designed to work with PDAs. As the SRAS was used in the LANTERN pilot, Northrop Grumman assumes this infrastructure is suitable for use in this LANTERN Service Expansion phase.

The Authority shall provide all SRAS deliverables as required for this LANTERN Service Expansion phase, including the approved SRAS software (Credant Mobile Guardian and Aventail VPN) in versions compatible with the MFR, to Northrop Grumman as Customer Furnished Equipment/Customer Furnished Information (CFE/CFI).

The Schedule sets out the critical date(s) by which these items are required from the Authority. Northrop Grumman's ability to meet the Schedule is dependent on the receipt of these items meeting the LANTERN Service Expansion requirements and quantities, by the critical dates set out in the Schedule. Accordingly, Northrop Grumman will not be held responsible for any delays to the Schedule due to delays beyond the critical dates set forth for receiving these items from the Authority.

3.3 Data Connectivity

The LANTERN Pilot Phase 2 - Implementation Phase utilised General Packet Radio Service (GPRS) connectivity, which was already in use at the selected pilot Forces. The intent was to capitalise on Force investments in mobile data connectivity. Whilst alternate radio links are under investigation by the Authority and could be adopted in the future for LANTERN, GPRS has performed satisfactorily in the pilot and is the proposed connectivity method for the LANTERN Service Expansion.

A minor improvement in the method of implementing subscriber information in the MFR for the specific cellular provider used by the Force receiving the MFR, is being tried in the pilot expansion under CCN040. It centralises the provision of SIMs by the Authority, which provides them to Northrop Grumman to install in the MFR prior to shipment. This has advantages over the previous method in which each Force acquired their own SIMs for LANTERN and the installation had to be done at the Force location. Advantages include faster build and setup, lower travel costs, and elimination of the need to open the MFR case repeatedly for each build. The LANTERN Service Expansion will also use this approach.

The Authority shall provide the liaison with the Forces. The Authority shall provide all Force and GPRS hardware and software required for this CCN014R2 "LANTERN Pilot Phase 2 - Implementation Phase" to Northrop Grumman as Customer Furnished Equipment/Customer Furnished Information (CFE/CFI).

Northrop Grumman's ability to meet the Schedule is dependant on the receipt of all Force GPRS hardware and software by the critical dates as set out in the Schedule.

Accordingly, Northrop Grumman will not be held responsible for any delays to the Schedule due to any delays receiving this GPRS hardware and software from the Authority on or before the critical dates set forth and/or that do not meet the LANTERN Service Expansion requirements.

4. Deliverables

4.1 Non-Document Deliverables

This LANTERN Service Expansion provides the following non-document deliverables:

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CCN050 LANTERN Service Expansion
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These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law is prohibited.

RESTRICTED – COMMERCIAL

- LANTERN interface to accept MFR submissions (images or encodings for two to ten fingers) and the central matching facility with updated algorithms within IDENT1 to allow 2 finger print-to-print identification
- Sufficient dedicated search capacity to meet envisaged LANTERN throughput as described in the Engineering Report: LANTERN Performance and Scalability (CCN014R2-20.2-1.0 dated 17 July 2007).
- A variable number of MFRs to access the LANTERN functionality
- Integration of the MFRs with Cable & Wireless (C&W) SRAS software and Force-supplied GPRS connectivity
- Training of Force IT personnel and trainers of users
- Rollout to a variable number of Forces in accordance with the attached schedule to be confirmed with the Authority consistent with Force availabilities
- Operations and Maintenance (O&M) for all added MFRs deployed to Forces for a period ending 3 years from the start of the contract.
- 2nd and 3rd line support of the capability for a period ending 3 years from the start of the contract
- Service management including definition of and reporting against shadow service level metrics as defined and agreed at the Incremental CDR

4.2 Document Deliverables

This LANTERN Service Expansion provides the following Schedule O (Deliverables) document deliverables:

- Document IDs 1 and 2. Revisions to LANTERN Pilot Phase 2 Test Plan and Procedures
- Document ID 3a. LANTERN Service Expansion Test Readiness Review (TRR) Report
- Document ID 3. LANTERN Service Expansion Test Readiness Review (TRR) Minutes
- Document ID 4. LANTERN Service Expansion Test Summary Report
- Document ID 6. LANTERN Service Expansion Incremental Critical Design Review (CDR)
- Document ID 6. LANTERN Service Expansion Operational Readiness Validation (ORV)
- Document ID 6. LANTERN Service Expansion Operational Readiness Review (ORR)
- Document ID 19. Revisions to LANTERN Pilot Phase 2 Memoranda of Understanding (MOUs)
- Document ID 20. Revisions to LANTERN Pilot Phase 2 Engineering Reports
 - Revisions to Credant Mobile Guardian policy if any
 - Audit and Activity Report (monthly)
- Document ID 26. Revisions to LANTERN Pilot Phase 2 Training Materials for Train the Trainers Day
- Document ID 46. Revisions to LANTERN Pilot Phase 2 Interface Control Document (ICD)
 - Northrop Grumman provided an interface specification for LANTERN pilot searches against the unified fingerprint collection held on IDENT1 in Document CCN009-003-4.0 – LANTERN Interface Control Document (ICD) dated 21 July 2006.
- Document ID 49. LANTERN Service Extension Updates to the Accreditation Documentation Set

Northrop Grumman and the Authority will determine and agree the content and layout of Document ID's 20 and 26 by the completion of the Incremental CDR.

5. Authority's Responsibilities

Authority's Responsibilities are set out in this clause and its subordinates.

5.1 Customer Furnished Equipment (CFE)/Customer Furnished Information (CFI)

The Authority is responsible for delivery of all CFE/CFI required under this LANTERN Service Expansion:

- All C&W SRAS deliverables, including approved SRAS software,
- Provision of all C&W Certificate Authority capability for LANTERN,
- Liaison with the Police Forces, and
- All Force GPRS hardware and software for GPRS connectivity.

5.2 Schedule O (Documentation Requirements) Document Review and Approval

It is assumed that Schedule O (Documentation Requirements) document reviews shall be handled on an exception basis where the documents shall be considered "Fit for Purpose" with approval to proceed unless written notice is received by Northrop Grumman not later than ten (10) working days following receipt of the document by the Authority.

6. LANTERN Stakeholders and Responsibilities

Northrop Grumman is the systems integrator and provides the handheld fingerprint capture application, enhanced central search capacity and updated functionality to meet the requirements of this LANTERN Service Expansion

The LANTERN stakeholders and their responsibilities are summarised in Figure 6-1 below.

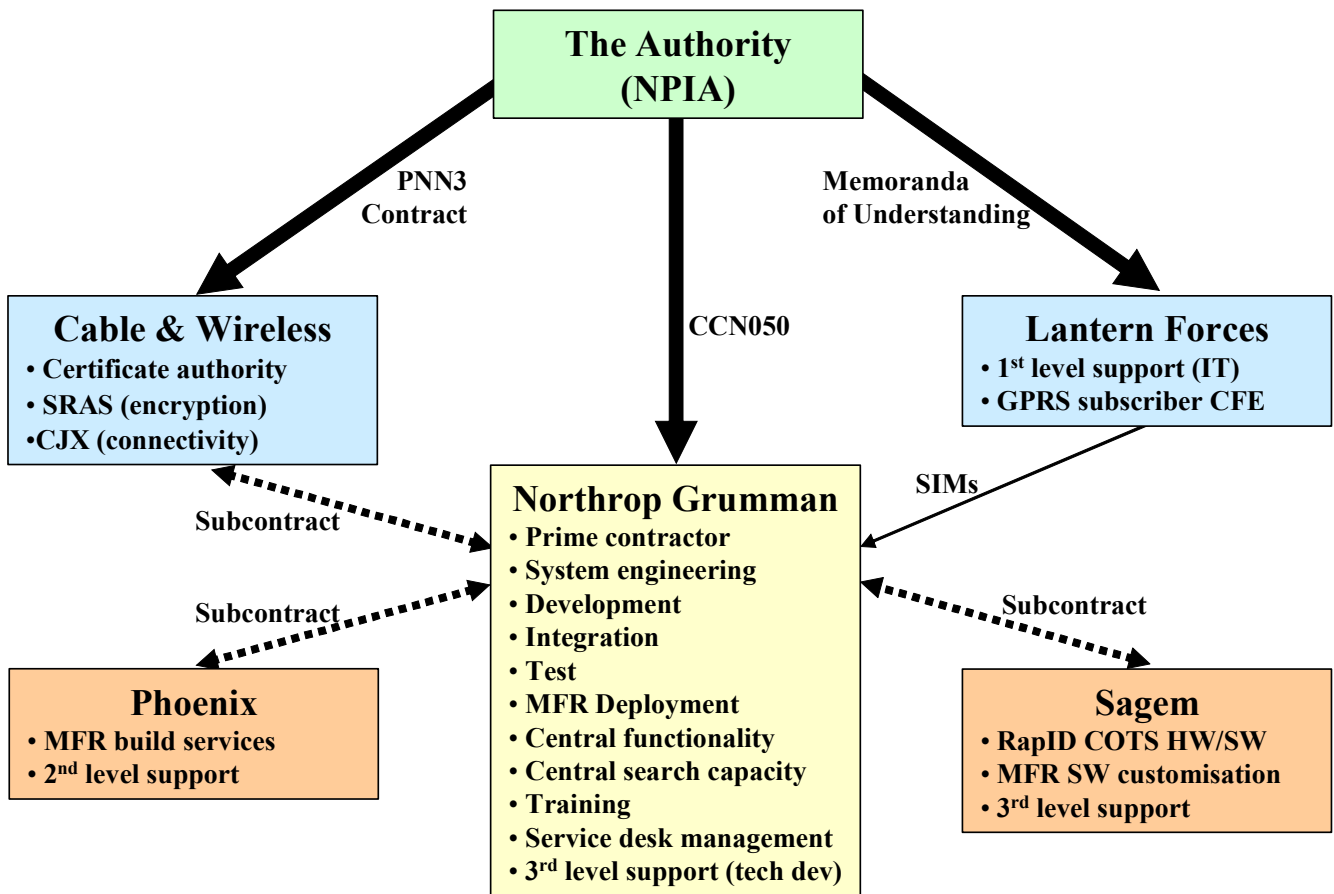


Figure 6-1 - LANTERN Stakeholders and Responsibilities

Northrop Grumman is responsible for overall service and service assurance with the exception of the 1st level support to be provided by each Force IT. Force IT shall escalate to the Service Desk only those incidents that they cannot resolve locally. After that, the Service Desk will manage escalation and tracking of tickets for all incidents. This is illustrated in Figure 6-2.

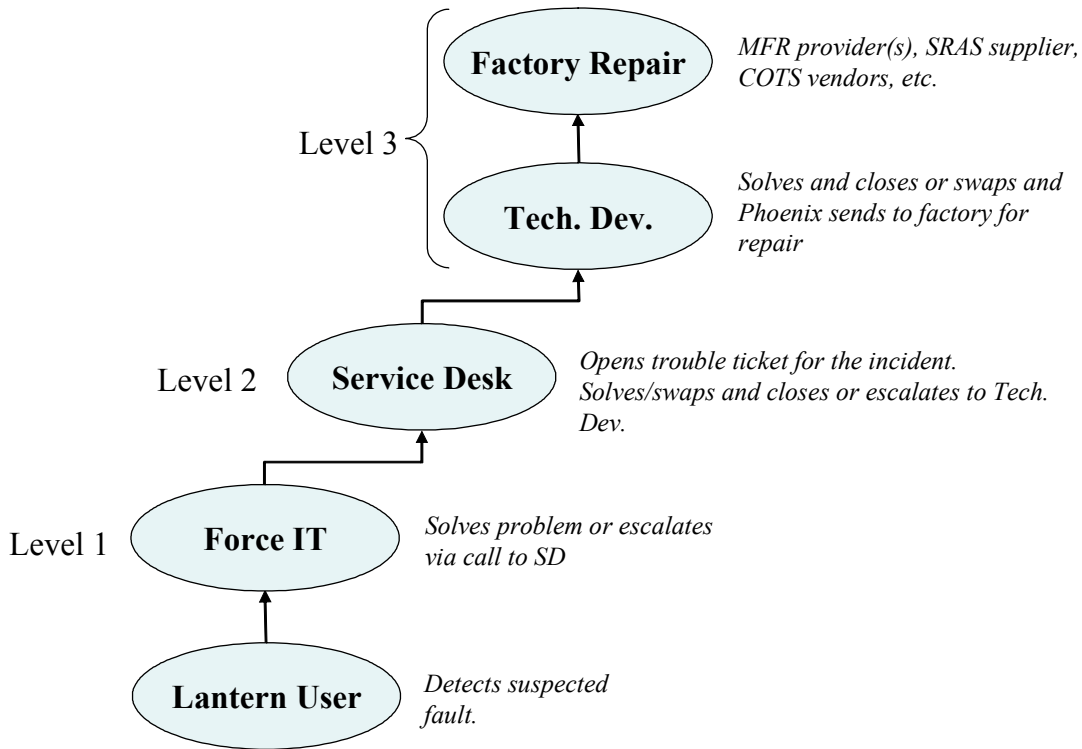


Figure 6-2 - LANTERN Service Levels

7. Schedule

The LANTERN Service Expansion schedule is as set out in Attachment B-3, Contract Change Note 050, Part B-3 – Evaluation, “Schedule”. The Schedule is subject to the Clause 9. Assumptions and Conditions below.

8. Options

No options are proposed at this time. Extra batteries and chargers for the MFR will be priced when they become available for the third generation device.

9. Assumptions and Conditions

For the purposes of pricing this LANTERN Service Expansion, the following assumptions and conditions apply. Any changes to these assumptions and conditions will be subject to a modification by CCN incorporated through Schedule L (Change Control Procedure).

1. The baseline design for this CCN has been developed as agreed in accordance with the LANTERN Pilot Phase 2 (CCN009) Critical Design Review. Any changes to that design will be presented at the Incremental CDR. New requirements or added functionality is not provided.
2. Extensions beyond the period of performance and technical refresh of MFRs will be provided through the change control process upon the Authority’s request.
3. The operational and performance characteristics of this capability have been defined and agreed in the LANTERN Concept of Operations (CONOPS).
4. The MFR will only accept index fingers for searching. Alternate fingers will not be tested.
5. LANTERN will search the Unified National Collection.
6. The Central search capacity to be provided is proportional to the number of MFRs procured. The ratio is the figure determined from pilot operation and documented in the LANTERN Performance and Scalability Report (CCN014R2-20.2-1.0). This proposal caps the searching capacity per hour at 335 searches per hour

for each 500 units deployed. This is consistent with the usage patterns in the LANTERN pilot as detailed in the Performance and Scalability Report. Search capacity beyond the DOR database size or the rate specified herein can be added to the contract through the Change Control process in accordance with Schedule L (Change Control).

7. LANTERN searches will be based on non-verified search architecture.
8. LANTERN will use dedicated KBMs separate from other IDENT1 services.
9. The proposed LANTERN Service Expansion is not subject to Schedule F (Service Level Requirements (SLR)). Faults will be resolved as soon as possible after notification to the IDENT1 Service Desk. Northrop Grumman's target is to resolve faults within twenty-four (24) hours.
10. Schedule O (Documentation Requirements) document reviews shall be handled on an exception basis where the documents shall be considered "Fit for Purpose" with approval to proceed unless written notice is received by Northrop Grumman not later than ten (10) working days following receipt of the document by the Authority.
11. The commencement date and subsequent deployment schedule will move out accordingly as of the date of Authority acceptance of this CCN.