DEN NETWORKS LIMITED RESPONSE TO TRAI
CONSULATATION PAPER ON
"Framework for Technical Compliance of Conditional
Access System (CAS) and Subscriber Management
Systems (SMS) for Broadcasting & Cable Services"

CAS and SMS are the integral part of the content distribution network. CAS and SMS also help the DPOs to manage their subscription and maintain the data of various reports as regards the subscriber management and authorisation, including the broadcaster's (Television Channel wise) subscription report.

Presently there are about 15 CAS platforms and 30 SMS platforms which are deployed by the DPOs as per their need. It has also been highlighted by the Authority and experienced by the DPOs that many of these platforms don't have all the technical features required for a secure and encrypted delivery of content.

The STBs procured by the MSOs are according to the recommendation by the CAS and SMS providers. In case of any change made by the CAS and SMS providers in their software solution, the MSOs also need to replace their STBs and many a times they have to incur huge expenses.

It may be noted that majority of the CAS & SMS companies operating in India are foreign entities and all the local customer data may be stored in the global servers or in the cloud, which is in fact detrimental to the security of the content as well as to the specific or personal data information.

Q1. List all the important features of CAS & SMS to adequately cover all the requirements for Digital Addressable Systems with a focus on the content protection and the factual reporting of subscriptions. Please provide exhaustive list, including the features specified in Schedule III of Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017?

DEN'S RESPONSE :

We feel that to ensure content protection and factual reporting of subscriptions the following features should be looked into:

A. SMS FEATURES :

a) MASTER SETUP MODULE

- Country Setup
- State Setup
- City Setup
- Area Setup
- Location Setup

- Street Setup
- Building Setup
- Plans & Pricing
- Head End Creation Setup
- Area Level Bouquet Master
- City Level Bouquet Master
- Channel List Master
- Channel Map Master
- CATV Provisioning Master
- Payment Master
- Invoice Master

b) **EMPLOYEES & USER MANAGEMENT MODULE**

- Roles & Permission
- User & Role Mapping
- Edit Contact Details
- Change User Password
- Update Service Status and Access Type
- Admin User, Normal User, Super USER

c) **CUSTOMER TICKET MASTER SETUP**

- Group Creation
- Team Creation
- Queue Creation
- Group Admin Mapping
- Team Admin Mapping
- Team Engineer Mapping
- Team & Queue Mapping
- Team Lead Mapping
- Call Type Creation
- Call Area Creation
- Ticket Category Creation
- Ticket Sub-Category Creation
- Resolution Creation
- Action Creation

d) **INVENTORY MANAGEMENT**

- Inventory Search
- Loading
- Location Updater
- State Change.
- Attribute Update
- Inventory Device Life Cycle
- Repairing management

e) ACCOUNT MANAGEMENT

- Customer Account Registration
- Parent-Child for Residential,
- E-CAF (Digital CAF)
- Hardware Allocation
- Service Activation
- Business User Creation (User ID creation)
- Business Unit Creation (LCO / JV/ Company master creation)

f) PROVISIONING

- New Activation
- Change Plan
- Cancel plan
- Suspend
- Re-activation
- Add plan Ala Carte
- Add Plan Bouquet
- Terminate Service
- Retract
- Change Bouquet Id
- Entity Change
- B-Mail
- Finger printing
- Reset Pin
- Change Location
- Set Personal Bit Provisioning

g) CUSTOMER TICKET MANAGEMENT

- Work Order
- Add Child Ticket
- Transfer Ticket
- Create ID-AHD Tickets
- View TAT Summary
- My Work Order

h) CUSTOMER MANAGEMENT

- Service Details
- Active Plan Details
- Customer Details
- Contact Information
- Account Information
- Address Information
- Bill & Service Details
- Bill Information

- Unbilled Information
- Service & Plans
- Active Service
- Service Hold
- Service Suspension
- Service Termination
- Add Plan
- Change Plan
- Cancel Plan
- Device Swap
- Inactive Service
- Terminated Service:
- Failed Provision Resubmit
- Adjustment
- Account Level Adjustments
- Bill Level Adjustments
- Item Level Adjustments
- Disputes
- Payments
- Payment Reversal
- Deposit & Deposit Refund
- History
- History Search
- Notes
- Bills
- Search Bills option (last 6 months)
- Provision – To search and check the provisioning orders status (Success/failed)
- Customer Ticket
- Customer Ticket Creation
- FTR
- Open Work Order
- Reopen Work order
- Work Order Notes

i) SUBSCRIPTION MANAGEMENT MODULE

- Package Creation for Broadcaster & DPO with NCF Value & Applicability Setting
- Package Modification
- CA ID Update for Packages &A_la_carte Channels
- Channel Detail Update DHE wise
- Historical Data Management of Broadcasters, DRP, MRP & Product Name
- Product Revenue Sharing Between Broadcaster & MSO
- Product Revenue Sharing Between LCO & MSO Entity & Tenure wise
- NCF Revenue Sharing Between LCO & MSO Entity & Tenure wise
- Various   Pay term plans as per Regulation
- All Plan to be prepaid or post-paid in nature

- refund on cancellation or plan change or termination
- Feature for End of Life of any product
- One plan can have multiple product
- Bundling of products in one single plan

j) LCO & SUBSCRIBERS MANAGEMENT MODULE

- Multiple Pay Term Available for Prepaid & Post-paid Billing of LCOs & Subscribers
- Monthly billing cycle
- Multiple Billing cycle as per state e.g. 1st of Month, 5th Of month etc.
- LCO & Subscriber Billing with (30 Days, 60 Days, 90 Days etc.)
- LCO & Subscriber Billing with (Add-on &A_la_carte Equal to Base Package Mode)
- LCO & Subscriber Billing with (LCO wise End Date)
- Date Alignment as per base plan
- Refund for all kind of transactions
- Discount on Plans
- 7 Days Demo plans
- NCF Refund on pro-rata basis
- Itemized LCO & Subscribers Billing formats with Product Subscription
- Auto Calculate CGST-SGST & IGST Tax in LCO & Subscriber Billing Transactions
- SMS - renewal, payment, general information
- Bmail – For Renewal, information
- Auto-scheduling of SMS/Bmail Delivery as per business rules
- Daily Auto Mailing Capability
- LCO communication module giving updates on customer complaints
- Daily Auto Text Messaging capability
- Daily Auto Mailing capability
- LCO Mobile App & Self-service Web Portal for Different Activities on Daily Basis
- Fresh Subscriber STB
- STB De-Activation
- STB Temporary De-Activation
- STB Re-Activation
- Product Addition
- Product Removal
- Plan Change (Addition & Removal)
- Product Renewal
- Auto-renewal (Enable/Disable)
- Activity Scheduler for (Activation, Deactivation
- STB & VC Pairing & De-Pairing
- Renewal (Package Wise & Connection Wise) Both
- Subscriber Debit & Credit Note (Single & Bulk)
- LCO Debit & Credit Note (Single & Bulk)
- LCO & Subscriber Payment Reconciliation
- Single Button for Refresh Card

- Resend CAS Commands (Re-Pair, Re-Entitle, Re-Activation, Re-Deactivation, Re-Add Card)
- Subscriber Conversion (Post-paid to Prepaid & vice versa)
- E-CAF Module with Digital CAF generation
- Management of Agreements with LCOs
- Auto SMS & CAS reconciliation on daily basis

k) CAS PROVISONING MODULE

- Verify and Execute CAS Commands
- Separate Middleware for processing CAS Commands
- Integration with multiple CAS systems
- All commands are on real-time basis
- Blacklisting of STBs
- View Blacklisted STB-VC Details
- Set Default Boot up Channel on STBs
- All Type of CAS Commands Provisioning Log Report with Multiple Criteria

l) SUBSCRIBER HISTORY MANAGEMENT

- Transaction History
- Life Cycle History
- Activation History
- User information who has done the transaction
- Device Life cycle history
- Invoices are available for 6 months
- Billing information history
- Data maintained for 2 years User Activity Log Reports

m) REPORTS

- Total Active STB Count on Dashboard According Permission
- Total In-Active STB Count on Dashboard According Permission
- Total STB & VC Stock Count on Dashboard According Permission
- Total Number of Product & STB Expiring Detail till Given Future Date on Dashboard According Permission.
- Today's Fresh Activation Count on Dashboard According Permission
- Today's De-Activation Count on Dashboard According Permission
- Today's Re-Activation Count on Dashboard According Permission
- Today's Product Addition Count on Dashboard According Permission
- Today's Product Removal Count on Dashboard According Permission
- Total Active & Inactive Subscriber's Details with Multiple Criteria
- All Reports with Multiple Criteria (Network Wise, Product Wise, State-City Wise & Broadcaster Wise)
- Complete Inventory Report of STB In Detail wise & Summary Wise
- All, Selective & Single Boxes Current Status With their First Time Activation Date
- Daily Expiry Report with Required Renewal Amount

- LCO Ledger Details of Deduction & Reversal with their Respective Activity Heads Information
- Subscriber Ledger Details of Deduction & Reversal with their Respective Activity Heads Information
- STB-VC History Report Transaction Date wise
- Material History Report Transaction Date wise
- STB-VC Pairing & De-Pairing Details Report
- LCO & Subscriber Receipt Details Report
- Periodic Fresh Activation Report
- Periodic De-Activation Report
- Periodic Re-Activation Report
- Periodic Product Addition Report
- Periodic Product Removal Report

n) TRAI & BROADCASTER'S AUDIT REPORTING MODULE

- As-On-Date Active-Inactive Subscriber's Details
- Product wise As-On-Date Active-Inactive Subscriber's Details
- Month End Wise Subscriber's Active-Inactive Historical Details
- As-On-Date Package-Channel Composition Details
- Historical Package-Channels Composition Details (Package Channels Composition Modification Log)
- Product Ageing Report
- Subscriber Ageing Report
- A_la_Carte wise Active STB's Count Report
- Package wise Active STB's Count Report
- Channel Under Package wise STB's Count Report
- Package &A_la_Carte wise Active STBs Count Report
- Unique Channels Wise Active STB's Count Report
- Material wise Active STBs Count Report
- HD & SD wise STB's Active Count Report
- MSO's Overall Subscriber Base Report
- Broadcaster Package Summary Report
- MSO/DPO Package Details (List wise)
- A_la_Carte Channel's Summary Report
- Performance Monitoring report of DPO required by TRAI Performance & Monitoring Module
- CAS Commands Monitoring tool
- Multiple Threading management for simultaneous CAS wise Command execution to handle Bulk Load
- Capacity of processing of 1Lakh transactions or provisioning actions per hour
- System Health Check Monitoring
- CAS-SMS Data Sync Tool
  Add-on Products & Services
- Self-Care Portal with Payment Gateway
- Self-Care Android /iOS Mobile App for Subscribers with Payment Gateway

o) THIRD PARTY INTEGRATION

- CAS Integrations
- Exclusive Payment Gateway Integrations
- 3rd party IVR Integrations
- 3rd party SMS Gateway Integration
- OTT plat form integration

B. CAS REQUIREMENTS:

Security is the core feature of CAS. CAS architecture must allow DPOs to handle all their content security needs for all distribution technologies, consumer devices and security clients in one unified management system. CAS should combine all DVB, IPTV and OTT clients in the same management system which is easy to use, navigate and configure, including an intuitive management system with step-by-step wizards, diagnostics, reporting and extensive audit logging, a comprehensive monitoring system to check the detailed statistics so that potential problems can be detected before they become an issue.

CAS system should have unique flexibility in the system to allow remote activation of new features, enabling easy upgrade of operation.

a. Linear Content

CAS must support all relevant business models for packaging linear content.
- Channel packages
- À la carte
- Rental
- Pay per View
- Supports all Subscription models like open ended, time limited, pre-paid and pre-loaded
- Preview and teaser

b. Time Shifted Content

CAS must enable services that allow the end user to consume time shifted content in several different ways.
- PVR
- nPVR
- Catch-up
- Start-over

c. On Demand Content

On demand services is an essential part of any pay-TV offering. CAS should facilitate to enable both Subscription and Transaction based On Demand Services (VOD and TVOD) for movies, TV-series and other pay-TV content.

d. **Easy Integration to 3rd Party Systems**

CAS should offer extensive and modern features for integrating with 3rd party systems.

e. **Standard features of CAS**

- **Subscription** - To be given access to content for a specified period of time (the subscription period). The subscription period is defined by the SMS - Time-limited subscription and Open-ended subscription.

- **Flexible Subscription -** Flexible subscription gives access to content for desired period and auto expires when subscription period ends.

- **Regional Products -** Enables the operator to define regional products that are sold to only to a region or headend. It is very useful in distributed operations like cable.

- **Chipset Pairing -** Security extension providing a cryptographic coupling between smart cards and STBs. Prevents STB hijacking, SC cloning and CW sharing.

- **Messaging -** User text messages to be displayed on the TV screen, messaging can be sent in different mode like OSD, Mail-Box, Scroll with schedule and repetition. Supports international character sets.

- **Fingerprinting -** A visible text displayed for a limited time on-screen by the STB to identify the CA client of the STB. It can be based on service or clients delivered using both EMM and ECM.

- **Watermarking -** End-to End watermarking solution full filling MovieLabs recommendations

- **Pay Per View -** PPV enables to sell time-limited access to one or more content, such as TV channels and On Demand content.

- **Content usage control -** Specifies how the content can be consumed by the consumer like copy control, trick play control and device sharing.

- **EMM Pull -** Serve EMMs to IP-connected STBs and CAMs upon request from STB with instant activation and no need to wait cycle-time of EMM playout.

- **OTT -** Over-the-top (OTT) is a service offering online delivery of content to a media-enabled, broadband-connected consumer device. Supports all OTT features and devices (IOS, Android Browser)

- **Connected Access -** Connected Access is introducing the next generation IPTV security with a unique security client integrating two-way Cardless CAS and DRM in one single security client

- **Geographical Blackout –** Capability for Geographical Blackout

- **Maturity Rating -** Enabling the end-user to set a PIN code is important to meet some content owner requirements as well as expectations from end-users. This feature will enable the end-user to control the access to content in the home and cover the need for parental control of specific content.

- **Card & Cardless -** High security CA with or without a physical smart card in the STBs must utilize state of the art physically separated secure processors in modern DVB chipsets.

- **CAM Cards -** CA Modules must supports all DVB CI, CI+ standards with integrated CAM option.

- **PVR rules -** Controlling the PVR recordings is an important aspect of the requirements from content owners. CAS should enable to use predefined or customized URI profiles to control the output, set limitation on time and control the availability to copy the recordings.

  - **Time constraints** - Set parameters defining the time constraints on viewing specific PVR content based on content rights. DPO can allow the end-user to have unlimited access to a specific PVR recording or set a clearly defined time restriction. Both the time of playback and time of recording can be used to determine whether the client should be allowed to play the recorded content or not.

  - **Output control** - With the output control DPO can enable or disable analogue outputs, control if recording on outputs are allowed and trigger downscaling of HD content.

  - **Copy control** - Remain in control even after the recording is done by specifying copy restrictions and applying retention limits on digital content. Set parameters to allow or restrict PVR recording and set time limits for how long the end user is entitled to view the individual recording. CAS must enable DPO to apply HDCP where this is required.

  - **Trick play control -** Controlling the trick play options is important for advanced pay-TV services. CAS should enable DPO to apply restrictions on playback, limit the availability of pausing, control the allowed duration for time-shift and block fast-forward functionality during commercials. There are also options to restrict the speed the end-user should be able to jump in the program or deny it all together

- **Device management -** CAS should enable DPO to have complete control over the devices in his operation and master the complexity of different device models. Configure the number of allowed devices per account, and how often it should be allowed to change a device. These settings can be applied globally or per account

and the devices can be either operator or user controlled. The device management can control which content is allowed to which device model by setting device profiles.

- **Messaging -** The messaging feature can be used to send short, alphanumeric messages to one or more subscribers. These messages can be delivered on-screen or to a mailbox and contain promotions, instructions or important customer information. All messages can be delivered immediately or on a scheduled basis.

- **Multiple Operators -** CAS should allow multiple pay-TV operators to share a single installation of one particular CAS. Unlike other optional features, Multi Operator is a system configuration that should allow to register multiple pay-TV operators and optionally share content, secure clients, OTT accounts, and STBs in a secure and controlled manner.

A RANGE OF SECURITY CLIENTS

- **Smart Cards** - The Smart Card is a specialized tamper resistant cryptographic hardware used to control access to content on the client side.

- **Cardless** - The Cardless is a CA client where the CA client runs inside a purpose-built area of the STB chipset instead of in a physical smart card. It is designed to work in one-way broadcast operations and is based on the latest development in STB chipsets providing sufficient hardware security mechanisms to enable secure implementation of the CA client, hardware root of trust.

- **IPTV** - CAS client is the next generation security client for IPTV ready to safeguard premium content over a variety of environments by employing the CAS security hardware root of trust, Trusted Execution Environments (TEE's) and software-only implementations to ensure that operators can reach any device with the highest level of security achievable.

- **OTT Accounts** - An OTT account is used to authorize either one or a collection of OTT client devices such as tablets, smartphones and PCs. The consumer can be enabled to self-manage the devices and add/ remove devices from the OTT account.

C. **General Features CAS & SMS :**

- The CAS and SMS should be integrated in such a manner that activation and deactivation of STBs can happen simultaneously in both the systems.
- It shall not be possible to alter the data and logs recorded in the CAS.
- The DPO should validate that the CAS, in use, does not have facility to activate and deactivate a Set Top Box ("STB") directly from the CAS terminal. All activation and deactivation of STBs should be done with the commands of the SMS.
- The CAS should have the capability of upgrading STBs over-the-air ("OTA") or over-the-cable ("OTC"), as may be applicable, so that the connected STBs can be upgraded.
- The fingerprinting should not get invalidated by use of any device or software.
- The CAS and SMS should be able to activate or deactivate services on STBs of at least 10% of the subscriber base of the distributor within 24 hours.
- The STB and Viewing Card (VC) should be paired from the SMS to ensure security of the channel.
- The CAS and SMS should be capable of individually addressing subscribers, for the purpose of generating the reports, on channel by channel and STB by STB basis.
- The CAS shall be independently capable of generating, recording, and maintaining logs, for the period of at least immediate preceding two consecutive years, corresponding to each command executed in the CAS including but not limited to activation and deactivation commands issued by the SMS.
- The CAS shall be able to tag and blacklist VC numbers and STB numbers that have been involved in piracy in the past to ensure that such VC or the STB cannot be re-deployed.
- It should be possible to generate the following reports from the logs of the CAS:
    - STB-VC Pairing / De-Pairing
    - STB Activation / De-activation
    - Channels Assignment to STB
    - Report of the activations or the deactivations of a particular channel for a given period.

- CAS should be securely integrated with the chipset and implement "Secure Root of Trust". Since the root of trust is a logical target for an attacker, it should be made as secure as possible to safeguard it from compromise. Both chip vendor and CAS vendor should have access to its own 'virtual' security core and perform secure functions without having to 'trust' other entities.

- Fingerprinting:
  - The CAS & STB should support both visible and covert types of finger printing.
  - The finger printing should not be removable by pressing any key on the remote of STB.
  - The finger printing should be on the topmost layer of the video.
  - The finger printing should be such that it can identify the unique STB number or the unique VC number.
  - The finger printing should appear on the screens in all scenarios, such as menu, Electronic Programme Guide (EPG), Settings, blank screen, and games etc.
  - The location, font colour and background colour of fingerprint should be changeable from head end and should be random on the viewing device.
  - The finger printing should be able to give the numbers of characters as to identify the unique STB and / or the VC.
  - The finger printing should be possible on global as well as on the individual STB basis.
  - The overt finger printing should be displayed by the distributor of television channels without any alteration with regard to the time, location, duration and frequency.
  - Scroll messaging should be only available in the lower part of the screen.
  - The STB should have a provision that finger printing is never disabled..

Q2. As per audit procedure (in compliance with Schedule III), a certificate from CAS / SMS vendor suffices to confirm the compliance. Do you think that all the CAS & SMS comply with the requisite features as enumerated in question 1 above? If not, what additional checks or compliance measures are required to improve the compliance of CAS/SMS?

DEN'S RESPONSE :

Regulations required all DPOs to adhere to the minimum criteria/compliances specified under Schedule III of Telecommunication (Broadcasting and Cable) Services

Interconnection (Addressable Systems) Regulations, 2017, a large number of DPOs are still not fully compliant and aware of the technical requirements. As observed by the Authority, unscrupulous vendors of CAS/SMS deploy systems based on non-standard security solutions that are vulnerable to hacking. Accordingly, CAS/SMS system(s) in the case of most DPOs do not adhere to minimum technical requirements thereby resultingin piracy and inconsistency in services to the subscribers *etc.*

In order to keep a check on such non-compliant CAS/SMS vendors as well as DPOs, it is suggested that the Authority should make it mandatory for all the current vendors providing services in India to declare all the versions of CAS/SMS that have been or being installed/deployed by such vendor in the market. This declaration, which has been submitted by the vendors, should then be compared by the Authority, with the monthly/quarterly PMR report(s) submitted by the various DPO(s) to the Authority. However, it is pertinent to note that the submission of monthly/quarterly PMRs is practically restricted to a select major DPOs. Hence, in order to make sure that the aforesaid compliance measure is duly implemented, the Authority must ensure that all DPOs (irrespective of their size) make submissions of monthly/quarterly PMRs.

TRAI should form a Industry lead body consisting of Representative from :

A. TRAI

B. C-DAC

C. DPO's (1 representative each from MSO & DTH ((having minimum 5 mn Subscriber base), to be rotated on yearly Basis)

D. BECIL

E. Technical experts from IIT

F. CAS/SMS Vendor (1 representative each from CAS & SMS (tier 1) , to be rotated on yearly Basis)

The proposed body would be responsible for :

1. laying down the framework for CAS/SMS system to benchmark the minimum requirements of the system to be deployed in India.

2. laying down the framework for registration of all CAS/SMS vendors providing services

in India.

3. laying down certification framework for deployment of new version for CAS/SMS in India.

4. laying down the Audit procedure to randomly check on whether any SMS/CAS vendor is deploying any CAS/SMS in India without registration /certification of his CAS/SMS.

5. laying down norms for banning and taking punitive action against the CAS/SMS vendor for doing business in India, in violation of the framework laid down by the body.

6. laying down the rules /procedure for functioning of the body.

Q3. Do you consider that there is a need to define a framework for CAS/ SMS systems to benchmark the minimum requirements of the system before these can be deployed by any DPO in India?

DEN'S RESPONSE : Defining the framework for benchmarking the CAS / SMS will help DPO to choose the right solution. There are various factors in CAS which differs from vendor to vendor as they use proprietary solution to address the content security. Some of the important factors are listed below.

a. CAS with and without card.
b. Number of packages supported in each card or STB (in case of cardless CAS).
c. Number of package mapping with single channel. All CAS have different limits, DPOs with multiple CAS in simulcrypt environment facing difficulties while designing the packages as per the broadcaster bouquet and regulatory requirements.
d. Some CAS in the market do not allow storage of CAS keys in the STB. This has adverse effect on DPO's QoS when remote headend loses IP connectivity with ECMG & EMMG. In distributed headend infrastructure where Telco links between headend and CAS system gets break due to various reason, in this scenario the STB should work for atleast 2 to 4 days or as long as old ECM is being played out from local headend. Some CAS in the market demand continuous flow of fresh EMMs and new ECMs.
e. Support of number of transactions per second differs from CAS to CAS. This is very important factor when addressing bulk of subscribers in short period of time.

f. Availability of full technical local support in India. Almost all CAS vendors have their experts based out-of-India which affects DPO's QoS as the availability of off-shore resources sometime takes time as they help remotely.

Q4. What safeguards are necessary so that consumers as well as other stakeholders do not suffer for want of regular upgrade/ configuration by CAS/ SMS vendors?

DEN'S RESPONSE : As stated in our response to Q2 , there is a need to have Industry body, for laying down complete framework regarding the same. All SMS/CAS vendors would be required to get themselves registered with the industry body and complete the certification process for both CAS & SMS before deploying it in the Country. This will help all the stakeholders and consumers interest. Certification process will ensure that CAS & SMS vendor has to first certify their product before it is ready for deployment.

Also it should be made mandatory for the CAS/SMS vendor to be registered under Companies Act 2013. This would ensure that the CAS/SMS vendor in case of any default, can be held accountable under Indian Laws. Further their servers should be placed in the territorial jurisdiction of India .

Q5. a) Who should be entrusted with the task of defining the framework for CAS & SMS in India? Justify your choice with reasons thereof. Describe the structure and functioning procedure of such entrusted entity. (b) What should be the mechanism/ structure, so as to ensure that stakeholders engage actively in the decision-making process for making test specifications / procedures? Support your response with any existing model adapted in India or globally.

DEN'S RESPONSE : Kindly refer to our response to Question 2.

An Industry Body comprising of people who have regulatory /technical/operational /audit expertise should be entrusted with the task of defining the framework for CAS & SMS in India .

This would ensure timebound framing of rules and guidelines, as their focus would be only to prepare the framework and to monitor the registration of CAS /SMS vendor and certification process of the CAS/SMS to be deployed in India.

Q6. Once the technical framework for CAS & SMS is developed, please suggest a suitable model for compliance mechanism.

a) **Should there be a designated agency to carry out the testing and certification to ensure compliance to such framework? Or alternatively should the work of testing and certification be entrusted with accredited testing labs empanelled by the standards making agency/ government? Please provide detailed suggestion including the benefits and limitations (if any) of the suggested model.**

DEN'S RESPONSE : The testing and certification can be done by the Industry body appointed for this purpose(refer our reply to question no.2)

b) **What precaution should be taken at the planning stage for smooth implementation of standardization and certification of CAS and SMS in Indian market? Do you foresee any challenges in implementation?**

DEN'S RESPONSE : Once the framework of standardization and certification is in place, already deployed sub-standard CAS & SMS will have to be re-developed as per the framework, get certified and implement the same in DPO's network. In case the already deployed CAS &SMS are not certified within the suggested timeframe of 3 months , intimation to be given to the DPOs using such CAS & SMS , to change the same to a certified alternative CAS/SMS within 3 months of the intimation.

c) **What should be the oversight mechanism to ensure continued compliance? Please provide your comments with reasoning sharing the national/ international best practices.**

DEN'S RESPONSE : As stated in our response to question no. 2, the industry body should lay down a process for certification of any new version of CAS & SMS from the vendors before it is released in India for deployment.

Internationally , all major CAS vendor get their CAS audited. One such noted security agency doing such audits for the CAS is "FRANCOMBE SECURITY AUDIT" (https://www.cartesian.com/services/content-security/farncombe-security-audit/farncombe-security-audit-mark/).

The Industry body can adopt the same set of Audit for CAS being deployed in India .

Q7. Once a new framework is established, what should be the mechanism to ensure that all CAS/ SMS comply with the specifications? Should existing and deployed CAS/ SMS systems be mandated to conform to the framework? If yes please suggest the timelines. If no, how will the level playing field and assurance of common minimum framework be achieved?

DEN'S RESPONSE : Once the new framework is established , all CAS & SMS vendor should get their CAS & SMS alredy deployed , duly certified by the Industry body within 3 months of the framework coming into effect .

In case they donot get their CAS/SMS certified within the timeline of 3 months, they should not be allowed to function in India.

Further intimation to be given to the DPOs using such CAS & SMS , to change the same to a certified alternative CAS/SMS within 3 months of such intimation.

Q8. Do you think standardization and certification of CAS and SMS will bring economic efficiency, improve quality of service and improve end- consumer experience? Kindly provide detailed comments.

DEN'S RESPONSE : Standardization and certification of CAS & SMS will definitely improve quality of service and end-consumer experience. The below mentioned points will further explain:

   a. By deploying right CAS solution end-consumer experience will improve as there will be very less or nil service outage due to sub-standard CAS solution.
   b. Service subscription renewal will be almost instant as standardise SMS will not have any bottle neck in processing multiple transactions from various renewal options like mobile app., website, etc.
   c. Prevent Loss of government revenues.
   d. There would be positive impact on ability of broadcasters to invest in quality content , as they would be able to reaslise higher subscription revenue.
   e. Would prevent cannibalization of subscriber base from distribution platform operators using certified CAS & SMS.

Q9. Any other issue relevant to the present consultation.

   N.A.