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CRV Terms of Reference

Chonlawit Banphawatthanarak

CRV TF Chairman

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- Content of CRV Terms of Reference (TOR)
- Annexes
- Principle of ‘Compliance’, ‘Partial Compliance’, and ‘Non-Compliance’



Overview of the tender package

- **Terms and conditions**
 - Terms and Conditions will generally be used during the contracting and execution stages. In this case the Individual Service contract will be signed between the Supplier and the CRV User.
 - ICAO Terms and Conditions will only be used in the exceptional case where ICAO would procure the services on behalf of a CRV User. In this case the Individual Service contract will be signed between the Supplier and ICAO.
- **Terms of Reference**
 - Background and objectives of the project
 - Specifies the services to be delivered
 - 6 annexes
 - Determines responsibilities
- **Instructions To Tenderers**
 - Gives necessary instructions to the tenderers for the sealed tender process
 - 6 annexes
- **Individual Service Contract**
 - An annex to Instructions to tenderers, which will become an important piece after the contract is awarded



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CONTENT OF CRV TERMS OF REFERENCE (TOR)



Content of Terms of Reference

1. Background
2. Project Objective
3. Scope of the Services
4. Supplier's responsibility
5. End User / ICAO Responsibility
6. Implementation Schedule



1. Background

- The need for CRV services
 - The current AFTN/AMHS connections have many limitations.
 - “It was decided that a dedicated, common network operated by a Communication service provider is a viable approach to be studied, in order to replace the current configuration...”

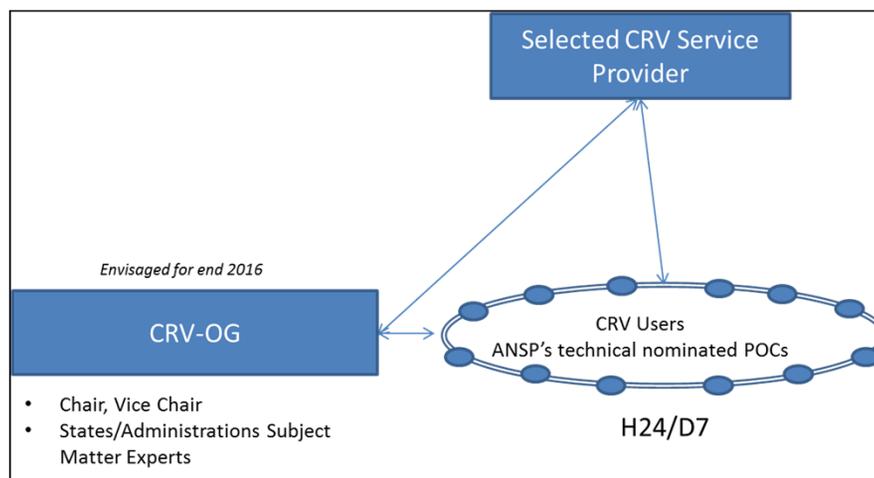


1. Background

- The users of CRV are all ANSPs of states within the APAC region and potentially include other entities such as airspace users (AU), airport operation (AOP), etc.
- A CRV-Oversight-Group (CRV-OG) will be established at the end of 2016 to oversee the operation of CRV and interface with selected service provider.



1. Background





1. Background

- Benefits of CRV: included in Annex A the CONOPS
- Data that may be carried over CRV:
 - • AFTN/AMHS messages to replace the current AFTN/AMHS connections,
 - • Ground-to-ground voice communications between states,
 - • AIDC messages via the exchange of AFTN/AMHS messages,
 - • METAR and SPECI (including TREND), TAF and SIGMET data in a GML-compliant format,
 - • NOTAM and aeronautical data including obstacles, terminal procedures and airport mapping data in a GML-compliant format,
 - • Data link communications,
 - • AIM information such as eAIP over IP,
 - • ATFM data flow of meteorological data in the same manner as support for WXXM data flow,
 - • exchange of ATFM information such as flight schedule, ATFM messages, ATFM daily plan (ADP), etc,
 - • ATS messages, Traffic Flow Management, Airport CDM and boundary crossing in a GML-compliant format, and
 - • Other data as necessary.



2. Objectives

- “The International Civil Aviation Organization (ICAO), on behalf of the CRV Users, intends to select **the best and final offer for delivering, on a turnkey basis, safe, secure and reliable transportation network services of the Common Regional Virtual Private Network (CRV) Of Asia/Pacific Region envisaged in the ICAO CNS/ATM concept, through two backbones (one Multiprotocol Label Switching (MPLS), based on a terrestrial, satellite, or both networks, and one based on Virtual Private Network over the public internet).**”



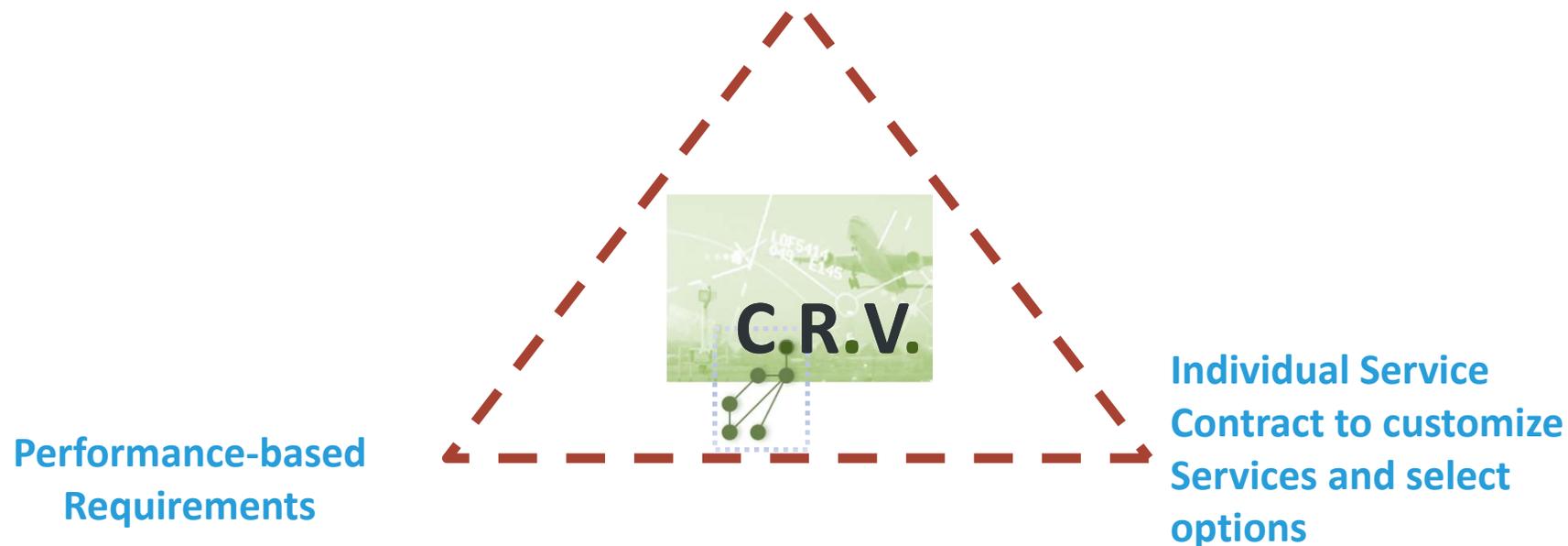
3. Scope of the Services

- Core, Additional, Optional Services
 - Core: main MPLS backbone with a terrestrial and, where necessary, a satellite segment.
 - Additional: Installation and management of a voice and data gateway.
 - Optional:
 - PKI Infrastructure
 - Dedicated NOC



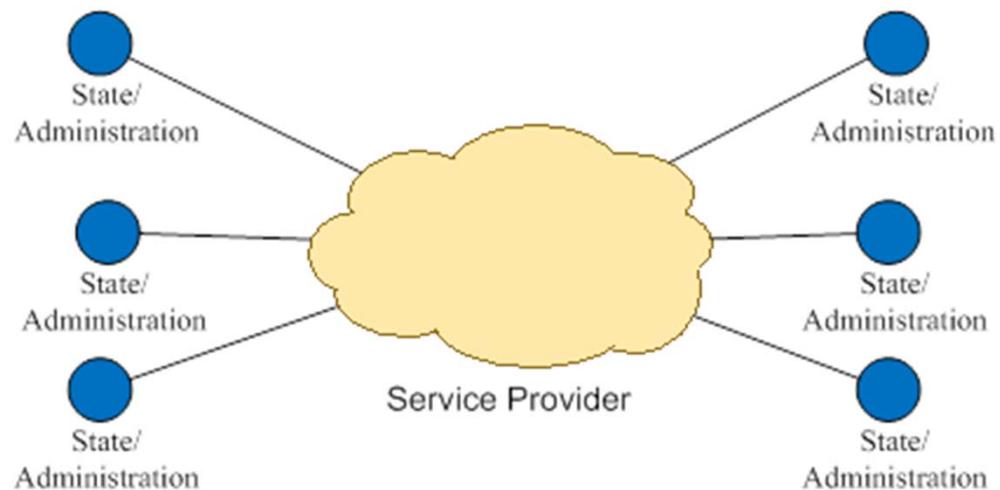
3. Scope of the Services

A catalogue of services, with options





3. Scope of the Services





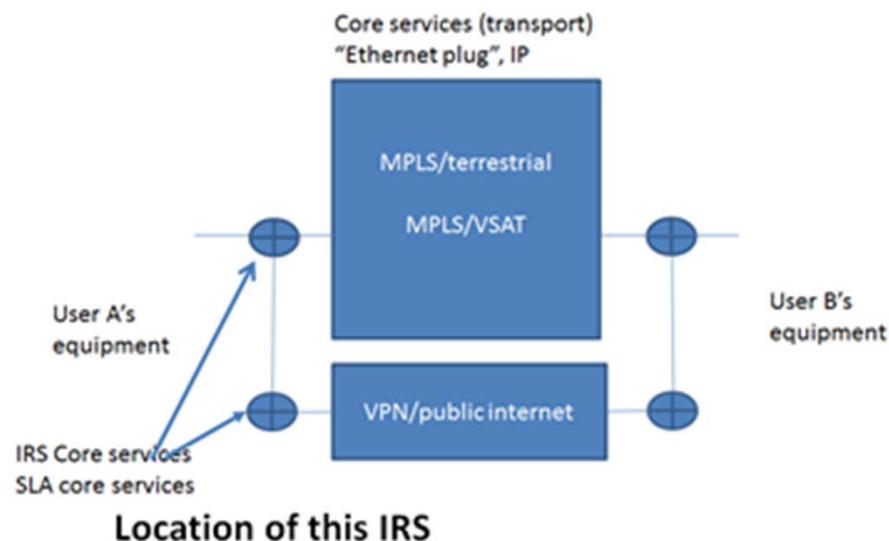
3. Scope of the Services

- Management of the Network Design
 - “Contractor shall be fully responsible for the design, selection of components and materials, and installation techniques...”
 - “Tenderer shall present the draft System Design Document (SDD)...”



3. Scope of the Services

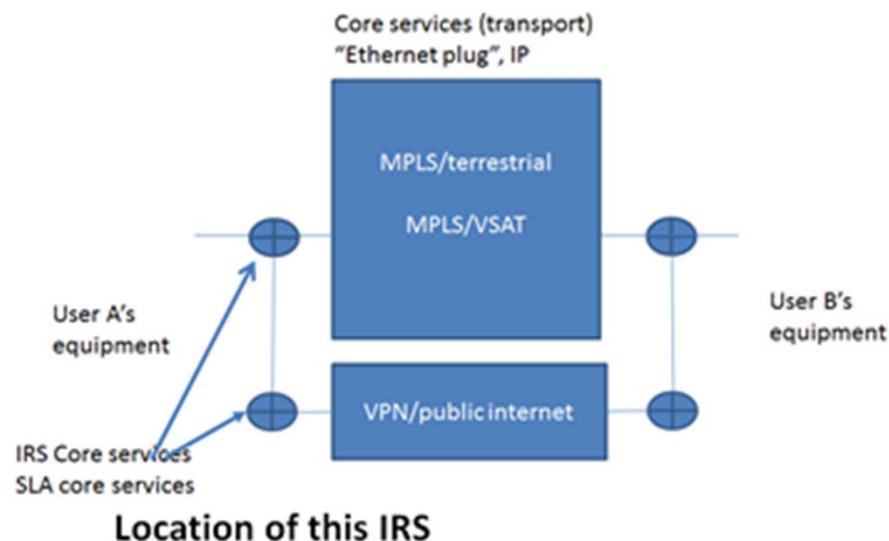
- Network Topology
 - Contractor responsible for integration of MPLS/terrestrial, MPLS/VSAT, VPN/public internet in Core services.
 - Contractor responsible for IP address management / routing.
 - Core services support IPv4 and IPv6





3. Scope of the Services

- Network Topology
 - Interface Requirement Sheet (IRS) described in Annex e.
 - Service Level Agreement (SLA) described in Annex B





Scope of the Services

- Characteristics of the MPLS backbone
 - “...contractor shall provide and install all the necessary equipment at each of the sites of the CRV Users...”
 - “The equipment will include the NID, modems and other equipment required for the installation for the MPLS backbone (ground and/or satellite),...”



3. Scope of the Services

- Characteristics of the MPLS backbone
 - The CRV shall implement Quality of Service (QoS) to prioritise traffic,
 - The CRV shall have a packet loss rate of less than 0,1% for SLA-Voice 2 and SLA-Voice 4 (as in **Annex D**),
 - The CRV should have a packet loss rate of less than 0,5% for the remaining SLA-, (as in **Annex D**)
 - The Contractor shall provide a high priority, low latency path to support Voice over Internet Protocol (VoIP) transport,
 - The CRV shall give an appropriate level of priority to SIP,
 - The VoIP Transport shall provide maximum latency as shown in **Annex C**,
 - The VoIP Transport shall provide a maximum jitter of 40 ms,
 - The VoIP Transport shall provide a maximum packet loss of 1%,
 - The VoIP Transport shall provide an availability greater than 99.9%,
 - The CRV shall use the high priority tags in the VPN packet headers to ensure that VoIP traffic is given high priority and minimal delay,
 - The CRV shall provide transport for the ED-137 VoIP,
 - The CRV shall use the high priority tags in the packet headers to ensure that ED-137 VoIP RTP traffic is given high priority and minimal delay,
 - The CRV shall give an appropriate level of priority to ED-137 SIP signaling.



3. Scope of the Services

- Characteristics of the MPLS backbone
 - “The CRV shall provide a **private telecommunications network which is only accessible to the CRV Users.**”
 - “The CRV Network shall **not be accessible from the public Internet.**”
 - “Where a CRV User has multiple access points then the **CRV shall automatically direct traffic to the working access points.**”



3. Scope of the Services

- Customer Support Services
 - “The Tenderers shall provide a draft Customer Support Service (CSS) plan to manage the CRV network.”
 - “The Contractor shall provide and maintain a **24x7 Customer Service Desk...**”
 - “The Contractor shall measure and report monthly to the CRV Users and ICAO Regional...”



3. Scope of the Services

- Optional Services :
 - Customer Service Desk proficient in aviation applications
 - Dedicated Network Operations Center (NOC)



3. Scope of the Services

- Network Management
 - “The Contractor shall provide a proactive **network management service**...for the detection, routing and resolution of problems.”
- Performance Management
 - “The Contractor shall submit a monthly **Performance Management Report** to CRV-OG providing the status and performance of the Network.”



3. Scope of the Services

- Contingency Plan
 - “The Tenderer shall **provide a contingency plan** in case of total failure of the CRV”
 - “The Contractor shall **apply the contingency plan** in case of total failure of the CRV in coordination with CRV-OG”



3. Scope of the Services

- Implementation Management
 - Program Management and Quality Assurance
 - Action list and risk table
 - System Engineering Plan
 - Installation and Transition
 - Site Acceptance Process



3. Scope of the Services

- **Configuration Management**
 - Standard process – normal change management.
 - Fast-track process – corrective action
- **Monitoring and Reporting**
 - Real-time access to Contractor's NID
 - Command and control capabilities – involve with SLA management with details in Annex D



3. Scope of the Services

- **Fault Management**
 - Fault detection and analysis
 - Notification, troubleshooting, and closure of issues.
- **Safety Management**
 - Safety Management Plan
 - Contribution to CRV user's safety case
 - Escalation Process



3. Scope of the Services

- Security Management
 - Security Policy
 - Security Management Plan
 - **Isolation from non-CRV communications**
 - Escalation Process
 - Reporting of security events
 - Protection from harmful codes
 - **Monitoring of cyber security and best practices and threats**
 - **Optional Services: PKI**



3. Scope of the Services

- Training
 - Training plan
 - Initial training package (2 days)
 - Refresh training package (1 day)



4. Supplier's Responsibility

- Contract Management
 - Contract Management Plan
 - Dispute Resolution Plan
 - **Validity of the proposals (10 Years starting from the date of the letter from ICAO with the invitation for contract negotiations.)**



4. Supplier's Responsibility

- Contract Management
 - Contract initiation
 - Termination of contracts
 - **Changes involving 2 CRV Users or More (communicated via CRV-OG)**
 - Extension of contracts
 - “All individual contracts shall be renewable on an annual basis, up to five years, from the day following the 5th anniversary of the date of the letter from ICAO with the invitation for contract negotiations.”



4. Supplier's Responsibility

- Contract Management
 - Addition of a new participant – response to request of new participant from CRV-OG
 - Price Management
 - “The agreed bid selling prices shall be fixed for 5 years, and after these 5 years, adjusted whether up or down in May of each calendar year according to the formulas...”



4. Supplier's Responsibility

- Contract Management
 - Payment Deduction – penalties according to Annex D.
 - Billing Management
 - “The contractor shall update and maintain a Billing Management plan...”
 - **“The Contractor shall send individual invoices to all the CRV Users on a separate basis in compliance with the procurement clauses.”**



4. Supplier's Responsibility

- Contract Management
 - Sub-contracting
 - “The Contractor shall not subcontract (including any use of a third party to perform) any aspect of the performance of the works or services without the prior written approval of the CRV-OG and Host Country.”
 - “In the case where the Contractor intends to subcontract (including any use of a third party to perform) any aspect of the performance of the works or services, the approval of the Host Country and/or CRV-OG may be withheld at their absolute discretion.”



4. Supplier's Responsibility

- Coordination between Contractor and CRV Users
 - Regular meetings
 - Contractor representatives
 - “The Contractor shall ensure that the Contractor Representative is reasonably available to attend the meetings referred above and is prepared to answer any queries relating to the performance of the CRV.”



5. End User / ICAO's Responsibility

- Provision of access and technical facilities by CRV Users
 - Physical spaces
 - Electrical power
 - Access to equipment to connect to the CRV



6. Implementation Schedule

- “Contractor shall update and maintain a high level milestone schedule...”
- “The Contractor shall take into account the close coordination with each Civil Aviation Authority/Air Navigation Contractor for installation/commissioning purposes in the schedule.”



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ANNEXES



Annex A – CRV CONOPS

- Concept of Operations for CRV to serve the Asia/Pacific region, which includes
 - Objective of CRV
 - CRV will offer a safe, secure, robust and cost effective telecommunications transport service to all CRV Members,
 - All CRV Candidates should have opportunity to contract to CRV service.
 - Management of CRV
 - CRV Use Cases, Safety Cases
 - CRV Capability Description
 - Accessibility, Physical Connectivity, Access Bandwidth and QoS, Network Security, Capacity for growth and expansion, Network monitoring, etc.
 - CRV Regulatory Requirements



Annex B Matrix of Flows for CRV services

- The matrixes of flow for the services are provided as information, and not as requirements.
 - provide the information on type and characteristic of network connections currently in use, time of implementation, etc.
 - include AFTN PLAN, Required ATN Infrastructure Plan (for AMHS), ATS Direct Circuit Plan (for Voice Communication), and AIDC Implementation Plan.



Annex C – QUALITY OF SERVICE PLAN

- QoS Plan defines the priority and marking of packets which are to traverse the CRV.
- uses the Internet standard RFC 4594 Configuration Guidelines for DiffServ Service Classes as its basis for the allocation of applications to QoS queues



Annex D – SERVICE LEVEL AGREEMENT AND PAYMENT DEDUCTION TABLE FOR CORE SERVICES

- Annex D defines the Service Levels to be met by the CRV Service Provider between the Service Provider's NIDs.
- Includes the proposed Payment Deductions.



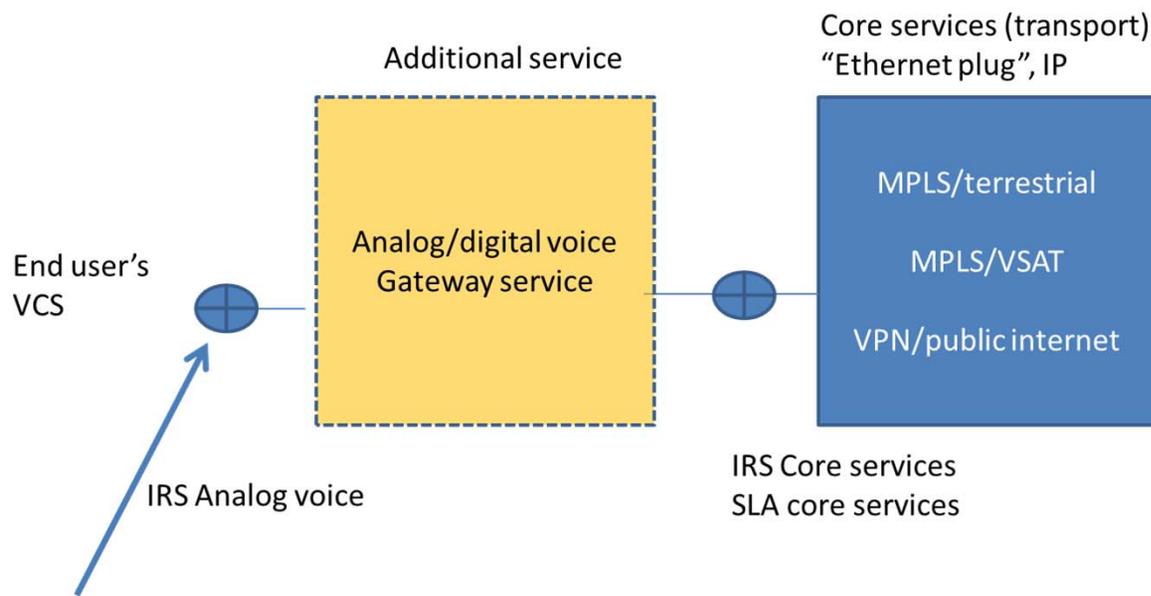
Annex E – INTERFACE REQUIREMENT SHEET (IRS)

- Annex E defines the minimum requirements for the interface between the Service Provider and each of the States/Administrations.

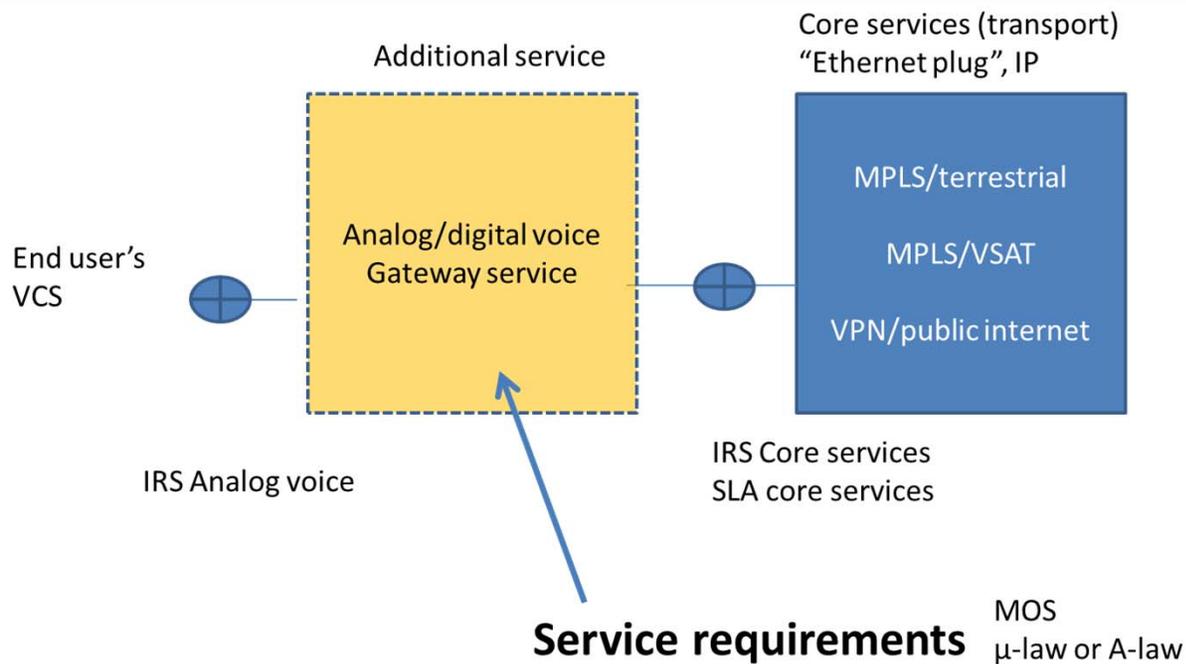


Annex F – IRS for Additional Managed Voice and Data Gateway

- Annex F defines **Interface and Service requirements** for additional managed voice and data gateway.
- The gateway service is for analog or digital voice to voice over IP gateway service between the Service Provider voice gateway and each of the States/Administrations' analog or digital Voice Communication System (VCS) equipment.



Location of this IRS





Sample of Requirements in TOR

TERMS OF REFERENCE	COMPLIANCE STATEMENT
<p>...</p> <p>The Project contemplates that the Contractor shall provide the following:</p> <p>3.1.1 Core services:</p> <p>a) Safe, secure and reliable carriage of data between all users' sites through the implementation of a MPLS backbone with a terrestrial and, where necessary, a satellite segment;</p> <p>...</p>	<p>"C – COMPLIANCE"</p> <p>"PC – PARTIAL COMPLIANCE"</p> <p>"NC – NON-COMPLIANCE"</p>



PRINCIPLE OF 'COMPLIANCE', 'PARTIAL COMPLIANCE', AND 'NON- COMPLIANCE'



Principle of 'C' / 'PC' / 'NC'

- C – The tender can satisfy the statement.
- PC – The tender can partially satisfy the statement. The tender shall clearly state which part(s) of the requirement can and which part(s) cannot be satisfied.
- NC – The tender cannot satisfy the statement.



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THANK YOU