1 Stage 1 STATEMENT OF WORK
Connectivity Engineering Consulting Services

1. Introduction

1.1. Purpose

The purpose of this Statement of Work (SOW) is to obtain project management (PM), consulting, engineering and subject matter expert (SME) services in support of Canada's multimedia (MM), information technology (IT) and integrated security system (ISS) requirements.

Due to the nature of the requirements, the procurement of these services will be separated into two stages. This document is the Stage 1 SOW. The Stage 1 SOW will be publicly available. The Stage 2 SOW will be distributed directly to bidders who successfully complete the Stage 1 evaluation process.

1.2. Overview

Canada has a requirement for integrated project teams that can provide PM, consulting, engineering, and SME professional services. These teams will function as multidisciplinary teams that can incorporate additional resources from Canada's staff to deliver on a variety of project initiatives related to the modernization of multimedia, IT and ISS technology. These projects will frequently be conducted in support of major construction or facility renovation projects in Ottawa, Ontario. These services will be required on an as-and-when requested basis over at least the next five years. Canada intends to issue a standing offer(s) for these services.

1.3. Multimedia, IT and ISS Projects

A number of multimedia, IT and ISS projects are planned to be undertaken over the duration of the standing offer(s). Canada has established a strategic business plan and guiding principles (additional detail will be provided in stage 2 of this procurement) to guide the realization of the business objectives. Adherence, by the Standing Offer Holder, to these guiding principles will ensure that decisions concerning multimedia and related technologies are aligned with Canada's business objectives.

1.4. Project Organization and Governance

The statement of work for each project will define the exact reporting relationship between the Standing Offer Holder and Canada. In general, the Standing Offer Holder will report to the Technical Authority for day-to-day guidance, technical and business decisions.

The Standing Offer Holder will work within the predefined governance structure established by the Technical Authority. Additional information relating to project governance will be provided in a subsequent stage of this SOW.

1.5. Project Structure

Construction Projects will be conducted in four or more separate and distinct phases for each project identified by Canada and will include integrated Multimedia Systems including Information Technology and Integrated Security Systems components. The appropriate under-noted phases will be the subject of individual work packages contained in each Statement of Work of a resulting call-up.

- Phase 1: Develop technical, business, functional and space requirements.

- Phase 2: As applicable, support development of building fit up design and construction drawings.

- Phase 3: Develop design and document technology systems, and provide

support for the procurement of required technical good and services.
- Phase 4: Implement and commission technology systems, including on-site supervision of cabling before building substantial completion.

Campus projects will follow a similar multiphase approach with the specific phases being determined by the nature of the project.

Specific activities that are required within each of these phases will be identified in the resulting call-ups' Statements of Work.

2 Scope of Work

The following paragraphs provide a description of the technology environment and a description of the tasks that the Standing Offer Holder must perform.

2.1 Environment and Technology Scope

2.1.1 Technology Scope

The Standing Offer Holder must provide services to projects including, but not limited to, the following list of technologies:

1. Audio Systems, microphones, recording, sound reinforcement and delivery
2. Camera technology and integration
3. Audio distribution systems
4. Video distribution systems
5. Video and Audio Streaming distribution systems
6. Community Access Television (CATV) systems
7. Multimedia (audio and Video) distribution systems
8. Video Recording facilities
9. Television Lighting
10. Cloud hosted services
11. Media Asset Management (audio and video)
12. Interpretation translation systems
13. Digital signal paths
14. Acoustic design
15. Multimedia control systems
16. Video teleconferencing
17. Audio teleconferencing
18. Network delivery
19. Multimedia presentation services
20. Computer and Broadcast interface
21. Digital Signal Programming
22. Media Control Systems programming
23. Multimedia operations center room design and Videoconference Operations Centre
24. Televisions control room design
25. Console design
26. Equipment room; layout and design
27. Cable management
28. Satellite communications
29. Mobile communications
30. Infrastructure specifications (i.e.: Structural, mechanical and electrical)
31. Space planning
32. Technical power and grounding
33. Computer Aided (CAD) Design
34. Electronic systems design
35. Open or Closed Captioning
36. Trunking Radio Systems
37. Closed Circuit Television

38   Mechanical engineering and infrastructure
39   Electrical engineering and infrastructure
40   Integrated Security Systems
41   Security Systems
42   Storage, backup and archive
43   IT infrastructure
44   Network infrastructure
45   Voice over IP and other communications over IP
46   Virtualization
47   Media Networks
48   Operating system and middleware
49   Information management
50   Internet of Things (IOT) devices / Operational Technical Systems (OTS)
51   Devices and Sensors for Smart Buildings

Note: As technology and business requirements continue to evolve over the course of the Standing Offer, additional technologies may be added to this list.

2.1.2   Environment Scope
The technologies listed above are deployed to deliver the following business services/environments:

2.1.2.1   Large Meeting Rooms
Large meeting room spaces include: audio systems to capture the meeting proceedings, audio visual systems to facilitate the presentation of information, video-conferencing and audio-conferencing systems to allow meeting participants to join in the proceedings remotely, and interpretation systems. All these systems are tied together via a sophisticated multimedia control system which integrates and simplifies operations such that a non-technical user can control the entire set of systems efficiently and effectively. Multimedia consulting support is required to design and implement all of these systems. The following further describes the types of technologies represented in the large meeting room environment:

1. High performance audio systems including, microphones, programming, audio digital amplifiers, control consoles, control system, recording, central processing, sound re-enforcement/ loudspeakers, interpretation listening stations and delivery.
2. Multimedia control systems including programming, a graphical user interface and interface cards (serial and IP communication protocols), audio processing, audio visual and video devices, touch panels, graphics processing, capture of audio/video content and distribution.
3. Video teleconferencing including video codec, and IP based video conferencing, programming and room environment considerations.
4. Audio teleconferencing including audio codec, integration into interpretation and public address systems.
5. Acoustic design including sound distribution, sound amplification and sound attenuation.
6. Interpretation translation systems including microphones, operator consoles, floor sound (though headsets), language selections (French, English, AUX), intercom systems, off-air monitors, acoustic design, task lighting, sound distribution, listening stations (volume and channel selectors) and wireless listening devices.
7. Multimedia presentation services including a multimedia control system, audio visual displays/monitors – LED, DVD, Laser Projectors, CATV, display walls, screens, Audio Visual projectors and Video Display processors.

2.1.2.2   Television/Broadcast/Webcast Services
Television/broadcast/webcast services operates in a professional quality broadcast/webcast environment similar to that used by commercial broadcasters/webcasters. Broadcast systems begin with the camera, lighting and control systems and extends through the routing environment to a digital media asset management system used for recording, repurposing and distribution; a centralized monitoring system used to ensure quality and reliability; and to a distribution system for internal and external distribution. Webcasting systems use a more simplified approach to capture and deliver content. As facilities are renovated or constructed, it will be necessary to extend this environment to the newly renovated or constructed facilities. The following list further describes the types of technologies represented in the broadcast environment:
1. Camera technology and integration including broadcast control system, remote control panels, camera drives/robotics, camera lens, camera assembly, and video and control cabling.
2. Video Recording facilities including, digital storage, duplication and monitoring.

3. Television Lighting including studio lighting light levels, lighting types, and broadcast lighting.
4. Media Asset Management including computer based high resolution and lower resolution recording and distribution of audio and video media assets, media playout servers capable of scheduling and playing out content to a CATV head end, digital video recorders, SDI/HD interfaces, editing workstations and connectivity requirements.
5. Acoustic design including sound distribution, sound amplification and sound attenuation.
6. Master control room design including monitoring, quality assurance, and recording.
7. Televisions control room design including AV displays, signal processor, video processors, digital amplifiers, video switching and routing, tally, waveform scope, SDI/HD interfaces, camera control units, and audio consoles.
8. Operator console design including physical design, electronics integration, prototyping and fabrication of console or monitoring desk.
9. Open or Closed Captioning including encoding, stenotype, voice recognition, and Advanced Television Systems Committee (ATSC) programming.
10. Computer and Broadcast interfaces including interfacing to custom software applications and broadcast control systems.

2.1.2.3 Distribution of Audio and Broadcast content

Key systems supporting content distribution include sophisticated technical distribution systems which take the audio and broadcast video captured in the various venues and distribute it to internal and external users through different mediums including radio, television and the internet (audio and video streaming).

As facilities are renovated or constructed, it will be necessary to extend this distribution environment to the newly renovated or constructed facilities. The following list further describes the types of technologies represented in the distribution environment:

1. Audio distribution systems including audio routers, audio distribution amplifiers, and audio control systems.
2. Video distribution systems including video routers, video cabling, SDI/HD video Distribution Amplifiers (DAs), composite video to SDI/HD decoder and fibre transmitter/ receivers.
3. Video and Audio Streaming distribution systems including encoding, monitoring, distribution, scheduling and web portal services using cloud-based services for live and on demand audio and video content.
4. Digital CATV systems including encoding, cabling standards, Quadrature Amplitude Modulation (QAM) distribution, Internet Protocol Television (IPTV) distribution, monitor types, program guides and source of feeds.
5. Multimedia (audio and Video) distribution systems including MM (audio/video) control and routing, MM (audio/video) cabling, and MM DAs (audio/video).
6. Digital signal paths including system architecture, system signal flows, communication protocol standards, and digital path redundancy.

2.1.2.4 Support Facilities for Large Meeting Rooms and Broadcast Control Centers

Key examples of these support facilities include Multimedia Equipment Rooms, Telecom Rooms, Interpretation Technologies, Broadcast Control Centers, and Multimedia operation centers (MMOC) and Video Conferencing Operations Centers (VCOps). Each of these facilities serves a different purpose and during the fit up of building or space each facility has a unique set of physical requirements that must be factored into the architectural design process.

The Standing Offer Holder must assist in the definition of the functional requirements, develop technical accommodation guidelines, develop general arrangements layouts, and participate in design and construction specifications reviews with the architect. The functional requirements define the amount of space that is required, defines space adjacencies and gives a high-level profile of the activities that will occur in that space. The technical accommodation guidelines define the physical requirements of the space (e.g. heating, cooling, number of occupants, special requirements - racks, backboards, conduit etc). The general arrangements package describes where the various pieces of technology will be located and what type of connectivity is required to those devices - ie. location of racks, UPS, isolation transformers, displays, projection screens, power and associated conduit size required, etc. As facilities are renovated or constructed, it will be necessary to define these support facilities in the context of the newly renovated or constructed facilities.

The following further describes the types of technology services required for facilities supporting Large Meeting Rooms and Broadcast Control Centers:

1. Equipment room layout and design including racks, patches, panels, HVAC, power consumption and universal power supplies, and technical power systems.
2. Space planning including room layouts, technical accommodations fit up guidelines, room and

tenant relocation.

3. Infrastructure specifications including HVAC, demolition requirements, general construction, electrical, and specialized fire suppression systems, drawing and specification reviews.
4. Mechanical engineering and infrastructure including HVAC systems for Multimedia equipment rooms, control centers, and Telecom Rooms. Development of heating and cooling requirements for equipment/environment. Review of mechanical drawings and specifications.
5. Electrical engineering and infrastructure including conduit, cable tray and electrical systems for Multipurpose Meeting Rooms, executive meeting rooms, Multimedia equipment rooms, broadcast control centers, Multimedia operation centers, Press equipment rooms, and Telecom Rooms. Development of heating and cooling requirements for equipment/environment. Review of electrical drawings and specifications.
6. Technical power and grounding including isolated supply, isolated building ground, isolated equipment racks and ground isolation testing.

2.1.2.5   Communication Systems

Communications infrastructure is comprised of a set of systems supporting voice/IP telephony, data, audio, webcasting, social media and broadcast video communications. The voice/IP telephony and data applications communication requirements fall into the category of a medium sized enterprise user. The capture and distribution of audio and broadcast video has a unique set of communication requirements which are similar in nature to that of a television broadcaster. As facilities are renovated and new facilities are constructed, this communications environment will need to be enhanced and extended. The following technologies are considered part of the communications environment:

1. Network delivery including network switches, network cabling, fibre transmitters and receivers, fibre patch panels, single mode and multimode fibre, and air-blown fibre.
2. IT and Network infrastructure including fiber optics, copper cabling, network devices, switching, and routing devices.
3. Satellite communications including reception, transmission, placement, cabling, and protocols.
4. Mobile communications, including reception, transmission, placement, cabling, and protocols.
5. Cable management including routing, cable types (copper/fibre), management, labelling, cable trays, and jackfields.
6. Storage, backup and archive including computer storage devices, servers, and operating systems.

2.1.2.6   Integrated Security Systems

An extensive security system is in place to ensure the physical security of facilities and personnel through the use of industrial quality security systems in the areas of access control, intrusion detection, secure communications and identity authentication. As facilities are renovated and new facilities are constructed, this security environment will need to be enhanced and extended to ensure the continued security of the facilities. The following technologies are considered part of the physical security environment:

1. Trunking Radio Systems including computer-controlled radio system, radio frequencies, two-way communications, and user groups.
2. Closed Circuit Television including private video cameras, private signal transmission, monitoring and digital video recording.
3. Integrated Security Systems including integration of access devices, alarm management, close circuit television, motion sensors, scanning machines, digital video recorders.
4. Security Systems including access control systems and intrusion detection systems designed to protect the safety of personnel and physical assets.

2.1.2.7   General Technologies and Design Services

Many of the systems described above use the latest information technologies to provide systems automation, platforms, control, data management and data storage. Similarly, some design techniques span multiple environments and are common throughout the environments. The following technologies and disciplines are widely used throughout the systems and practices described above:

1. Virtualization including multiple functional server or desktop environments operating on a single hardware platform, distributed applications, client computer hardware, and remote computers.
2. Operating system and middleware including hardware interface, resource allocation, access protection, software, applications, processing, interoperability, and distributed architectures.
3. Information management including organizing, retrieving, acquiring, storing and maintaining information and metadata, including the associated architectures, policies, practices and procedures.
4. CAD Design including technical design, technical drawings, accommodations fit ups, electrical and mechanical layouts in a BIM environment. Design review and mark-up, shop drawings and as-built drawings, drawing review and mark-up. Detailed technical designs, technical contract documents

and technical as-built systems layouts.

2.2 Required Tasks

The Standing Offer Holder must perform the following tasks in support of Multimedia, IT and ISS Projects.

2.2.1 Project Management

The Standing Offer Holder will assist in the management of MM/IT/ISS projects.

2.2.2 Project Management Support

The Standing Offer Holder will assist in the performance of duties in support of the Technical Authority. These duties could include assistance with activities such as: defining project charters, requirements definition, scope validation, project scheduling, resources management, project documentation, budget definition, project tracking, logistics, etc.

2.2.3 Project Tracking

The Standing Offer Holder will assist in the understanding of issue management policies, strategies and processes, and implement them. These duties could include assistance with activities such as schedule tracking, budget management, procurement tracking, change management, risk management, communications plan management, issues management, status reporting, etc.

2.2.4 Project Management Consultation

The Standing Offer Holder will assist in development of project management policies, strategies and processes, define project scopes including the preparation of detailed project approaches, and develop project charters, work plans and schedules.

2.2.5 Project Risk Management

The Standing Offer Holder will assist in the development of project-based risk management initiatives.

2.2.6 Procurement Support

The Standing Offer Holder will provide support in the preparation of procurement documentation, procurement plans, research of available technologies, provide detailed option analysis and track procurement activities.

2.2.7 Facilitation and Consultation

The Standing Offer Holder will develop approaches for consultation with key stakeholders and facilitate these consultations.

2.2.8 Training and Awareness

The Standing Offer Holder will develop educational material and events and deliver knowledge transfer sessions related to MM/IT/ISS project system operationalization and project management. All educational materials will be developed in English. Canada retains the right to translate the materials to French if required.

2.2.9 Documentation and Communication

The Standing Offer Holder will prepare documentation and communication material for distribution to project team members and stakeholders alike. All documentation and communications materials will be developed in English. Canada retains the right to translate the materials to French if required.

2.2.10 Change Management

The Standing Offer Holder will develop and assist in the implementation of organizational change management including but not limited to articulating the critical parameters of the change initiative, assessing organizational readiness, preparing change management strategies and plans, preparing the change sponsors and change agents and developing communication strategies and plans.

2.2.11 Review Analysis

The Standing Offer Holder will review, understand and provide meaningful comment on a

broad scope of technical and business deliverables.

2.2.12 Reporting
The Standing Offer Holder will assess and accurately report on project status and issues covering diverse set of project environments.

2.2.13 Business Analysis
The Standing Offer Holder will develop technical and business strategies, situational analysis, document and validate functional and technical requirements, and evaluate business delivery processes.

2.2.14 Technical Writing
The Standing Offer Holder will develop technical documentation such as test plans, specifications, configurations, test reports, method and procedures, deficiency lists etc.

2.2.15 Engineering
The Standing Offer Holder will develop concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, review architectural designs and construction documents, develop technical test plans, implement technical test plans, commission technical systems and lead technical workshops and reviews.

2.2.16 Application Development
The Standing Offer Holder will review and understand technical specifications, develop custom interfaces between applications, develop additional functionality external to applications using available APIs, document source code, perform unit testing and application testing, debug code, maintain various COTS applications, perform application upgrades perform application maintenance of COTS and custom developed applications, maintain source code libraries.

The Standing Offer Holder may also be required to make customizations of COTS applications to meet Canada's requirement. When this customization occurs, it is expected that the modifications will be integrated and maintained by the COTS supplier and all Intellectual Property ownership of the COTS will remain with the COTS supplier.

Canada can commission custom application development at its discretion.

All software development executed by this agreement will be either classified as a Modification to COTS or Custom Application Development and this will be specified at the outset of all applicable resulting call-ups statements of work.

2.2.17 Application Architecture and Design
The Standing Offer Holder will assist in the development and review of function and technical requirements, develop architectures for interfaces and custom application components, develop system architectures, work with structured software development processes (e.g. Agile, RUP MSF etc), develop application specifications, develop application designs, oversee application development activities.

2.2.18 Security Requirements
The Standing Offer Holder will perform threat and risk assessments, gather and document business, technical and functional security requirements and develop concept designs, preliminary designs, detailed designs, and cost estimates. The Standing Offer Holder will also review architectural, electrical and structural designs and construction documents for requirements compliance and provide feedback to project teams and provide site inspection services.

2.2.19 Accessibility Requirements and Design
The Standing Offer Holder will assist with the identification of accessibility requirements and ensure that designs, technical specifications for procurements and software developments are aligned with Canada's accessibility requirements and policies where applicable.

2.3   Deliverables

Throughout the projects, the Standing Offer Holder must produce project management, technical and business deliverables. All deliverables must be presented for review at the following stages of development:

1. Preliminary
2. Draft
3. Final

2.4   Standing Offer Holder Requirements

2.4.1   The Standing Offer Holder must hold an organizational security clearance at the level of Secret.

3   Types of Services

Each Statement of Work provided to the Standing Offer Holder will identify the professional services that will be required to assist with the delivery of the various MM/IT/ISS projects.

3.1   Professional Services

Project Teams consisting of resources in the areas of Project Management, Consulting Services, Engineering Services and Subject Matter Experts are required for the MM/IT/ISS projects. These teams must assist in the planning and execution of the MM/IT/ISS projects. The projects will be of varying sizes and complexity. The Standing Offer Holder must be able to provide the following services of qualified personnel as listed in section 4 of the SOW "as and when required" to deliver the following services in support of various MM/IT/ISS projects. All Standing Offer Holder resources must be experienced working with selected technologies from the technologies described in the Environment and Technology Scope (Section 2.1 of this document).

3.1.1   Project Management Services

In order to meet the requirements of the projects, project management will be applied to all projects regardless of size, budget or timeline. The Standing Offer Holder must supply Project Management resources as listed in section 4 of the SOW that will be responsible to apply project management knowledge, skills, tools and techniques to the broad range of activities of the MM/IT/ISS projects.

3.1.2   Consulting Services

The Standing Offer Holder must supply Consulting Resources as listed in section 4 of the SOW to ensure that proposed technology solutions will be aligned and implemented with the Canada's business goals, requirements and strategies. The Standing Offer Holder will also be required to define realistic migration road maps, transitions plans, training plans, system maintenance plans and design change management programs as required by particular projects. This service offering will support the project delivery full life cycle - from specification through to project management, documentation development, testing, training and maintenance.

3.1.3   Engineering Services

The Standing Offer Holder must also provide a broad range of Engineering Resources as listed in section 4 of the SOW to ensure that all aspects of the implementation of MM/IT/ISS that may be part of the various renovation projects can adequately be addressed by the project team. Engineering resources will primarily focus on all aspects of the design of specific systems. This engineering service offering will support the project delivery full life cycle - from requirements and specification development through to project management, construction, testing, training and maintenance.

3.1.4   Subject Matter Experts

Many of the projects that will be supported by this agreement will be very complex, requiring integration of sophisticated technical systems with cutting edge architectural concepts. As such, it is not possible to predetermine all of the technical expertise that may be required to address specific issues that may arise. As a result, the Standing Offer Holder may be required to provide subject matter experts in a variety of areas that will be determined as the need arises. Examples of areas that may require enhanced technical expertise include acoustics, lighting, audio and vibration. Please note that these are examples only and there may be other domains required.

3.1.5   Other Resources as Required

During execution of the individual Statement of Work, there may be a requirement for expert resources not included in the above noted Professional Services. In this event, Canada will negotiate with the Standing Offer Holder(s) to satisfy these requirements.

4 Resource Categories

The Standing Offer Holder must provide any or all of the following resources in response to any individual work package:

	Category
1	Senior Project Manager
2	Intermediate Project Manager
3	Junior Project Manager
4	Senior Business Analyst
5	Intermediate Business Analyst
6	Junior Business Analyst
7	Technical Writer
8	Senior Multimedia Engineer
9	Intermediate Multimedia Engineer
10	Junior Multimedia Engineer
11	CATV Specialist
12	Senior Audio Subject Matter Expert (SME)
13	CAD Specialist
14	Senior Digital Asset Management/Streaming Subject Matter Expert (Streaming Media Application Architect)
15	Intermediate Multimedia, Digital Asset and Streaming Media Application Architect
16	Software Developer
17	Mobile Software Developer
18	Software Development Manager
19	Integrated Security Systems Subject Matter Expert (ISS SME)
20	Integrated Security System (ISS) Specialist
21	Senior Physical Security Specialist
22	Senior Technical (Emissions) Security Specialist
23	Intermediate Technical (Emissions) Security Specialist
24	Network and IT Security Specialist
25	Senior Networking Engineer
26	Network Designer
27	Network Implementation Specialist – Cable Plant

4.1   General Resource Responsibilities and Tasks

The following are a set of general work responsibilities for each of the resource categories within this Standing Offer. This description of roles is provided to ensure clarity on what is meant by each of the role titles. Along the guidelines of this general work, there will be additional associated specific project-based tasks and responsibilities identified within each individual call-ups' statements of work.

4.1.1   Senior Project Manager:

Senior Project Managers typically perform various tasks in support of the Technical Authority. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. These tasks may include (but not limited to) the following:

1. Assisting in the management of MM/IT/ISS projects.

2. Assisting in the performance of duties in support of the Technical Authority. These duties could include assistance with activities including but not limited to: defining project charters, requirements definition, scope validation, project scheduling, resources management, project documentation, budget definition, project tracking, and logistics.

3. Assisting in the understanding of issue management policies, strategies and processes, and implementing them. These duties could include assistance with activities including, but not limited to: schedule tracking, budget management, procurement tracking, change management, risk management, communications plan management, issues management, status reporting.

4. Assisting in development of project management policies, strategies and processes, defining project scopes including the preparation of detailed project approaches, and developing project charters, work plans and schedules.

5. Assisting in the development of project-based risk management initiatives.

6. Providing support in the preparation of procurement documentation, procurement plans, research of available technologies, providing detailed option analysis and tracking procurement activities.

7. Developing approaches for consultation with key stakeholders and facilitating these consultations.

8. Managing project teams that will be performing the tasks described in items 2.2.8 through 2.2.19 of this Statement of Work.

4.1.2   Intermediate Project Manager:

Intermediate Project Managers are typically used to manage low to medium complexity projects or project streams of large projects that have a Senior Project Manager providing overall project management services. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. Intermediate Project Manager tasks typically include (but not limited to) the following:

1. Assisting in the management of MM/IT/ISS projects.

2. Assisting in the performance of duties in support of the Technical Authority. These duties could include assistance with activities including but not limited to: defining project charters, requirements definition, scope validation, project scheduling, resources management, project documentation, budget definition, project tracking, and logistics.

3. Assisting in the understanding of issue management policies, strategies and processes, and implementing them. These duties could include assistance with activities including, but not limited to: schedule tracking, budget management, procurement tracking, change management, risk management, communications plan management, issues management, status reporting.

4. Assisting in development of project management policies, strategies and processes, defining project scopes including the preparation of detailed project approaches, and developing project charters, work plans and schedules.

5. Assisting in the development of project-based risk management initiatives.

6. Providing support in the preparation of procurement documentation, procurement plans, research of available technologies, providing detailed option analysis and tracking procurement activities.

7. Developing approaches for consultation with key stakeholders and facilitating these consultations.

8. Managing project teams that will be performing the tasks described in items 2.2.8 through 2.2.19 of this Statement of Work.

4.1.3   Junior Project Manager:

Junior Project Managers typically perform various tasks in support of the Technical Authority or the Senior/Intermediate Project Manager. These tasks may include (but not limited to) the following:

1. Assisting in the management of MM/IT/ISS projects.

2. Assisting in the performance of duties in support of the Technical Authority. These duties could include assistance with activities including but not limited to: project scheduling, resources scheduling, project documentation management, budget tracking, issues tracking, project tracking,

procurement tracking, change tracking, status reporting and logistics.

3. Assisting in development of work plans and schedules.

4. Providing support in the preparation of procurement documentation, procurement plans, research of available technologies, and tracking procurement activities.

5. Assisting in the development and/or updates to project-based risk reporting/tracking.

6. Participating in consultation with key stakeholders.

7. Assisting with the management of project teams that will be performing the tasks described in items 2.2.8 through 2.2.19 of this Statement of Work.

4.1.4   Senior Business Analyst:

Senior Business Analysts typically participate in project teams in support of MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

2. Gather and document business requirements.

3. Developing and assisting with the implementation of organizational change management including but not limited to articulating the critical parameters of the change initiative, assessing organizational readiness, preparing change management strategies and plans, preparing the change sponsors and change agents and developing communication strategies and plans.

4. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.

5. Assessing and accurately reporting on project status and issues covering diverse set of project environments.

6. Developing technical and business strategies and situational analysis. Documenting and validating functional and technical requirements and evaluating business delivery processes.

4.1.5   Intermediate Business Analyst:

Intermediate Business Analysts will typically be used to provide business analyst services on low to medium complexity projects or projects where the services are more tactical (rather than strategic) in nature. Intermediate Business Analysts will require less experience than Senior Business Analysts and typically participate in project teams in support of the MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

2. Developing and assisting in the implementation of organizational change management including but not limited to articulating the critical parameters of the change initiative, assessing organizational readiness, preparing change management strategies and plans, preparing the change sponsors and change agents and developing communication strategies and plans.

3. Gathering and documenting business requirements.

4. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.

5. Assessing and accurately reporting on project status and issues covering diverse set of project environments.

6. Assisting with the development of technical and business strategies and situational analysis. Documenting and validating functional and technical requirements and evaluating business delivery processes.

4.1.6   Junior Business Analyst:

Junior Business Analysts typically participate in project teams in support of the MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Assisting the Senior or Intermediate Business Analyst on MM/IT/ISS projects

2. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

3. Gathering and document business requirements.

4. Assessing and accurately reporting on project status and issues covering diverse set of project environments.

5. Documenting and validating functional and technical requirements.

6. Assisting in the implementation of organizational change management.

7. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.

4.1.7   Technical Writer:
Technical Writers typically participate in project teams in support of the MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

2. Developing technical documentation including, but not limited to: test plans, specifications, configurations, test reports, methods and procedures.

3. Providing communications support to the project managers.

4.1.8   Senior Multimedia Engineer:
Senior Multimedia Engineers typically participate in project teams in support of the MM/IT/ISS projects. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. The Senior Multimedia Engineer will be performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of procurement documentation, procurement plans, researching of available technologies, providing detailed option analysis and tracking procurement activities.

2. Developing approaches for consultation with key stakeholders and facilitating these consultations.

3. Developing educational material and events related to MM/IT/ISS projects and project management.

4. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

5. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.

6. Developing concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, commissioning technical systems and leading technical workshops and reviews.

7. Providing overall multimedia engineering oversight for teams with multiple multimedia engineers.

4.1.9   Intermediate Multimedia Engineer:
Intermediate Multimedia Engineers typically participate in project teams for low to medium complexity projects or larger and/or more complex projects where they are working in support of a Senior Multimedia Engineer. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. The Intermediate Multimedia Engineer will be performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of procurement documentation, procurement plans, researching of available technologies, providing detailed option analysis and tracking procurement activities.

2. Developing approaches for consultation with key stakeholders and facilitating these consultations.

3. Developing educational material and events related to MM/IT/ISS projects and project management.

4. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

5. Reviewing, understanding and providing meaningful comment on a broad scope of technical and

business deliverables.

6. Developing concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, developing control system programming, commissioning technical systems and leading technical workshops and reviews.

4.1.10 Junior Multimedia Engineer:
Junior Multimedia Engineers typically participate in project teams for low to medium complexity projects or larger and/or more complex projects where they are working in support of a Senior or intermediate Multimedia Engineer by performing tasks such as (but not limited to) the following:

1. Assisting the Senior or Intermediate Multimedia Engineer on MM/IT/ISS projects

2. Assisting/participating in developing approaches for consultation with key stakeholders and facilitating these consultations.

3. Providing support in the preparation of procurement documentation, procurement plans, researching of available technologies, providing detailed option analysis and tracking procurement activities.

4. Assisting with the development of educational material and events related to MM/IT/ISS projects and project management.

5. Assisting with the development of documentation and communication material for distribution to project team members and stakeholders alike.

6. Assisting with the development of concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, developing control system programming, commissioning technical systems and leading technical workshops and reviews.

7. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.

4.1.11 CATV Specialist
CATV Specialists typically participate in project teams in support of the MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of CATV procurement documentation, procurement plans, researching of available technologies, providing detailed option analysis and tracking procurement activities.

2. Developing educational material and events related to CATV projects and project management.

3. Preparing CATV documentation and communication material for distribution to project team members and stakeholders alike.

4. Developing concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, developing CATV head end programming and configurations, commissioning technical systems, tuning CATV implementations and leading technical workshops and reviews.

5. Installing and configuring QAM based CATV head end equipment for QAM based CATV implementations

6. Optimizing CATV distribution networks in commercial/institutional facilities with multiple drops per building

4.1.12 Senior Audio Subject Matter Expert:
Senior Audio Subject Matter Experts typically participate in project teams in support of the MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of procurement documentation, procurement plans, researching available technologies, providing detailed option analysis and tracking procurement activities.

2. Developing approaches for consultation with key stakeholders and facilitating these consultations. These approaches will include the development of acoustic models for the sound reinforcement system. These approaches would also include the development of acoustic objectives for the audio system including, but not limited to STI, NC & reverb time.

3. Developing educational material and events related to audio systems deployed as part of MM/IT/ISS projects.

4. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

5. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.

6. Developing audio system concept designs, preliminary designs, detailed designs, cost estimates, , technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, commissioning technical systems and leading technical workshops and reviews.

7. Participating and leading testing to confirm that stated acoustic objectives where achieved. This testing will include the fine tuning or calibration of the implemented audio system.

8. Working in collaboration with acoustician to resolve issues that span both the audio system and room acoustics.

4.1.13 CAD Specialist:
CAD Specialists typically participate in project teams in support of MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Developing AutoCAD drawings for technical systems containing technologies described in 2.1 of this document. Drawings could include detailed designs, preliminary designs, as-built drawings etc.

2. Developing 3D animations such as walkthroughs, pan, zoom etc. of architectural spaces using AutoCAD.

4.1.14 Senior Digital Asset Management/Streaming Subject Matter Expert (Streaming Media Application Architect):
Senior Digital Asset Management/Streaming Subject Matter Experts typically participate in project teams in support of the MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Analyzing existing and planned system infrastructures and assist in designing hardware and software architectural upgrades. Develop load calculations, validation tests and scaling strategies. Design and optimize in-house hosted, cloud and hybrid architectures specific to multimedia capture and distribution (including closed captioning). Propose scalable and sustainable solutions to deliver highly available applications across multiple cloud providers and client existing infrastructure.

2. Decomposing applications into roles and subsystems, identify interfaces and dependencies.

3. Assisting application engineers and deployment team in production transition.

4. Assisting in resolution of high-level architectural design issues.

5. Conferring with business analysts and clients regularly to identify computerization needs and determine how the desired results can be achieved. Analyze existing systems and programs and develop or recommends new systems or modifications to existing systems.

6. Reviewing and analyze system specifications to determine whether all required elements have been included. Consult with business analysts and clients to gather information about program needs, objectives, functions, features, and input and output requirements.

7. Analyzing, defining, and documenting requirements for data, workflow, logical processes, hardware and operating system environment, interfaces with other systems, internal and external checks and controls, and outputs.

8. Using programming languages (e.g. C++, C#, VB.NET) to code computer instructions from the systems documentation. Utilize any special programming techniques necessary to achieve the most effective program.

9. Modifying existing programs to conform to system changes or to make improvements in the existing program.

10. Writing and maintaining documentation to describe program development, logic, coding, testing, changes, and corrections.

11. Developing test plans ensuring that unit, system, integration and user acceptance plans are complete and understood by developers and users.

12. Supporting and use the various methodologies such as the Microsoft Solutions Framework (MSF), UML, RUP, Software Development Life Cycle (SDLC).

13. Assisting the overall MM/IT/ISS team in activities described in items 2.2.16 to 2.2.17.

4.1.15 Intermediate Multimedia Digital Asset Management/Streaming Media Application Architect:

Intermediate Multimedia Digital Asset Management/Streaming Media Application Architects typically participate in project teams for low to medium complexity projects or larger and/or more complex where they are working in support of a Senior Digital Asset Management/Streaming Subject Matter Expert (Streaming Media Application Architect) by performing tasks such as (but not limited to) the following:

1. Analyzing existing and planned system infrastructures and assist in designing hardware and software architectural upgrades. Develop load calculations, validation tests and scaling strategies. Design and optimize in-house hosted, cloud and hybrid architectures specific to multimedia capture and distribution (including closed captioning). Propose scalable and sustainable solutions to deliver highly available applications across multiple cloud providers and client existing infrastructure.

2. Decomposing applications into roles and subsystems, identify interfaces and dependencies.

3. Assisting application engineers and deployment team in production transition.

4. Assisting in resolution of high-level architectural design issues.

5. Conferring with business analysts and clients regularly to identify computerization needs and determine how the desired results can be achieved. Analyze existing systems and programs and develop or recommends new systems or modifications to existing systems.

6. Reviewing and analyze system specifications to determine whether all required elements have been included. Consult with business analysts and clients to gather information about program needs, objectives, functions, features, and input and output requirements.

7. Analyzing, defining, and documenting requirements for data, workflow, logical processes, hardware and operating system environment, interfaces with other systems, internal and external checks and controls, and outputs.

8. Using programming languages to code computer instructions from the systems documentation. Utilize any special programming techniques necessary to achieve the most effective program.

9. Modifying existing programs to conform to system changes or to make improvements in the existing program.

10. Writing and maintaining documentation to describe program development, logic, coding, testing, changes, and corrections.

11. Developing test plans ensuring that unit, system, integration and user acceptance plans are complete and understood by developers and users.

12. Supporting and use the various methodologies such as the Software Development Life Cycle (SDLC).

13. Assisting the overall MM/IT/ISS team in activities described in items 2.2.16 to 2.2.17.

4.1.16 Software Developer

Software Developers typically participate in project teams in support of MM/IT/ISS Projects by performing tasks such as (but not limited to) the following:

1. Reviewing and understanding technical specifications, developing custom interfaces between applications, developing additional functionality external to applications using available APIs, documenting source code, performing unit testing and application testing, debugging code, maintaining various applications, performing application upgrades, performing application maintenance of COTS and custom developed applications and maintaining source code libraries.

2. Integrating COTS applications in a corporate environment including developing custom interfaces using available APIs.

3. Supporting and using the various methodologies such as the Microsoft Solutions Framework (MSF), UML, RUP, Software Development Life Cycle (SDLC).

4. Using programming languages (e.g. C++, C#, VB.NET) to code computer instructions from the systems documentation. Utilize any special programming techniques necessary to achieve the most effective program.

5. Designing, developing and implementing integrated solutions based on various application environments (e.g. MS Sharepoint, MS Dynamics CRM, MS SQL, MS Biztalk, IIS).

6. Developing integrated applications using development environment tools such as ASP.NET, Visual Studio 2010, IIS, MS Reporting Services, Web Services HTML, CSS, XML, HTTPS, Team Foundation Server and SQL Server Management Studio.

7. Developing applications for deployment in a major cloud environment (e.g. Microsoft Azure, Amazon AWS)

4.1.17 Mobile Software Developer:

Mobile Software Developers typically participate in project teams in support of MM/IT/ISS projects by performing application development services for mobile devices such as Android and iOS tablets and phones. Mobile Software Developers typically perform development activities such as (but not limited to) the following:

1. Reviewing and understanding technical specifications, developing custom interfaces between applications, developing additional functionality external to applications using available APIs, documenting source code, performing unit testing and application testing, debugging code, maintaining various mobile applications, performing application upgrades, performing application maintenance of mobile and custom developed applications and maintaining source code libraries.

2. Implementing, architecting and successfully delivering mobile applications on mobile device platforms such as Android and iOS.

3. Working with clients and design teams to implement requirements into functionality/features on mobile applications.

4. Developing mobile applications in a Microsoft based technology environment including integrating COTS applications.

5. Developing mobile applications that involve multilingual streaming encoding, transcoding and playback applications for Apple ioS and/or Android

6. Supporting and use the various methodologies such as Agile, Continuous Integration/Continuous Delivery and/or Devops processes.

7. Developing applications for use in a medium to large scale production environment (100+ users)

8. Developing integrated applications using a variety of development environments/tools/languages such as Visual Studio, IIS, Web Services using REST, DHTML, Apple Swift, Apple Objective-C, C#, Xamarin, Java or Kotlin with Android Studio, Flutter/Dart, JSON, XML and/or Ajax.

9. Deploying mobile applications to mobile platforms using a variety of techniques such as App Store, Side Loading and Enterprise platform.

10. Developing multi-platform mobile application (several platforms for same application).

4.1.18 Software Development Manager:

Software Development Managers typically participate in project teams in support of MM/IT/ISS projects and plan, direct, and coordinate all activities related to writing software programs. Software Development Managers are typically familiar with all the policies, procedures and technical issues related to software programming. The Software Development Manager is also in charge of managing the activities of the software developing team of a company for MM/IT/ISS projects. The Software Development Manager performs tasks such as (but not limited to) the following:

1. Preparing documentation and communication material for distribution to project team members and stakeholders alike.

2. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables related to functional requirements, product features and user experience.

3. Assessing and accurately reporting on project status and issues covering diverse set of project environments.

4. Assisting with the development of technical and business strategies and situational analysis. Documenting and validating functional and technical requirements and evaluating business delivery processes.

5. Working with technical, business and design related stakeholders and implementation teams using an iterative Agile framework to continuously deliver value in the form of wireframes, interactive mockups and usable software.

6. Managing all the activities of the software development group; setting attainable goals to team members in order for MM/IT/ISS projects to be finished on time.

7. Participating in design control activities; monitoring, evaluating and ensuring the completion of tasks and projects; analyzing software requirements; implementing design plans, reviewing unit tests; ensuring appropriate use of programming languages, codes and processes.

8. Supporting and using the various methodologies such as Agile, Continuous Integration/Continuous Delivery and/or Devops processes, Microsoft Solutions Framework (MSF), UML, RUP, Software Development Life Cycle (SDLC).

4.1.19 Integrated Security Systems Subject Matter Expert:

Integrated Security Systems Subject Matter Experts typically participates in project teams in support of MM/IT/ISS projects. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. The Integrated Security Systems Subject Matter Expert will be performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of procurement documentation, procurement plans, researching available technologies, providing detailed option analysis and tracking procurement activities.
2. Developing approaches for consultation with key stakeholders and facilitating these consultations.
3. Developing educational material and events related to Integrated Security Systems deployed as part of MM/IT/ISS projects.
4. Preparing documentation and communication material for distribution to project team members and stakeholders alike.
5. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.
6. Developing Integrated Security Systems concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, commissioning technical systems and leading technical workshops and reviews.
7. Developing specifications for ISS Systems involving multiple technologies such as (but not limited to): digital video surveillance, electronic access control, security intercom systems, control center alarm and video monitoring equipment, emergency call systems, radio systems, and console equipment.

4.1.20 Integrated Security System Specialist:

Integrated Security Systems Specialists typically participate in project teams in support of MM/IT/ISS projects. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. The Integrated Security Systems Specialist will be performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of procurement documentation, procurement plans, research of available technologies, providing detailed option analysis and tracking procurement activities.
2. Developing approaches for consultation with key stakeholders and facilitating these consultations.
3. Developing educational material and events related to Integrated Security Systems deployed as part of MM/IT/ISS projects.
4. Preparing documentation and communication material for distribution to project team members and stakeholders alike.
5. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.
6. Developing Integrated Security Systems concept designs, preliminary designs, detailed designs, cost estimates, technical and functional requirements and space planning, technical accommodation guidelines, technical general arrangements packages, procurement

documentation and equipment lists, reviewing architectural designs and construction documents, developing technical test plans, implementing technical test plans, commissioning technical systems and leading technical workshops and reviews.
7. Developing specifications for ISS Systems involving multiple technologies such as (but not limited to): digital video surveillance, electronic access control, security intercom systems, control center alarm and video monitoring equipment, emergency call systems, radio systems, and console equipment.
8. Developing shop drawings and as-built drawings to accompany security system designs.

4.1.21 Senior Physical Security Specialist

Senior Physical Security Specialists typically participate in project teams in support of MM/IT/ISS projects by performing tasks such as (but not limited to) the following:
1. Supporting the development of Threat and Risk Assessments for facilities using the RCMP/CSE Harmonized Threat and Risk Assessment Methodology (2007).
2. Supporting the development of Security Design Briefs for development and rehabilitation projects.
3. Gathering, document and consolidate physical security business, technical and functional requirements for new projects.
4. Supporting the development of Concepts of Operations for systems, technologies and applications related to projects and security program improvements.
5. Providing advice and guidance on concept designs, preliminary designs, detailed designs, and cost estimates.
6. Providing input on industry standards, best practices and accepted approaches for the development and implementation of security mitigations.
7. Reviewing architectural, electrical and structural designs and construction documents for requirements compliance and provide feedback to project teams.
8. Providing site inspection services.
9. Developing security requirements and/or designs addressing multiple domains such as (but not limited to) the following: Blast Analyses, Vehicle Ramming Mitigations, Ballistic Doors/Frames/Walls and Glazing, Crime Prevention through Environment Design (CPTED), Security Lighting, CBRN systems, Security Operations.
10. Providing support in the preparation of procurement documentation, procurement plans, researching available technologies, providing detailed option analysis and tracking procurement activities.
11. Developing approaches for consultation with key stakeholders and facilitating these consultations.

4.1.22 Senior Technical (Emissions) Security Specialist

Senior Technical (Emissions) Security Specialists typically participate in project teams in support of MM/IT/ISS Projects by performing tasks such as (but not limited to) the following:
1. Gathering, documenting and consolidating technical security requirements related to emission risk management.
2. Developing concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements, procurement documentation and equipment lists for technical security solutions.
3. Developing equipment, racking, power and communications strategies for reducing emission risk.
4. Developing infrastructure guidance to comply with emission security standards and best practices.
5. Developing test policies, procedures and methodologies for emission-related equipment and system testing.
6. Applying known security standards (e.g., ITSG-XX) to designed solutions.
7. Defining TEMPEST-rated equipment requirements and solutions for a variety of domains (e.g. TEMPEST Equipment, In Place Monitoring Systems, Technical Surveillance Counter Measures, Special Discussion Areas, Published Wireless/Wireline Emission Mitigation Standards, Technical COMSEC Inspections (TCI))
8. Providing input on the specifications, infrastructure, design and equipment required for localized monitoring systems.
9. Supporting the development of Technical COMSEC Inspections (TCI).
10. Reviewing architectural, electrical and structural designs and construction documents for requirements compliance and provide feedback to project teams.
11. Providing site inspection services.

12. Providing support in the preparation of procurement documentation, procurement plans, researching available technologies, providing detailed option analysis and tracking procurement activities.
13. Developing approaches for consultation with key stakeholders and facilitating these consultations.

4.1.23 Intermediate Technical (Emissions) Security Specialist

Intermediate Technical (Emissions) Security Specialists typically participate in project teams in support of Projects by performing tasks such as (but not limited to) the following:

1. Performing equipment testing to document emission vulnerabilities.
2. Developing hardening solutions for equipment requiring emission mitigations.
3. Developing concept designs, preliminary designs, detailed designs, cost estimates, technical functional requirements, procurement documentation and equipment lists for technical security solutions.
4. Developing equipment, racking, power and communications strategies for reducing emission risk.
5. Developing infrastructure guidance to comply with emission security standards (e.g. ITSG-02, ITSG-11a, ITSG-12, ITSG-33) and best practices.
6. Reviewing architectural, electrical and structural designs and construction documents for requirements compliance and provide feedback to project teams.
7. Performing Technical COMSEC Inspections (TCI), as required.
8. Providing site inspection services.
9. Defining TEMPEST-rated equipment requirements and solutions for a variety of domains (e.g. TEMPEST Equipment, In Place Monitoring Systems, Technical Surveillance Counter Measures, Special Discussion Areas, Published Wireless/Wireline Emission Mitigation Standards, Technical COMSEC Inspections (TCI))
10. Designing and implementation of technical (emission) security systems and mitigations in an institutional environment.
11. Providing support in the preparation of procurement documentation, procurement plans, researching available technologies, providing detailed option analysis and tracking procurement activities.
12. Developing approaches for consultation with key stakeholders and facilitating these consultations.

4.1.24 Network and IT Security Specialist:

Network and IT Security Specialists typically participate in project teams in support of MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Providing support in the preparation of procurement documentation, procurement plans, researching available technologies, providing detailed option analysis and tracking procurement activities.
2. Developing educational material and events related to network and IT security deployed as part of MM/IT/ISS projects.
3. Preparing documentation and communication material for distribution to project team members and stakeholders alike.
4. Reviewing, understanding and providing meaningful comment on a broad scope of technical and business deliverables.
5. Developing network and IT security concept designs, preliminary designs, detailed designs, cost estimates, technical and functional requirements, procurement documentation and equipment lists, developing technical test plans, implementing technical test plans, commissioning technical systems and leading technical workshops and reviews.

4.1.25 Senior Networking Engineer:

Senior Networking Engineers typically participate in project teams in support of MM/IT/ISS projects. In special circumstances, these resources may be required on site in the National Capital Area within four (4) hours of receiving a request from Canada. The Senior Networking Engineering will be performing tasks such as (but not limited to) the following:

1. Developing and/or Deploying IT network architecture strategies, planning and design processes using technologies such as local area networks, IP addressing, IP sub networks and VLANs, IP routing protocols, telephony, cell phone systems, voice over IP, Virtual Private Networks (VPNs), network security, authentication and encryption techniques, high availability network design, firewalls, Intranet Security Area (INSA) or

DMZ, network monitoring, OSI Layer's 1 Through 5 etc.

4.1.26 Network Designer:

Network Designers typically participate in project teams in support of MM/IT/ISS projects by performing tasks such as (but not limited to) the following:

1. Developing network designs for local area networks that include IP addressing, IP sub networks and VLANs, IP routing protocols, voice over IP, Virtual Private Networks (VPNs), network monitoring, network security, high availability network design, firewalls, intranet security area (INSA) or DMZ, and authentication and encryption techniques.
2. Planning, designing, establishing standards, performing quality reviews, defining scope and developing bills of material, and costing matters related to networks and its associated structured cabling.
3. Performing quality assurance/reviewing on-site structured-cabling infrastructure.

4.1.27 Network Implementation Specialist – Cable Plant

Network Implementation Specialists – Cable Plant Designers typically participate in project teams in support of MM/IT/ISS projects. The Network Implementation Specialist – Cable Plant will be performing tasks such as (but not limited to) the following:

1. Reading maps, locating and being in above ground or underground utility/communication facilities.
2. Identifying cable types, managing cable types and installation check lists.
3. Reading CADs and advising Canada and its contractors.
4. Inspecting contracted cabling installations and writing inspection reports.
5. Installing cabling infrastructure in a complex enterprise environment.
6. Providing network designs that include a variety of IT technologies (e.g. LAN, IP, Telephony, Cell, VOIP, VPNs, Network security, Authentication/encryption, High availability, Firewalls, INSA or DMZ, Monitoring, OSI Layers 1 through 5)