Research Design and Standard Organisation
Telecom Section/ S&T Vertical

Reasoned document for Version 2.0 d0 of draft specification No. RDSO/SPN/TC/108/2019 for "IP Based Integrated Passenger Information System" based on the internal review and comments received on specification posted online for 30 days.

S.N.	Clause No of RDSO Specification	Clause, as it exists in RDSO Specificatoin	Comments/Suggestions Received from ZR/Vendors	RDSO Remark	Modified Clause
1.	2.1	The IP Based Integrated Passenger Information System (IPIS) will consist of Firewall, Central Data Controller (CDC) loaded with software for announcement & display, Remote monitoring Software Server (RMS) with Network Monitoring Software (NMS), PDC, LED display (TV), Advance Video Display (AVD) and display boards of different sizes like Single Line, Multiline, At a glance, True color Indoor and outdoor video display, Coach Guidance.	**M/s Audio Visual Digital Systems** The IP Based Integrated Passenger Information System (IPIS) will consist of Firewall, Central Data Controller (CDC) loaded with software for announcement & display, Remote monitoring Software Server (RMS) with Network Monitoring Software (NMS), PDC, LED display (TV), Advance Video Display (AVD) and display boards of different sizes like Single Line, Multiline, At a glance, True color Indoor and outdoor video display, Coach Guidance along with facility backward compatibility with 108 Ver 0, 1. **Justification:** Many systems are already installed in Indian Railways as per RDSO 108 V0, V1. Maintaining backward compatibility with the same is must. As in the current specifications protocols and data transmission method is completely changed, so we need to device a mechanism to cater the newly installed systems of the same generation, that is, 108 V0, V1. For this we need to have provision for V0 & V1 protocols also in the system.	Agreed	The IP Based Integrated Passenger Information System (IPIS) will consist of Firewall, Central Data Controller (CDC) loaded with software for announcement & display, ~~Remote monitoring Software Server (RMS) with~~ Network Monitoring Software (NMS), PDC, LED display (TV), Advance Video Display (AVD) and display boards of different sizes like Single Line, Multiline, At a glance, True color Indoor and outdoor video display, Coach Guidance along with facility of backward compatibility with all older IPIS system installed as per previous version of specifications i.e. RDSO/SPN/TC/108/2019 and RDSO/SPN/TC/61.
2.	2.8	Advance Video Display Boards (AVD) is a very compact and rugged 4 mm LED Video wall for railway environments. It shall display the train Information as done by multiline boards.	**A. Paul Software Systems Pvt Ltd.** We recommend sunlight readable LCD's of similar size, which will come at nearly the same cost but have a far higher reliability, instead of LED based video wall/ display. The look and feel will be dramatically better, energy consumption become 1/10th - this will help railway get closed to its net zero goals and the display will pay back system cost is less than 2 years, while giving a better look and feel.	Not Agreed	No change
3.	2.10	All devices shall be connected at the station with LAN network. LAN network shall be arranged by the purchaser	**1. South East Central Railway** All devices shall be connected at the station with LAN network with path diversity with redundant OFC and CAT Cable. LAN network shall be arranged by the purchaser. **Justification:** In case of cable fault/cut, services will not be interrupted. **2. M/s Audio Visual Digital Systems** All devices shall be connected at the station with LAN	1. Zonal Railway can decide on path diversity 2. LAN Network shall be arranged by user	No change

			network. **Justification:** LAN network is never arranged by the purchaser. It is either existing or laid down in the schedule of tender.	Railway	
4.	2.11	CDC shall host an open REST API to disseminate train information data and messages to display boards on demand, this will replace the older methods of push type data communication and shall ease out interoperability among vendors.	**M/s Audio Visual Digital Systems** CDC shall host an open REST API to disseminate train information data and messages to display boards on demand. Along with it shall have provision for 108 V0, V1 display boards also. **Justification:** Interoperability with older systems is also desired, like V0, V1. Need to incorporate the same also.	Agreed	CDC shall host an open REST API to disseminate train information data and messages to display boards. CDC shall also be able to disseminate train information data and messages to all older versions of IPIS system i.e. RDSO/SPN/TC/108/2019 and RDSO/SPN/TC/61 to ensure interoperability with older versions.
5.	2.12	All display boards shall have provision for LED short and open detection feature, the display board shall host a http webserver within itself which can be viewed using any of the shelf browser like chromium, MS Edge, Opera etc.	**1. South East Central Railway** All display boards shall have provision for LED short and open detection feature, the display board shall host a https web server within itself which can be viewed using any of the shelf browser like chromium, MS Edge, Opera etc. **Justification:** CDC hosting an open REST API must have https web server not in http as it is not secure. **2. Matsushi Power Technologies** All display boards shall feature an automated LED short and open circuit detection system, capable of self-diagnosis and reporting faults to the CDC. The system shall log detected anomalies in the CDC's central monitoring dashboard for proactive maintenance. **3. A. Paul Software Systems Pvt Ltd.** All LED display boards shall have provision for LED short and open detection feature, the display board shall host a https webserver within itself which can be viewed using any of the shelf browser like chromium, MS Edge, Opera etc. Additionally, the fault information should be available over an API at the CDC. **4. General Auto Electric Corporation** It will be over engineering and it will lead to raise the cost of all display boards and IPIS system. It is better if System just check data is actually displaying on board or not using feedback from display boards. **5. Applied Electro Magnetics (P) Ltd., Noida** The format for the webpage should be same across all vendors, it should be possible to replicate the latest image displayed over the display and provision for programming the board configuration via a GUI available on the web page. **Justification:** The format for the webpage should be same across all	Agreed	All display boards shall have provision for LED short and open detection feature, the display board shall host a https web server within itself which can be viewed using any of the shelf browser like chromium, MS Edge, Opera etc. Additionally, the fault information should be available over an API at the CDC. The system shall log the detected anomalies in the NMS for proactive maintenance.

			vendors, it should be possible to replicate the latest image displayed over the display and provision for programming the board configuration via a GUI available on the web page		
6.	2.13	The http webserver hosted inside the display board shall be capable to configure the display board parameters like Board Type, PF No, IP address etc. by using GUI over the commonly used browsers and must be password protected at OEM level.	**1. South East Central Railway** The https webserver hosted inside the display board shall be capable to configure the display board parameters like Board Type, PF No, IP address etc. by using GUI over the commonly used browsers and must be password protected at OEM level. **Justification:** CDC hosting an open REST API must have https web server not in http as it is not secure. **2. Western Railway** Operating system once installed at station to be handed over to the operator with Separate "User" Account Profile. Main "Administrator" Profile to be used only by System Engineer/Telecom maintenance Personnel. No software installation permitted with Operator's User Account. All unused port to be disabled. This is to be proposed to accommodate Cyber Security Guideline based best practice and prevention of installation of unauthorized software on Connected systems/PC. **3. M/s Audio Visual Digital Systems** Delete **Justification:** If we allow configuration of such parameters from any browser, then we have to do it individually. On the contrary, we should have ID Info Table, in which we should define attributes of any LED Display Board and that way in a tabulation way we will have attributes of all IDs at once place. **4. M/s Matsushi Power Technologies** Each display board shall host a secure HTTPS web server with a role-based access control (RBAC) system to allow different user privilege levels (Admin, Maintenance, Read Only). Role-based access control (RBAC): 1. Admin → Full control over board parameters. 2. Maintenance → View and modify limited settings 3. Read Only→ Only view settings **5. M/s A. Paul Software Systems Pvt Ltd.** The https webserver hosted inside the display board shall be capable to configure the display board parameters like Board Type, PF No, IP address etc. by using GUI over the commonly used browsers and ~~must be password protected at OEM level~~ support digest	Agreed	The https webserver hosted inside the display board shall be capable to configure the display board parameters like Board Type, PF No, IP address etc. by using GUI over the commonly used browsers and must be password protected at OEM level. Operating system once installed at station to be handed over to the operator with Separate "User" Account Profile. Main "Administrator" Profile to be used only by System Engineer/Telecom maintenance Personnel. No software installation permitted with Operator's User Account. All unused port to be disabled.

			based authentication mechanism.		
7.	2.14	The display shall periodically test the LED open / short status once in a day preferably when train data is not available or mainly during night between 1:00 AM – 3:00 AM once every day and the same status shall be stored until next cycle, this information must be available when the website hosted inside the display is viewed by the user/administrator	**M/s Audio Visual Digital Systems** The display shall periodically test the LED open / short status once in a day preferably when train data is not available or mainly during night between 1:00 AM – 3:00 AM once every day and the same status shall be stored until next cycle, this information must be available when the website hosted inside the display is viewed by the user/administrator. Also, user can also check the status of LEDs from CDC software and also automatic LED checking time should be user configurable. **Justification:** User should have the facility to check the LED status and also automatic LED checking time should be user configurable	Agreed	The display shall periodically test the LED open / short status once in a day preferably when train data is not available or mainly during night between 1:00 AM – 3:00 AM once every day and the same status shall be stored until next cycle, this information must be available when the website hosted inside the display is viewed by the user/administrator. User shall be able to check the status of LEDs from CDC software and NMS. Also, automatic LED checking time shall be user configurable.
8.	2.15	All Display board used in the IPIS system shall have unique MAC address issued by IEEE and can be linked to the manufacturer under license.	**M/s Audio Visual Digital Systems** Delete **Justification:** Not required to be defined in the specs	Unique MAC address will ensure no conflict between different display boards.	No change
9.	2.16	If tenderer is an OEM of IPIS then an undertaking for technical support for post commissioning maintenance problems, failures of equipment including after sale support and also providing necessary upgrades of software free of cost as required due to upgradation of specification of IPIS from time to time throughout the life of the equipment to be submitted along with submission of the tender.	**1. Applied Electro Magnetics (P) Ltd., Noida** Software upgrades shall be automatically available without any user intervention. **Justification:** It shall be the responsibility of the OEM to upgrade the software time to time whenever required free of Cost. **2. Partronics eBoards Private Limited** If tenderer is an OEM of IPIS then an undertaking for technical support for post commissioning maintenance problems, failures of equipment (hardware under warranty) including after sale support and also providing necessary upgrades of software free of cost as required due to upgradation of specification of IPIS from time to time throughout the life of the equipment to be submitted along with submission of the tender. **Justification:** The undertaking may cause confusion that any hardware failure is to be also rectified till the codal life of the equipment without any AMC. **3. South Western Railway** If tenderer is an OEM of IPIS then an undertaking for technical support for post commissioning maintenance support, failures of equipment including after sale support and also providing necessary upgrades of software free of cost as required due to upgradation of specification of IPIS from time to time throughout the life of the equipment to be submitted along with	Agreed. Software up gradation shall be free of cost throughout the codal life of IPIS system and hardware failure replacement/maintenance shall be provided throughout post-commissioning maintenance	~~If~~ The OEM shall provide ~~is an OEM of IPIS then an undertaking shall be submitted along with submission of the tender for technical support for hardware failure replacement (under warranty)/maintenance throughout post-commissioning maintenance period. Also providing~~ necessary software upgrades free of cost throughout the codal life of the equipment, as and when required, due to up gradation of IPIS specification from time to time.

			submission of the tender. Clarity is required regarding the terms of "free of cost" in the undertaking for software upgrades and post-commissioning maintenance, especially in relation to the warranty clause.		
10.	New clause proposed		**RDSO Review** All the IPIS devices and system shall support SNMPv3 protocol and protocol converter (if required) shall be provided at Edge NMS for existing or old IPIS specification.	As NMS is introduced, all device shall support SNMPv3 protocol	All the IPIS devices and system shall support SNMPv3 protocol. Also protocol converter (if required) shall be provided at Edge NMS for existing or old IPIS specification.
11.	3.1 (j)	Firewall	**1. M/s Audio Visual Digital Systems** Delete **Justification:** Firewall is part of Windows 11 OS also. So, it will be extra burden to the Railways and enhancing SKU.	Not Agreed. Firewall is must as per Meity guidelines.	No Change
12.	3.2.2 b)	Min. 16 GB or higher RAM	**A. Paul Software Systems Pvt Ltd.** Min. 32 GB or higher RAM	Not Agreed	No Change
13.	3.2.2) 3.2.2 j)	The CPU of CDC shall be of industrial grade & reputed make having following minimum configuration 2 GB Graphic card (If not inbuilt in CPU)	**1. M/s Audio Visual Digital Systems** The CPU of CDC shall be of reputed make having following minimum configuration j) Delete **Justification:** Industrial is not needed, as this limits the option. Instead we can use standard Desktop PCs as available in the market or even Server of 1U, 2U height can also be considered. Graphic capabilities are already there. Previously since dual display was used, it was required. But, now not required to mention exclusively. **2. Applied Electro Magnetics (P) Ltd., Noida** The CPU of CDC shall be of Tower type workstations, which are made for the 24x7 working capacity of HP/DELL or any other reputed make having following minimum configuration **Justification:** There is only one industrial grade PC supplier, so many times we have to wait to get the delivery of the material, while the tower workstations are easily available in market of HP/DELL make, with 3 yrs on site warranty, which is beneficial for both supplier and railways as	Not Agreed Partially Agreed	No Change The CPU of CDC shall be of industrial grade/24x7 working capacity & reputed make having following minimum configuration.
14.	3.2.2 g)	Audio Input /Output ports	**1. A. Paul Software Systems Pvt Ltd.** VOIP (SIP protocol) based audio system, which is a standard in all metro and foreign railways should be used. This will allow for Dynamic zone-based broadcasting (e.g., on common areas, on different platforms etc). Please see our detailed explanation on VOIP based system (Attached) which are more robust, support multizone configurability (Announce on one	Not Agreed. PA system is not the part of IPIS specs.	No Change

			platform's one area only to reduce unnecessary noise generation in silent zones), have far clearer speech, can be integrated into an extranet and other sub systems.		
15.	3.2.4	It should be possible to operate CDC from a suitable control center or enquiry office, preferably a dust free or AC environment.	**M/s Audio Visual Digital Systems** It should be possible to operate CDC from a suitable control center or enquiry office, preferably a dust free or AC environment. Railways to ensure the same. **Justification:** At stations proper place to keep the system must be provided by the Railways to ensure trouble free operation.	Agreed	It should be possible to operate CDC from a suitable control center or enquiry office, preferably a dust free or AC environment. User Railway to ensure the same.
16.	3.2.6	The Audio output for PC based announcement shall be connected to existing audio amplifier of public address system eliminating any ground noise or hum.	**A. Paul Software Systems Pvt Ltd.** VOIP systems are entirely immune to AC hum being digital communication. it is a standard in all Metro applications. VOIP (SIP protocol) based audio system as the default option to allow for Dynamic zone-based broadcasting (e.g., on common areas, on different platforms etc. as explained in the note attached. CDC shall host a SIP server to distribute the audio. PDC may act as the SIP clients connecting to CDC to get real time audio and distributing audio at the end point. SIP based loudspeakers would be a bigger game changer, allowing power distribution over IP cabling itself, instead of shielded analog cabling. The entire PA and PIs system will follow ethernet methods.	Not Agreed. PA system is not the part of IPIS specs.	No Change
17.	3.2.7	UPS of minimum 1 KVA with minimum 25 minutes battery backup on 0.8 KVA shall be provided for uninterrupted operation of the CDC.	**Applied Electro Magnetics (P) Ltd., Noida** UPS of 1KVA with minimum 25 minutes battery backup shall be provided for uninterrupted operation of the CDC material like PC's, Monitor, Speakers, CDS, KVM Switch etc. If there is any other rating or battery backup is specified by the purchaser then the mentioned specifications are to be followed. **Justification:** In most of the tenders the purchaser mentioned different rating UPS with different backups.	Minimum requirements for UPS are specified. However zonal railways can define better configuration as per their requirement.	No Change
18.	3.2.12	Integration with NTES	**South Western Railway** While the specification covers integration with NTES (National Train Enquiry System), it lacks provisions for clear status indication. Add a prominent visual indicator on operator interfaces showing NTES connection status (up/down) include timestamp of last successful data synchronization with NTES i. Add automated alerts when connection is lost or restored ii. Provide fallback procedures for manual data entry when NTES connection is unavailable. **Hardware requirements and changes required in system architecture diagram in annexure D** In Reference for Main Software Home Screen Diagram-1, default operation shall be in NTES so that	Agreed. Already included in main software home screen. Already included in clause no. 2.13.	Already included in Diagram 1 and clause no. 5.1.13.

			the user will not be using CGDB option and NTES link up or down shall be written on the screen like earlier version. i. PF changing option shall be given to the IPIS user and the data fed in IPIS system shall be updated in NTES automatically. ii. The http webserver hosted inside the display board shall be capable to configure the display board parameters like Board Type, PF No, IP address etc. by using GUI over the commonly used browsers and must be password protected at OEM level and the password shall be shared with S&T.		
19.	3.2.12.1	System shall be fully equipped with suitable hardware & software to acquire updated data of running trains from NTES via NTES REST API 951 & 952 using HTTPS protocol or any central server.	**RDSO Remark** System shall be fully equipped with suitable hardware & software to acquire updated data of running trains from NTES via NTES REST API 951 & 952 using HTTPS protocol or any central server. The Time interval for fetching of data from NTES shall be minimum 1 minute.	Included as per minutes of meeting dated 20.02.2025 issued by Railway Board.	System shall be fully equipped with suitable hardware & software to acquire updated data of running trains from NTES via NTES REST API 951 & 952 using HTTPS protocol or any central server. The Time interval for fetching of data from NTES shall be 1 minute.
20.	3.2.13	Integration with CAP	**South Western Railway** The specification mentions integration with CAP (Common Alerting Protocol) via C-DOT in clause 3.2.13, but does not address network connectivity issues. Concerns and Suggestions: i. C-DOT systems are not currently part of the Railnet network, creating potential connectivity challenges ii. Implementation of secure data transmission between isolated networks needs to be addressed Recommendation: i. Utilize Internet Public IP addressing with appropriate security measures to enable communication between C-DOT systems and the IPIS network. ii. Implement a well-defined API gateway with proper authentication for secure cross-network communication. iii. Consider adding firewall rules and security protocols specifically for this external integration.	SOP for implementation of CAP in IPIS to be issued by Railway Board.	No Change
21.	3.2.13.3	Common Alerting Protocol (CAP) API shall be provided by C-DOT (Centre for Development of Telematics) of the Department of Telecommunications (DoT), Ministry of Communications, Government of India. Any change in data protocol shall be updated time to time.	**M/s Audio Visual Digital Systems** Common Alerting Protocol (CAP) API shall be provided by C-DOT (Centre for Development of Telematics) of the Department of Telecommunications (DoT), Ministry of Communications, Government of India. **Justification:** If any change in protocol is notified, then it will depend on what is to be changed.	Not Agreed	No Change

			Accordingly in future it should be decided.		
22.	3.2.14	CDC shall host an API which shall provide train information details to display boards.	**A. Paul Software Systems Pvt Ltd.** CDC shall host an API which shall provide train information details to the display boards and shall also receive fault and health data from each display board and VOIP speaker.	Partially agreed	CDC shall host an API which shall provide train information details to the display boards and shall also receive fault and health data from each display board.
23.	3.3.4	CDS shall be of industrial grade & reputed make like HP, CISCO, Juniper, Brocade, IBM, Alcatel, Lucent, Avaya, Netgear, D-link, Moxa, Phoenix Contact, Digisol etc. or any other similar make. Note: Local content (LC) shall be as per Table-A (List of telecom product, Services and works) issued by Department of Telecommunications, Ministry of communications vide notification published in the Gazette of India Extraordinary (Part I Sec. I), New Delhi, 21st October 2024.	**M/s Audio Visual Digital Systems** CDS shall be of reputed make like HP, CISCO, Juniper, Brocade, IBM, Alcatel, Lucent, Avaya, Netgear, D-link, Moxa, Phoenix Contact, Digisol etc. or any other similar make. Note: Local content (LC) shall be as per Table-A (List of telecom product, Services and works) issued by Department of Telecommunications, Ministry of communications vide notification published in the Gazette of India Extraordinary (Part I Sec. I), New Delhi, 21st October 2024. **Justification:** Industrial is not needed, as this limits the option. Instead we can use standard L3 switched as per the make mentioned. **Western Railway** Note: Local content (LC) shall be as per Table-A (List of telecom product, Services and works) issued by Department of Telecommunications, Ministry of communications vide notification published in the Gazette of India Extraordinary (Part I Sec. I), New Delhi, 29th August-2018 21st October 2024. Add or latest as issued by DoT. **South Western Railway** Compliance with TTP (Trusted Telecom Portal) guidelines established by NSCS may be made mandatory for IPIS equipment procurement to ensure network security and trusted sourcing.	Not Agreed. CDC is used at stations with extreme conditions therefore CDC shall be of industrial grade. Agreed. Already included in ATF.	CDS shall be of industrial grade & reputed make like HP, CISCO, Juniper, Brocade, IBM, Alcatel, Lucent, Avaya, Netgear, D-link, Moxa, Phoenix Contact, Digisol, WatchDog etc. or any other similar make. Note: Local content (LC) shall be as per Table-A (List of telecom product, Services and works) issued by Department of Telecommunications, Ministry of communications vide notification published in the Gazette of India Extraordinary (Part I Sec. I), New Delhi, 21st October 2024 or latest as issued by DoT.
24.	3.4	Platform Data Controller (PDC)	**M/s Audio Visual Digital Systems** Delete **Justification:** We are using L2 switch. Instead, it can be a simple L2 switch for every Platform. This will ensure maintainability and will reduce MTBF. Also, this will reduce the complexity of architecture. With Platform switch our options are not limited and we can have as many IPs through VLAN at CDC side.	Not Agreed. PDC requires pulling data from CDC which is not possible with normal L-2 Switch.	No Change
25.	3.4.3	The Platform Data Controller shall have Layer-2 switch compatibility features for routing packets between CDC and field devices like Platform display boards, At a Glance Display Board and Coach Guidance display boards.	**Partronics eBoards Private Limited** The Platform Data Controller shall have Layer-2 switch compatibility features for routing packets between CDC and field devices like Platform display boards, At a Glance Display Board and Coach Guidance display boards. The PDC should be able to connect in a ring network with all other PDC and CDS. **Justification:** Ring network support should be	Already included in specification. Please see Annexure 'D'.	No Change

			explicitly mentioned.		
26.	3.4.4	The Platform Data Controller shall periodically hit the REST API hosted in CDC and gather data for the specific platform.	**General Auto Electric Corporation** What should be the periodically hit frequency? Suppose if it is 10,20,30 sec then every PDC hit API of CDC after each 10/20/30 Sec for same train data. This may create unwanted traffic on Network.	As discussed in vendor meet, the periodically hit frequency shall be at a fixed interval of 5 Second.	The Platform Data Controller shall periodically hit the REST API hosted in CDC and gather data for the specific platform at a fixed interval of 5 Second.
27.	3.4.8	Connectivity of coach guidance display shall be on daisy chain like structure and in case of failure (like power down of specific pole) of any device, extension of communication link shall not be affected. Also, in case of removal of any Display Board for repair it should not affect working of other display Boards.	**Applied Electro Magnetics (P) Ltd., Noida** Connectivity of coach guidance display shall be done on daisy chain like structure through junction box only to work the other display boards if one is failed. Junction box is mandatory to install with every coach guidance display board. Justification: Junction boxes shall also be the part of the display boards and the structure shall also be defined for all vendors as it creates confusion in field because all are using the different technics to comply this feature.	Agreed. As discussed in vendor meet.	Following three new clauses introduced as below; 3.4.8.1 Daisy chain structure and CGD connectivity shall be achieved using separate junction box which shall bypass the connectivity to next unit in case of power down. 3.4.8.2 Junction Box shall have Minimum one input and 2 output ethernet ports. 3.4.8.3 When Power to Junction box is available it shall act as an active ethernet switch.
28.	3.4.14	All Optical ports of PDC should be standard SC or LC type connector.	**1. Partronics eBoards Private Limited** All Optical ports of PDC should be fully loaded with standard SC or LC type connector. **Justification:** It is not mentioned that PDC should be supplied with optical modules or not. If it is supplied fully loaded then it will be beneficial for Railways. **2. South Western Railway** All Optical ports of PDC should be standard SC or LC type connector. (SC-APC connector may be used.)	Agreed Agreed	All Optical ports of PDC shall be fully loaded standard SC or LC type connector. SC-APC or LC-APC connector may be used.
29.	3.5.1 b)	Character Size for coach composition data display: For English, the character size shall be preferably of 12x7 LED matrix. There should be a gap of minimum 16x1 LED matrix between two consecutive characters and 16x3 LED matrix between two consecutive words. However, actual character size may depend on type of font used.	**General Auto Electric Corporation** English Coach Character size 12x7 is very less compared to earlier 7x5 because led pitch is 5mm now.	Not Agreed	No Change
30.	3.5.3	All mono color display boards shall be protected with U.V. stabilized polycarbonate sheet having thickness of 3mm ± 0.3mm for better visibility and protection against dust/Rain.	**RDSO Review** Matte finish film and antiglare features added for better visibility	For better visibility	All mono color display boards shall be protected with U.V. stabilized polycarbonate sheet with matte finish film and antiglare features having thickness of 3mm ± 0.3mm for better visibility and protection against dust/Rain.
31.	3.5.7	The housing of various display boards should be made of Cold Rolled Closed Annealed (CRCA) Sheet of minimum 1.2	**RDSO Review** The housing of various display boards should be made of Aluminium Sheet of minimum 2.0 mm thickness. It	Aluminium sheet is lightweight and resistant to	The housing of various display boards should be made of ~~Cold Rolled Closed Annealed (CRCA)~~ Aluminium Sheet of

		mm thickness. It should be powder coated in black color to protect from rust.	shall be powder coated in black color to protect from rust.	corrosion.	minimum ~~1.2~~ 2.0 mm thickness. It ~~should~~ shall be powder coated in black color to protect from rust.
32.	3.5.8	**Mechanical Dimensions of Display Board** Multiline display board (Single Color) (For Min 2 lines) 3550(L) ± 10 x 600(H) ± 5 x 130 (D) ± 5 - **Single sided**. 3550(L) ± 10 x 600(H) ± 5 x 180(D) ± 5 - **Double sided**. Gap between two adjacent lines: 80 ± 5 Increase in Height for each additional line: Max 240 Single line display board 3550(L) ± 10 x 350(H) ± 5 x 130(D) ± 5 - **Single sided**. 3550(L) ± 10 x 350(H) ± 5 x 180(D) ± 5 - **Double sided.** At-a-glance display board 2150(L) ± 10 x 500(H) ± 5 x 130 (D) ± 5 **- Single sided** 2150(L) ± 10 x 500(H) ± 5 x 180 (D) ± 5 - **Double sided** Coach guidance display board540(L) ± 5 X 250(H) ± 5 X 200 ± 5 (Depth Top) & 178 ± 5 (Depth Bottom)	**M/s Audio Visual Digital Systems** Multiline - 3550(L) ± 10 x 600 (H) ± 5 x 150 ± 5 – Single Sided 3550 (L) ± 10 x 600 (H) ± 5 x 200 (D) ± 5 – Double Sided Gap between two adjacent lines: 80 ± 5 Increase in height for each additional line: Max 240 Single line display board 3550(L) ± 10 x 350(H) ± 5 x 150(D) ± 5 - Single sided. 3550(L) ± 10 x 350(H) ± 5 x 200(D) ± 5 - Double sided. At-a glance display board 2150(L) ± 10 x 500(H) ± 5 x 150(D) ± 5 - Single sided 2150(L) ± 10 x 500(H) ± 5 x 200(D) ± 5 - Double sided Justification: Dimensions should be kept as it is as density and number of LEDs have increased which will result in greater heat dissipation.	Agreed. As discussed in vendor meeting, Existing dimensions restored.	Multiline - 3550(L) ± 10 x 600 (H) ± 5 x 150 ± 5 – Single Sided 3550 (L) ± 10 x 600 (H) ± 5 x 200 (D) ± 5 – Double Sided Gap between two adjacent lines: 80 ± 5 Increase in height for each additional line: Max 240 Single line display board 3550(L) ± 10 x 350(H) ± 5 x 150(D) ± 5 - Single sided. 3550(L) ± 10 x 350(H) ± 5 x 200(D) ± 5 - Double sided. At-a glance display board 2150(L) ± 10 x 500(H) ± 5 x 150(D) ± 5 - Single sided 2150(L) ± 10 x 500(H) ± 5 x 200(D) ± 5 - Double sided
33.	3.5.9	Sun guard/ rain hood made of CRCA Sheet of minimum 1.2 mm thickness shall be provided on the top of all type of display boards to protect them from direct sun light, rain and dust.	**1. Western Railway** in addition/ replacement to CRCA: FRP Material may be proposed for hood. It does not undergo corrosion and thus is more suitable. Already the signal unit and TLJB are made of FRP. **2. M/s Audio Visual Digital Systems** Sun guard/ rain hood made of CRCA Sheet of minimum 1.2 mm thickness shall be provided on the top of all type of display boards even in shed area and wherever possible to protect them from direct sun light, rain and dust. For locations like wall or if at any location shed is being obstructed then it can be left on such locations. **Justification:** It should be provided on all type of display boards irrespective of the location, if and only if, shed can be placed. For example, on walls if not possible then it may be left. **3. Applied Electro Magnetics (P) Ltd., Noida** Sun guard/ rain hood made of CRCA Sheet of minimum 1.2 mm thickness shall be provided on the top of the display boards which are installed outside shed area to protect them from direct sun light, rain and dust.	Not Agreed. Not Agreed. Not Agreed.	No Change

			Justification: The sun guard for all type of boards which are installed in covered area is increasing the cost of the product, which it is completely unnecessary as the boards are already covered. However, it is necessary only for the boards which are installed outside covered area of the platform		
34.	3.5.10	Train No (Gap) Train Name (Gap) EDT (Gap) EAT (Gap) PF No	**M/s Audio Visual Digital Systems** Train No (Gap) Train Name (Gap) EAT (Gap) EDT (Gap) PF No **Justification:** Typographical error	It is already there in spec	No Change
35.	3.5.19	CGDB shall be double faced & other Display Boards can be single or double faced as specified by the purchaser. However, if not specified default will be double face.	**1. M/s Audio Visual Digital Systems** CGDB shall be double faced & other Display Boards can be single or double faced as specified by the purchaser. However, if not specified default will be single face. **Justification:** By default Display Boards should be single face as mainly 3 line, 4 line, 5 line, 10 line and other multiline display boards are erected on the walls. Also, in tender if Railways wants specifically double face, they do mention the same. 2. **Partronics eBoards Private Limited** CGDB shall be double faced & other Display Boards can be single or double faced as specified by the purchaser. However, if not specified default will be single. **Justification:** Changing the default from single face to double face will cause huge confusion in all divisions during tendering as the wordings and rate references are used from previous LOA's	Agreed Agreed	CGDB shall be double faced & other Display Boards can be single or double faced as specified by the purchaser. However, if not specified default will be single face.
36.	3.6	General Requirements of True Color Video Display Board (OVD, IVD & AVD)	**Areca Embedded Systems Pvt Ltd.** 1. We suggest refresh rate of 3840Hz for all LED true colour displays. 2. Frames per sec 30 fps.	Not Agreed. As discussed in vendor meet, for measuring the refresh rate and frames per sec, specific tools are required which are very expensive and not included in the STR. However new clause added for flicker free display.	New Clause added 3.6.11.6 The display shall be flicker-free to ensure stable and comfortable visual performance under all operating conditions.
37.	3.6.1	The LED video display board shall be made up of multiple LED modules and cabinets. Each module shall consist of LEDs and respective drivers. LED modules/cabinets shall be arranged vertically and horizontally to construct the actual display. These LED modules shall be interchangeable and shall	**A. Paul Software Systems Pvt Ltd.** We suggest switching to high reliability Sunlight readable LCD's that come at a fraction of the cost, consume 10% of the energy and have far better aesthetics. Matrix based structures are an obsolete technology that is getting phased out in most equivalent applications in new infrastructure being	Not Agreed	No Change

		be used anywhere.	developed worldwide. They also support advertising.		
38.	3.6.2	LED Display module shall be manufactured using 16 X 48 LED matrix.	**1. A. Paul Software Systems Pvt Ltd.** Redundant clauses in case LCD based true color displays. **2. Areca Embedded Systems Pvt Ltd.** We suggest for IVD OVD Only	Not Agreed Already included in specs	No Change
39.	3.6.3	Pitch for OVD shall be 8mm ± 0.1mm, Pitch for IVD shall be 6mm ± 0.1mm and pitch for AVD shall be 4mm ± 0.1mm.	**A. Paul Software Systems Pvt Ltd.** The finer pitch of LEDs requires a better electronics infrastructure for production. This necessitates a revision in the STR and the incorporation of additional plant and machinery, including 3D Solder Inspection Systems and Automatic Optical Inspection machines. To ensure proper solder joints, the SMT process should be carried out in a Class-8 clean room with an appropriate particle counting inspection system.	Partially Agreed.	Pitch for IVD and OVD shall be ~~8mm~~ 7mm± 0.1mm, ~~Pitch for IVD shall be 6mm ± 0.1mm~~ and pitch for AVD shall be 4mm ± 0.1mm.
40.	3.6.4	Glass filled nylon / PC-ABS based LED trays shall be used to fix LED panels.	**Partronics eBoards Private Limited** Glass filled nylon / PCABS based LED trays shall be used to fix LED panels for IVD and OVD. Justification: Glass filled nylon / PCABS based LED trays are not required for AVD	Partially Agreed	Glass filled nylon / PC-ABS based LED trays shall be used to fix LED panels for all display boards.
41.	3.6.9	Display Board cabinet shall be made up of minimum 1.2 mm thick CRCA sheet with powder coating.	**RDSO Review** Display Board cabinet shall be made up of minimum 2.0 mm thick Aluminium sheet with powder coating.	Aluminium sheet is lightweight and resistant to corrosion.	Display Board cabinet shall be made up of minimum ~~1.2~~ 2.0 mm thick ~~CRCA~~ Aluminium sheet with powder coating.
42.	3.6.11.1	The pitch of Outdoor video display boards shall be of 8 mm± 0.1 mm.	**Central Railway** In RDSO/SPN/TC/108/2019 ver-1, there are two types of True colour display boards with a Pitch 7.5 mm for Indoor Video Display (IVD) and 10 mm Pitch for Outdoor Video Display (OVD). In the proposed draft of ver-2, the pitch is being reduced to 6 mm for IVD and 8 mm for OVD while increasing the total matrix size. For the convenience of Railways at the site, both the boards IVD and OVD Could be of common pitch of 7 mm. This will make boards interchangeable and ease maintenance/rectification. Views of other zones may be obtained. **Applied Electro Magnetics (P) Ltd., Noida** The pitch of Outdoor video display boards shall be of 6 mm ±0.1 mm **Justification:** For better clarity of videos ad train information, the pitch shall be maximum 6 mm.	Agreed Not Agreed	The pitch of Indoor and Outdoor video display boards shall be of 7 mm± 0.1 mm.
43.	3.6.12.1	The pitch of Indoor video display boards shall be of 6 mm± 0.1 mm.	**Central Railway** In RDSO/SPN/TC/108/2019 ver-1, there are two types of True colour display boards with a Pitch 7.5 mm for Indoor Video Display (IVD) and 10 mm Pitch for Outdoor Video Display (OVD). In the proposed draft of ver-2, the pitch is being reduced to 6 mm for IVD and 8 mm for OVD while increasing the total matrix size. For	Agreed	The pitch of Indoor video display boards shall be of 7 mm± 0.1 mm.

			the convenience of Railways at the site, both the boards IVD and OVD Could be of common pitch of 7 mm. This will make boards interchangeable and ease maintenance/rectification. Views of other zones may be obtained. **Applied Electro Magnetics (P) Ltd., Noida** The pitch of Indoor video display boards shall be of 4 mm ±0.1 mm **Justification:** For better clarity of videos ad train information, the pitch shall be maximum 4 mm.	Not Agreed	
44.	3.6.11.5, 3.6.12.3, 3.6.13.3	Pixel Resolution (W x H) for IVD & OVD has been changed Scan rate for AVD, IVD and OVD all are given different	**General Auto Electric Corporation** Display vertical resolution will be become very less. It is require to be at least (576 x 160)/(576 x 320)/(576x480) **Shri Subhash Parasram Electronic Park Pvt. Ltd.** Pixel Resolution (W x H): 576x160, 576x320, 576x480 **Justification:** It is needed to increase led row to maintain the display area as it is. Now, the led pitch is reduced in draft spec. **Partronics eBoards Private Limited** Pixel Resolution (W x H) 576 x 160 576 x 320 576 x 480 Line Height 25 pixels **Justification:** Height parameter in the Pixel Resolution should also be increased to maintain the physical height and increase the display resolution for better image and video clarity. If the height resolution is increased then line height should also be increased. **M/s Audio Visual Digital Systems** Pixel Resolution (W x H) for IVD & OVD to remain as previous Scan rate for AVD, IVD and OVD all can be same, that is, 1:8 scan **Justification:** Current requirements will increase 4 times due to increase in LED matrix and decreasing pitch. Normally it will be very high which will be a problem at Stations. Common scan rate can be used in order to have uniformity. So no need to mention the same. Instensity can be adjusted as per user requirement. **Applied Electro Magnetics (P) Ltd., Noida** The lines of the OVD/IVD shall be 10 Lines/20	Agreed. As discussed in vendor meet. Agreed. As discussed in vendor meet. Agreed. As discussed in vendor meet. Not Agreed Not Agreed	Corrected in table for both IVD and OVD Pixel Resolution (W x H) (576 x 160)/ (576 x 320)/ (576x480) Line Height 25 pixels Scan rate for IVD and OVD shall be 1:4.

			Lines/30 Lines, likewise the pixels of the OVD/IVD will be changed accordingly. **Justification:** For the better video resolution these changes are mandatory. **DAT Informatics Pvt Ltd.** Pixel Resolution (W x H) 576 x 160, 576 x 320, 576 x 480 Line Height 25 pixels **Justification:** To make size closest possible as of existing OVD, increasing height is required.	Agreed	
45.	3.6.13.1	The pitch of Indoor video display boards shall be of 4 mm± 0.1 mm.	**Applied Electro Magnetics (P) Ltd., Noida** The pitch of Outdoor video display boards shall be of 2.5 mm ±0.1 mm **Justification:** For better clarity of videos ad train information, the pitch shall be maximum 4 mm.	Typographical Error	The pitch of Advance video display (AVD) boards shall be of 4 mm± 0.1 mm.
46.	New clause proposed	----	**Partronics eBoards Private Limited** AVD shall be protected with U.V. stabilized Polycarbonate sheet having thickness of 3mm ± 0.3 mm for better visibility and protection against dust/Rain. **Justification:** AVD will be installed at various locations so for added protection against dust/rain polycarbonate protection is must.	Agreed. New Clause added.	3.6.13.4 AVD shall be protected with U.V. stabilized Polycarbonate sheet with matte finish film having thickness of 3 mm ± 0.3 mm for better visibility and protection against dust/Rain and antiglare features.
47.	3.7.2.2	3-in-1 (RGB) SMD type LEDs for Indoor Video Display (IVD) & outdoor Video Display (OVD) shall have the following parameter:	**M/s Audio Visual Digital Systems** OVD LED can be used everywhere for uniformity **Justification:** We can use OVD LED everywhere for uniformity as done in mono displays. Intensity being adjustable as per user requirement. This will ensure broader two categories and less SKUs. Also, in future if any other type of True Color Display Board is introduced it will be easy to build, maintain etc.	Partially agreed, P4 and P7 can-not have same LED. However, Parameters of IVD and OVD are now same.	Corrected in Table of Clause 3.7.2.2
48.	3.8.4	CDC Server shall host a URL (Uniform Resource Locator) for TV display, the smart TV shall call the URL and display the content available in full screen mode.	M/s Infosoft Digital Design and Services Pvt Ltd. CDC Server shall host a URL (Uniform Resource Locator) for TV display, the smart TV shall call the URL and display the content available in full screen mode Justification: New Annexure shall be added to make TV display screen also uniform among all vendors	Agreed. As discussed in vendor meet.	New Clause added : 3.8.4.1 Number of rows to be displayed in TV display shall be configurable between 4 to 8 lines. 3.8.4.2 There should be programmable option to display CGD of trains in rotational manner. 3.8.4.3 There should be programable option to display / hide manual messages. 3.8.4.4 CAP messages whenever arrive shall be displayed at the bottom line. 3.8.4.5 The reference display format for TV display shall be as per reference diagram 1A.
49.	3.9	General requirement for RMS / NMS Server	**1. Central Railway**	Agreed	Refer clause No. 3.9 of specification No.

			IPIS NMS should be capable of checking the following items and generating reports; a. Status of LED matrix of each LED display board. b. Link status of PDC, TADDB, CGDB, and other display boards. c. Station-wise Graphical display with the status of all network equipment. d. Status of power supply unit of each display unit and networking equipment. e. Port status of PDCH. f. Status of audio O/P of CDC. g. Status of Fan of Display Boards. h. Log of NTES connectivity. i. Generations of reports regarding the transfer of data to various display units, live/non-live status of various display units with date & time. Station-wise list of non-functional equipment of display system and PA system. j. Status of CPU of CDC, PDC, TADDB, CGDB. k. Status of daisy chain card of the coach guidance unit. l. Remote updating of train data. m. Load current of the equipment, PDCH, CDC, TADDB, CGDB, etc. **2. South East Central Railway** Remote Monitoring Server (RMS) with NMS software shall be provided at each station for remote monitoring in 1+1 redundancy mode. **Justification:** Redundancy will provide uninterrupted service and better maintenance of the Passenger Amenities system. **3. South Western Railway** The current specification in clause 3.9 indicates that a Remote Monitoring Server (RMS) with NMS software shall be provided at each station. This approach may lead to: i. Redundant infrastructure investments. ii. Increased maintenance requirements. Suggestion: Implement a centralized NMS at Divisional level rather than individual stations. This would: i. Reduce overall hardware and software costs ii. Provide comprehensive network visibility across multiple stations iii. Facilitate easier troubleshooting and maintenance iv. Allow for more efficient resource allocation and utilization.	Edge NMS (E-NMS) and Centralized NMS (C-NMS) specification defined in clause No. 3.9 of specification No. RDSO/SPN/TC/108/2025 Version-2.0 d1. Agreed Noted	RDSO/SPN/TC/108/2025 Version- 2.0 d1.

			v. Single NMS for different vendors. vi. Single RMS at a centralised location for different vendors.		
50.	3.9.4	SNMP based NMS software shall be loaded in RMS to monitor the network devices in IPIS System.	**1. A. Paul Software Systems Pvt Ltd.** It is recommended to define a standardized Management Information Base (MIB) for use with SNMP-based Network Management Systems (NMS). This will ensure interoperability across different vendors by establishing a common set of variables and parameters for monitoring and control. **2. Shri Subhash Parasram Electronic Park Pvt. Ltd.** SNMP based NMS software shall be loaded in RMS to monitor the network devices (CGDB, PFDB, MLDB, AGDB, PDC, TVC, OVD, IVD, ADV, CDC Master/Slave) in IPIS System. The device will be connected with NMS server via SNMP. **Justification:** Monitoring devices is not specified anywhere. So, a list should be mention for which types of devices to be mentioned on NMS. Note: monitoring device list should be mention in the draft.	Not Agreed Agreed.	NMS specs included.
51.	New clause proposed	----	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** IPIS NMS should be capable of checking the following items and generating reports 1. Status of LED matrix of each LED display board. 2. Link status of PDC, TADDB, CGDB, and other display boards. 3. Station-wise Graphical display with the status of all network equipment. 4. Status of power supply unit of each display unit and networking equipment. 5. Port status of PDCH. 6. Status of audio O/P of CDC. 7. Status of Fan of Display Boards. 8. Log of NTES connectivity. 9. Generations of reports regarding the transfer of data to various display units, live/non-live status of various display units with date & time. Station-wise list of non-functional equipment of display system and PA system. 10.Status of CPU of CDC, PDC, TADDB, CGDB. 11.Status of daisy chain card of the coach guidance unit 12.Remote updating of train data. 13. Load current of the equipment, PDCH, CDC,	Agreed	Included in NMS specs as above para

			TADDB, CGDB, etc. **Justification:** Monitoring parameters and its OID is not specify. So, A new clause 3.9.9 should be added. Note: parameter with OID list should be mention in the draft.		
52.	3.9.5	RMS shall have firewall supporting IPS (Intrusion Prevention system)	**M/s Audio Visual Digital Systems** Delete **Justification:** In Windows already Firewall is there.	Not Agreed.	NMS specs included.
53.	3.10	Firewall	**M/s Audio Visual Digital Systems** Delete **Justification:** Already Firewall facility available in Windows.	Not Agreed	No Change
54.	4.4	All the equipment of the system shall be connected on a single network at the station. This network will be connected through CDC. CDC shall be connected to RMS Server & RMS can be connected to Railnet/ any other compatible network for remote monitoring.	**RDSO review** All the equipment of the system shall be connected on a single network at the station. This network will be connected through CDC. CDC shall be connected to NMS ~~RMS Server~~ & NMS ~~RMS~~ can be connected to Railnet/ any other compatible network for remote monitoring.	NMS replaced the existing RMS Server	All the equipment of the system shall be connected on a single network at the station. This network will be connected through CDC. CDC shall be connected to edge NMS ~~RMS Server~~ & edge NMS ~~RMS~~ ~~can~~ shall be connected to Central NMS through Railnet/ any other compatible network for remote monitoring.
55.	4.7	Multiline mono color display board shall be of 2 lines or more and maximum up to 10 lines. Purchaser has to specifically mention the number of lines in each main display board as per site requirement	**M/s Audio Visual Digital Systems** Multiline mono color display board shall be of 2 lines or more and maximum up to 12 lines. Purchaser has to specifically mention the number of lines in each main display board as per site requirement **Justification:** At Big junctions like NDLS, NZM 12-line Display Boards is effective as number of trains are more.	Agreed. As discussed in vendor meet.	Multiline mono color display board shall be of 2 lines or more and maximum up to 12 lines. Purchaser has to specifically mention the number of lines in each main display board as per site requirement
56.	4.13	The Platform Area Display Boards shall periodically hit the PDC API to acquire data.	**M/s Audio Visual Digital Systems** Delete **Justification:** All Display Boards acting as IoT should directly enquire CDC for their data and no middle hardware is required. Already through VLAN we can cater multiple platforms, and already we are doing the same.	Not Agreed. CDC load will increase if every CGS start hitting CDC at every 5 second, so for load distribution its required that PDC host the API specific for platform devices	No Change
57.	4.14	The API hit frequency shall be configurable in the steps of 5 sec minimum.	**General Auto Electric Corporation** There are no chance to change Train data at any station even after each 1 minute because of that to hit API after each 5 seconds can create unwanted traffic on network. Data initiation should be done from CDC only.	Not Agreed	No Change
58.	4.15	The Application shall also generate a Text	**M/s Audio Visual Digital Systems**	Agreed	The Application Software of SPN/TC/108

		file compatible for backward compatibility as described in “Annexure B”.	The Application shall also generate a Text file as was there in RDSO Rev 4 compatible for backward compatibility as described in “Annexure B”. **Justification:** In RDSO Rev 4 Text File integration was there, wherein vendors have to put their software in the background. But, in Rev0 & Rev 1 with the common software and through protocols integrations is happening.		- Ver 2.0 shall also generate a Text file for backward compatibility as described in “Annexure- C”. The CDC software already installed and running as per previous IPIS versions shall be upgraded by their respective OEMs so that the older versions can read the Text file generated as mentioned above and run their respective display devices. All the connectivities shall be managed by the latest version of IPIS software. In case of Multiple IPIS version, the latest version shall be used in frontend and older version will continue to run in backend on the same CDC unit.
59.	4.27	The synchronization between various coaches shall be based on Time division multiplexing	**1. M/s Audio Visual Digital Systems** The synchronization between various coaches shall be based on SSE **Justification:** It is unclear as how synchronization will be achieved. This required further deep thinking as it is vital in CGDB of any platform. We propose Server Sent Events, a feature in REST API. Time division multiplexing will become gray area and will not make CGDB true PnP. **2. General Auto Electric Corporation** Need more details. **3. Shri Subhash Parasram Electronic Park Pvt. Ltd.** The synchronization between various coaches shall be based on Time division multiplexing. All CGS will get the reference time (HH:MM:SS) from PDC or CDC by call the API "http://[PDC IP or CDC_IP]:[PORT]/clock". (See the Annexure-A) **Justification:** Time Division Multiplexing (TDM) is based on the reference clock but no method does is given to get the reference clock to achieve the TDM. **4. Areca Embedded Systems Pvt Ltd.** We need little more clarity how to implement CGDB Time Division Multiplex using API	Not Agreed Discussed in vendor meet. Reference clock specified in A.6. Discussed in vendor meet.	No Change
60.	4.32	Display board of IPIS of various vendors shall be interoperable and plug and play (PnP) type. It should be possible to acquire & display train information data from CDC of other firm using standard API. From CDC, it shall also be possible to transfer data to display boards of other make and monitor link status & health of the display devices	**M/s Audio Visual Digital Systems** Display board of IPIS of various vendors shall be interoperable and plug and play (PnP) type. It should be possible to acquire & display train information data from CDC of other firm using standard API. From CDC, it shall also be possible to transfer data to display boards of other make and monitor link status & health of the display devices connected in the system.	Not Agreed. All details regarding uniform display across all vendors is already included in the specification.	No Change

		connected in the system.	For this Data will also come in Bitmap format so that Display should be uniform for all vendors. **Justification:** Bitmap data is very much essential so that when multi-vendor display boards are there, all should display similar font and should resemble each other.		
61.	4.37, 4.38	4.37 Proper Earthing arrangement shall be ensured by Railways for display boards. 4.38 The Earthing arrangement is to be provided by the OEM to ensure that all display boards along with CDC should have resistance not greater than 2 Ω.	**South Western Railway** Clear demarcation needed between Railway and OEM earthing scope.	Agreed	The Earthing arrangement shall be provided by the Railway and it shall be ensured that earth resistance for all display boards along with CDC is less than 2 Ω.
62.	4.39	For installation of coach guidance display board on uncovered portion of the platform shall be provided using GI pipe of minimum 3-inch diameter or as specified by purchaser.	**Applied Electro Magnetics (P) Ltd., Noida** For installation of coach guidance display board on uncovered portion of the platform shall be provided using GI pipe of minimum 3-inch diameter. **Justification:** Please don't leave this on purchaser to ensure the uniformity of the system.	Not Agreed	No change
63.	5.1.2	RMS (Remote Monitoring software) should be a web-based application loaded in RMS Server. This shall allow the access to the applications from any of the standard PCs remotely connected in LAN, having standard browser tool only for monitoring and reporting purpose.	**RDSO Review** Clause may be removed	Clause may be removed as NMS specification has been added.	Deleted
64.	5.1.5	Any failure in data transfer from CDC to display boards shall be available in the both systems (CDC & RMS) as an event for use of Administrator. Event logging shall also be available.	**Areca Embedded Systems Pvt Ltd.** Using the API mechanism how to achieve logging of events?	Event logging shall be achieved through NMS	No Change
65.	5.1.13.2	Automatic Mode: In automatic mode, the user will not be allowed to perform any operation and the system shall automatically acquire train information data from NTES and update the API for the display boards so that they can fetch latest information from CDC. In this mode the audio announcement shall also be automatically triggered based on time and status inputs received from NTES API.	**RDSO Remark** Automatic Mode: In automatic mode, the user will not be allowed to perform any operation and the system shall automatically acquire train information data from NTES and update the API for the display boards so that they can fetch latest information from CDC. In this mode the audio announcement shall also be automatically triggered based on time and status inputs received from NTES API. There shall be provision to mask trains which should not be updated automatically from NTES.	As per discussion with vendors, Some trains which are not updated automatically on NTES, there shall be a provision to mask train which should not be updated automatically from NTES.	Automatic Mode: In automatic mode, the user will not be allowed to perform any operation and the system shall automatically acquire train information data from NTES and update the API for the display boards so that they can fetch latest information from CDC. In this mode the audio announcement shall also be automatically triggered based on time and status inputs received from NTES API. There shall be provision to mask trains which should not be updated automatically from NTES.
66.	5.1.14	The software shall have provision for interoperability test with display device of another vendor, where the CDC software shall generate a report of the device being tested with the software API, along with data sent and device IP, which will be verified during type test at RDSO	**M/s Audio Visual Digital Systems** Interoperability test will be conducted by RDSO by third party software like POSTMAN which is commonly used to verify REST API **Justification:** Through Postman only CRIS verifies in case of any ambiguity with any vendor software.	Interoperability between display devices of various vendors shall be checked during Type Testing at RDSO premise.	No Change

67.	5.3.11	If two Trains are merged to form a single Train at a particular station, it should be clearly indicated on display boards by showing number of both Trains alternatively and shall be suitable announced on a PA system about the two merged Trains.	**M/s Audio Visual Digital Systems** Delete **Justification:** Concept of Merged Trains is almost obsolete in Indian Railways.	Not Agreed	No Change
68.	5.4.2	It shall be possible to acquire & update data of coaches for Rake formation of a train from the central server of Coach Operation Information System (COIS) via NTES REST API 951 or any other central server using HTTPS protocols having information of coach composition. The protocols will be arranged by the concerned Railways	**M/s Audio Visual Digital Systems** It shall be possible to acquire & update data of coaches for Rake formation of a train via NTES REST API 951. The protocols will be arranged by the concerned Railways Handling of Special Cases Case-1 Rake Reversal **Justification:** In Rake Reversal scenarios vendor has to take care that on CGDB only Eng has to be deleted or shifted and not the complete Coach Marshalling. But, in case of AGDB if position is shown with respect to Eng on top left then it should be reversed on AGDB in Rake reversal scenarios.	Not Agreed, Item is incorporated as per CRIS comments and pertains to CRIS.	No Change
69.	5.4.2	Case 4 Composite Coach Handling	**M/s Audio Visual Digital Systems** Composite Coaches should be displayed as it is like SLRD, SRD etc. **Justification:** In this displaying composite coaches in paging mode will be utter confusion to passengers. Already paging between Train Number # Coach in Eng # Coach in Hindi is there. The paging time is generally kept 10 seconds max. In this if we flip the composite coach it will be confusion. Instead with the bitmap here we can have little font in which composite coach is depicted with all its composition Example we can display SLRD and in the bottom in some 7 LED height we can display GEN + LUG + TM + PWD	Not Agreed, Item is incorporated as per CRIS comments and pertains to CRIS.	No Change
70.	5.5.2	Announcement shall be made by using AI based speech to text synthesizing algorithm or by traditional recorded wave file format, this will ensure future modification and upgradation of announcement systems	1. **M/s Audio Visual Digital Systems** Announcement shall be made by using AI based text to speech synthesizing algorithm or by traditional recorded wave file format, this will ensure future modification and upgradation of announcement systems **Justification:** Typographical error 2. **Shri Subhash Parasram Electronic Park Pvt. Ltd.** Announcement shall be made by using AI based text to speech synthesizing algorithm or by traditional recorded wave file format, this will ensure future modification and upgradation of announcement systems.	Agreed. Typographical error corrected.	Announcement shall be made by using AI based text to speech synthesizing algorithm or by traditional recorded wave file format, this will ensure future modification and upgradation of announcement systems

			Justification: The text should be replaced from "AI based speech to text synthesizing algorithm" change into "AI based text to speech synthesizing algorithm" **3. Areca Embedded Systems Pvt Ltd.** Replace Speech to Text with Text to Speech		
71.	6.0	POWER SUPPLY	**Western Railway** Each of the large display board: Multi-line, Train arrival-departure Display board, At a glance display board, Advance Video Display module to be supplied with dual Power supply modules. One fully wired and one as spare but mounted inside the board. For CGB, spare power supply module and SPD to be supplied as 1 per 10 numbers of CG board.	It shall be specified by purchaser railway in tender.	No Change
72.	6.1	Power Supply	**M/s Phoenix Contact** Missing Points which need to be Added: 1. Output Ripple Factor Less than 70 Milli Volt Peak to Peak 2. EN 50121-4 standard is missing which needs to be added for S&T application **Justification:** 1) Lesser Output Ripple supplies accurate power; hence life of downstream component may increase. 2) EN Standard must be added which increase reliability of system	Not Agreed	No Change
73.	6.3	Suitable Class C surge protection shall be provided at input of the power supply to protect against transient voltages suspected in the power supply source shall be provided. The parameters of Class C protection device shall be as per clause no. 5.9 of specification No. RDSO/SPN/TC/98/2011, Rev.0 or latest. Applicable parameters are given below:-	**M/s Phoenix Contact** Suitable Type-2 surge protection shall be provided at input of the power supply to protect against transient voltages suspected in the power supply source shall be provided. The parameters of Class C protection device shall be as per clause No. 3.12.1 of specification No. RDSO/SPN/215-2018 or latest. Applicable parameters are given below in Annexure 'A' **Justification:** Mentioned Parameters are having a lower rating compared to actual Type-2 Requirement as per IEC 61643-11. For the Surge protection device, RDSO Specification as per Latest Guidelines from Indian Railway, on Earthing, Bonding, Surge & Lightening Protection System for S&T installation (RDSO-SIG0SPD(PROJ)/1/2020 has the latest IEC standard and technical parameter All SPD's must be in accordance to IEC latest standards i.e., IEC 61643-11-2011 Please check Annexure 1 for complete SPD specification as per Latest Guidelines from Indian	Partially Agreed	Suitable ~~Class C~~ surge protection shall be provided at input of the power supply to protect against transient voltages suspected in the power supply source ~~shall be provided~~. ~~The parameters of Class C protection device shall be as per clause no. 5.9 of specification No. RDSO/SPN/TC/98/2011, Rev.0 or latest. Applicable parameters are given below:-~~ The parameters of SPD device shall be as per clause No. 3.12.1(a) of specification No. RDSO/SPN/215-2018 or latest. SPD shall be voltage clamping device, thermal disconnecting type and tested as per IEC 61643 with the following characteristics and features- See Annexure 'B' of reasoned document

			Railway, on Earthing, Bonding, Surge & Lightening Protection System for S&T installation.		
74.	New clause proposed	----	**Western Railway** Provision of IP-Speaker based announcement from the IPIS Software to be explored. IP Speaker access from IPIS to have multiple mode: Auto/ Station Operator mode/ Centralised Control Mode etc.	Speakers are not part of IPIS specs	No Change
75.	New clause proposed	----	**Central Railway** Intensity and Brightness of IVD/OVD display Boards should be automatically adjustable as per environmental condition and geographical location so as to reduce overall power consumption. Also if the display cannot detect its location automatically there may be a provision in the software to set the display to indoor settings or outdoor settings.	Already included in Clause No. 4.23.	No Change
76.	New clause proposed	----	**Central Railway** The cabinets for IVD and OVD should be made from aluminium to reduce the weight, and have much better corrosion resistance and better heat dissipation.	Agreed	Cold Rolled Closed Annealed (CRCA) Sheet has been replaced with aluminium in the relevant Clauses
77.	A.4.1 (i)	All Communication shall be on Ethernet (HTTP based REST API protocol) using OFC / STP CAT-6 cables.	**South East Central Railway** All Communication shall be on Ethernet (HTTPs based REST API protocol) using OFC / STP CAT-6 cables. **Justification:** CDC hosting an open REST API must have https web server not in http as it is not secure.	Agreed	All Communication shall be on Ethernet (HTTPs based REST API protocol) using OFC / STP CAT-6 cables.
78.	A.4.1 (ii)	Link Check for all type of boards shall be through standard PING Command or API Trigger Time from the display board.	**Areca Embedded Systems Pvt Ltd.** Please clarify API trigger time from display board	The Time at which the API is hit by the selected IP or user action that prompts the API to execute a specific task or process.	Link Check for all type of boards shall be through standard PING Command or API Trigger ~~Time~~ from the display board.
79.	A.4.1 (ix)	ix. IP Addressing should be of type IPv4 apart from commonly used 192.168 series to avoid conflicts with existing older version systems.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** Further conflicts will be occurred in interoperability and backward compatibility if changing IP schema from 192.168.x.x to 10.0.x.x **Justification:** It is unable to change IP schema for existing system, it will be led to incompatibility issues between newly versioned display board and existing CDC server.	Not agreed, As Rev 2 is moving to new concept of data communication so there will not be any conflict with the older version and that necessitate the change in IP	No change
80.	A.4.1 (x)	NW Clock	**Areca Embedded Systems Pvt Ltd.** What purpose Network clock is using in this spec Please clarify **DAT Informatics Pvt Ltd.** Delete clock. **Justification:** Nothing specified about clock else where so remove this.	Agreed, not required as discussed in vendor meet.	Removed

81.	A.4.2.4 (ii)	(ii) CDC shall get the link status of TADDB and CGDB maintained in respective connected hubs when the same hit the API and POST the link status.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** (ii) CDC shall get the link status of TADDB and CGDB maintained in respective connected hubs when the same hit the API and POST the link status. **POST request to devices which is directly connected to CDC** (e.g. AVD, OVD, IVD, PDC and TADDB at common area): "https://[DEVICE_IP]:[PORT_NO]/ipis/linkstatus" Payload: {"source":"IP_ADDR"} **API Response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE","linkstatus","LINK_STATUS"} **POST request to PDC for devices which is connected through PDC** (e.g. TADDB, CGS board at platform area) "https://[PDC_IP]:[PORT_NO]/ipis/devicelinkstatus" **Payload:** {"source":"IP_ADDR","devicelist":["IP1","IP2",...,"IPn"]} **API response with connected device list:** {status:STATUS_CODE,"message":"STATUS_MESSAGE","devicelist":["IP1","IP2",...,"IPn"]} **Note:** DEVICE_TYPE: CGDB, SLDB, AGDB, MLDB etc. **Justification:** Link status API and its response is not given in the spec. It needs to incorporate in the draft spec.	Not agreed, Refer API A.6 Sample Input Display Boards, when display board hit the respective API it post the health status there only.	No change
82.	A.4.2.5 (i) (a)	It shall give the intensity and time period for which the sent data is valid for displaying in the API.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** It shall set give the intensity and time period for which the sent data is valid for displaying in the API. **POST request to devices which is directly connected to CDC** (e.g. AVD, OVD, IVD and TADDB at common area): "https://[DEVICE_IP]:[PORT_NO]/ipis/config" Payload: {"station":"STN_CODE","source":"IP_ADDR","intensity":LEVEL,"datatout":TOUT_IN_MIN} **API response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **POST request to PDC for devices which is connected through PDC** (e.g. TADDB, CGS board at	Not Agreed, as per discussion with vendors in vendor meet it is already available and not required to include.	No change

			platform area) "https://[PDC_IP]:[PORT_NO]/ipis/deviceconfig" **Payload:** {"station":"STN_CODE","source":"IP_ADDR","devicelist":[{"ip":"IP_ADDR","intensity":LEVEL,"datatout":TOUT_IN_MIN}, ..., {"ip":"IP_ADDR","intensity":LEVEL,"datatout":TOUT_IN_MIN}]} **API response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **Further send the POST request from PDC to connected platform devices** (TADDB, CGDB etc) to set the configuration. "https://[DEVICE_IP]:[PORT_NO]/ipis/config" **Payload:** {"station":"STN_CODE","source":"IP_ADDR","intensity":LEVEL,"datatout":TOUT_IN_MIN} **API response from platform devices:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **Note:** LEVEL: 1, 2, 3, 4 (e.g. 25, 50, 75 and 100%) TOUT_IN_MIN: 30 to 240 (interval of 30 min) **Justification:** Relevant API is not mentioned in spec.		
83.	A.4.2.5 (i) (b)	It shall give the colour configuration table for AVD/IVD/OVD	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** b. It shall give the colour configuration table for AVD/IVD/OVD **POST request to AVD/IVD/OVD directly connected to CDC:** "https://[DEVICE_IP]:[PORT_NO]/ipis/config" **Payload:** {"station":"STN_CODE","source":"IP_ADDR","intensity":LEVEL,"datatout":TOUT,"hlinecolor":VALUE,"vlinecolor":VALUE,"bgcolor":VALUE,"stcolor":[{"runrighttime":{"trnocolor":VALUE,"trnmcolor":VALUE,"trarrcolor":VALUE,"trdepcolor":VALUE,"trpfcolor":VALUE}},...,{"canceled":{"trnocolor":VALUE,"trnmcolor":VALUE,"trarrcolor":VALUE,"trdepcolor":VALUE,"trpfcolor":VALUE}}]} **Note:** Intensity, datatout in integer and colour in hex format	Not Agreed, as per discussion with vendors in vendor meet it is already available and not required to include.	No change

			API response: {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **Justification:** Relevant API is not mentioned in spec.		
84.	A.4.2.5 (i) (c)	Get configuration shall acquire the data from the display board via POST method when respective boards hits the API. i. Intensity ii. Data validity time.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** c. Get configuration shall acquire the data from the display board via POST method when respective boards hit the API. i. Intensity ii. Data validity time. **POST request to devices which is directly connected to CDC** (e.g. TADDB at common area): "https://[DEVICE_IP]:[PORT_NO]/ipis/config" **Payload:** {"station":"STN_CODE","source":"IP_ADDR"} **API Response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE","data":{"intensity":LEVEL,"datatout":TOUT}} **POST request to PDC for devices which is connected to PDC** (e.g. TADDB, CGS board at platform area) "https://[PDC_IP]:[PORT_NO]/ipis/deviceconfig" **Payload:** {"station":"STN_CODE","source":"IP_ADDR","devicelist":["IP1",...,"IPn"]} **API response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE","devicelist":[{"ip":"IP_ADDR","intensity":LEVEL,"datatout":TOUT_IN_MIN}, ..., {"ip":"IP_ADDR","intensity":LEVEL,"datatout":TOUT_IN_MIN}]} Note: LEVEL: 1, 2, 3, 4 (e.g. 25, 50, 75 and 100%) TOUT_IN_MIN: 30 to 240 (interval of 30 min) **Justification:** Relevant API is not mentioned in spec. **Areca Embedded Systems Pvt Ltd.** Correction this clause. b board	Not Agreed, as per discussion with vendors in vendor meet it is already available and not required to include.	No change
85.	A.4.2.5 (ii) (a)	CDC shall send the command to set the switch Port configuration table, which shall	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** a. CDC shall send the command to set the switch Port	Not Agreed, as discussed with	No change

		contain the information of CGDB identification numbers in relation to the port it is connected.	configuration table, which shall contain the information of CGDB identification numbers in relation to the port it is connected. **POST API request to PDC to configure port:** "https://[PDC_IP]:[PORT_NO]/ipis/portconfig" **Payload:** {"station":"STN_CODE","source":"IP_ADDR","portlist":[{"portno":PORT_NO,"status":STATUS,"vlan":[1,2,3,...,n],"maclist":["mac1","mac2"]},...,{"portno":PORT_NO,"status":STATUS,"vlan":[1,2,3,...,n],"maclist":["mac1","mac2"]}]} **API response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **Justification:** Relevant API is not mentioned in spec.	vendors in vendor meet it is not Required to create so many APIs.	
86.	A.4.2.5 (ii) (b)	b. Get command shall get the PDC port configuration table stored in that PDC.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** Get command shall get the PDC port configuration table stored in that PDC. **POST request to PDC to get port configuration:** "https://[PDC_IP]:[PORT_NO]/ipis/portconfig" **Payload:** {"source":"IP_ADDR","portlist":["port1","port2",...,"portn"]} **API Response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE","portlist":[{"portno":PORT_NO,"status":STATUS,"vlan":[1,2,...,n],"maclist":["mac1",...,"macn"]},...,{"portno":PORT_NO,"status":STATUS,"vlan":[1,2,3,...,n],"maclist":["mac1",...,"macn"]}]} **Justification:** Relevant API is not mentioned in spec.	Not Agreed, as discussed with vendors in vendor meet it is not Required to create so many APIs.	No change
87.	A.4.2.6	Soft Reset: CDC shall send this information to TADDB/CGDB/PDC to reset itself and clear all the data content when respective device hit the API.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** Soft Reset: CDC shall send this information to TADDB/CGDB/PDC to reset itself and clear all the data content when respective device hit the API. **POST request to devices which id directly connected to CDC:**	Not agreed, Already available refer API document	No change

			"https://[DEVICE_IP]:[PORT_NO]/ipis/softreset" **Payload:** {"station":"STN_CODE","source":"IP_ADDR"} **API response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **POST request to PDC for devices which is connected to PDC itself.** "https://[PDC_IP]:[PORT_NO]/ipis/devicesoftreset" **Payload:** {"station":"STN_CODE","source:"IP_ADDR","devicelist":["IP1","IP2",...,"IPn"]} **API response:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **Further PDC forward the softreset POST request to connected platform devices (TADDB and CGDB etc)** "https://[DEVICE_IP]:[PORT_NO]/ipis/softreset" **Payload:** {"station":"STN_CODE","source":"IP_ADDR"} **API response from platform devices:** {"status":STATUS_CODE,"message":"STATUS_MESSAGE"} **Justification:** Relevant API is not mentioned in spec.		
88.	A.4.3 (ix)	It shall receive port configuration table from CDC and store in non-volatile memory.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** (ix) It shall receive port configuration table from CDC and store in non-volatile memory. Configuration Table Format: VLAN: PORT: STATUS: MAC ALLOW: AMC BLOCK:	Not Agreed, as per discussion with vendors in vendor meet configuration table is not required to include.	No change
89.	A.4.4	Train Arrival Departure Display Board (TADDB): The TADDB shall fulfil the following data communication functions. i. Validate the received packets over Ethernet from API. ii. Report error in case of any failure.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** A4.4 Train Arrival Departure Display Board (TADDB): The TADDB shall fulfil the following data communication functions. i. Validate the received packets over Ethernet from API. ii. Report error in case of any failure. iii. It shall receive configuration from CDC/PDC and	Partially Agreed	A4.4 Train Arrival Departure Display Board (TADDB): The TADDB shall fulfil the following data communication functions. i. Validate the received packets over Ethernet from API. ii. Report error in case of any failure. iii. Send Link status when acquiring data from API.

		iii. Send Link status when acquiring data from API. iv. It shall receive configuration from CDC and store in non-volatile memory.	store in non-volatile memory. **Justification:** Those TADDB devices which is installed at platform area and connected to PDC. They receive the configuration packet from PDC only.		iv. It shall receive configuration from CDC/PDC and store in non-volatile memory.
90.	A.4.5	A.4.5 Coach Guidance Display Board (CGDB): The CGDB shall fulfil the following data communication functions. i. Validate the received packets over Ethernet from API. ii. Segregate Packet information addressed to it. iv. Report error in case of any failure. vi. It shall receive configuration from CDC and store in non-volatile memory.	**Shri Subhash Parasram Electronic Park Pvt. Ltd.** A.4.5 Coach Guidance Display Board (CGDB): The CGDB shall fulfil the following data communication functions. i. Validate the received packets over Ethernet via API from PDC. ii. Segregate Packet information addressed to it. iv. Report error in case of any failure. vi. It shall receive configuration from CDC through PDC and store in non-volatile memory. **Justification:** CDC send the config packet to PDC via API POST method then PDC re-direct the same packet again to CGDB via API POST method	Agreed	A.4.5 Coach Guidance Display Board (CGDB): The CGDB shall fulfil the following data communication functions. i. Validate the received packets over Ethernet from API. ii. Segregate Packet information addressed to it. iv. Report error in case of any failure. vi. It shall receive configuration from CDC through PDC and store in non-volatile memory.
91.	A.6	API Information for all type of Display Boards	**1. M/s Audio Visual Digital Systems** Bitmap should also be there to make displays of every vendor uniform and look same **Justification:** Many Railways complaint that font of vendor A is better than font of vendor B. While doing integration in stations, complaint for the same comes. Also, with Bitmap a Display board can show sign or some Emojis etc if required in future. Merely by changing software at CDC end a complete new format and even any language can be displayed. To make the Display Boards truly PnP Bitmap is very essential otherwise party to party display will differ or vendors having common Development house will look same. **2. A. Paul Software Systems Pvt Ltd.** It is suggested to have hosting a web-based media player on a website. This would allow display to stream the content directly without the need to store the files locally with reduced storage and bandwidth overhead on the client side. This will also enhance the overall security of the system as the end devices do not have content storage **3. Shri Subhash Parasram Electronic Park Pvt. Ltd.** 1. Need to provide clear data packet information. CDC to TADDB, OVD, IVD, AVD via post API from board. 2. Need to provide clear data packet information from	Not Agreed, fonts for English, Hindi and regional language is defined in Table 1.3 and 1.4 Not Agreed Not Agreed	No Change

			CDC to PDC via POST API from PDC. 3. Need to provide clear data packet information PDC to TADDB, CGDB via POST API from platform board. 4. CGDB get the particular information of coach from PDC, it should not get all coach information that is irrelevant. 5. Language code of English, Hindi and bitmap of regional language need to be provided. **Justification:** There is a mismatch between the provided API information and the API response. Point 4: In the spec now, CGDB receives the complete data of all CGDB. That is irrelevant.		
92.	A.6	Sample Input PDC	**1. M/s Audio Visual Digital Systems** Delete **Justification:** This is not required **2. Applied Electro Magnetics (P) Ltd., Noida** Vendor Name field is missing **Justification:** Vendor name field shall be available **3. M/s Infosoft Digital Design and Services Pvt Ltd.** Vendor Name field is missing	Not agreed Agreed, Vendor Name field is added	Corrected in API document A.6
93.	A.6	Sample Output PDC	**1. Applied Electro Magnetics (P) Ltd., Noida** Sample Output for PDC is missing **Justification:** Sample output shall be available **2. M/s Infosoft Digital Design and Services Pvt Ltd.** Sample Output for PDC is missing	Agreed	Corrected in API document A.6
94.	A.6	1. Sample Output for Mono colour Train Information (AGD, PFD, MLD) and true colour Train Information (AVD, IVD, OVD) 2. STA, CGD, MSG	**1. M/s Infosoft Digital Design and Services Pvt Ltd.** TNE, TNH, TNR should be in Unicode only STA Field, Coach names, Message should also be in Unicode **2. Areca Embedded Systems Pvt Ltd.** Instead of SAT, SDT it should be EAT and EDT.	Agreed Agreed	Corrected in API document A.6
95.	A.8	Display Mode Tables	**M/s Audio Visual Digital Systems** Table 1.3 Delete **Justification:** Firstly, it is wrong and with Bitmap it will no longer be needed.	Partially agreed, Table 1.3 corrected and a new TABLE 1.4 is added where	Corrected in Table 1.3 and Table 1.4

				Fonts for display different language is defined as Bitmap is not considered	
96.	Annexure-C	(B.1 (Measurement of Viewing Angle of LED:)	**A. Paul Software Systems Pvt Ltd.** The vendor should have a QR code-based traceability system with automated record keeping of lot-wise consumption of LEDs in specific PCB serial numbers. Register-based record keeping is often misused by vendors to fudge the records and use spurious grade LEDs, impacting the quality of products of committed manufacturers who carry out the work ethically.	Already mentioned in Clause 4.40.	No change
97.	Annexure-D	Diagram 1	**Areca Embedded Systems Pvt Ltd.** Existing Screen is user friendly better if possible, we can continue same existed screen.	Same screen is used. Only HSR tab is included.	No Change
98.	New clause proposed	----	**Matsushi Power Technologies** The display boards on the platforms must have a QR code for getting all the trains information related to that station. **Justification:** This will help the passengers to get the train arrival and departure information easily displayed on their phones without reaching to the display board	Not Agreed	----
99.	New clause proposed	----	**South Western Railway** Coach position preview functionality: Coach position preview functionality should be reintroduced in the main dashboard interface as shown in Reference for Main Software Home Screen Diagram-1 as shown in previous version. What is displaying in the coaches also shall be reflected in the main dashboard so that any board is not displaying the data can be identified easily.	This facility is already available in CDC computer screen (As shown in Diagram 1). Also feedback from display boards is also ensured through HSR in clause no. 5.1.15.	----
100.	New clause proposed	----	**South Western Railway** For island platforms, specification should clarify that a single PDC is sufficient to serve displays on both sides, optimizing hardware requirements and reducing costs.	Not Agreed. User railway can decide about how to provide connectivity of IPIS system for island platforms	----
101.	**Note**: Other minor changes are highlighted in RED color of Specification No. RDSO/SPN/TC/108/2019, Ver. 2.0 d1				

Annexure 'A'

SN	Parameters	Limits (between Line & neutral)	Between Neutral & Earth
1	Nominal Voltage (U_0)	230V	230 V
2	Maximum continuous operating voltage	≥ 253V	≥ 253V

	(U_C)		
3	Temporary Over Voltage (UT_{OV}) withstands for 120 minutes	438V	438 V
4	Nominal discharge current 8/20 µs (I_n)	≥ 10KA	≥ 10KA
5	Maximum discharge current 8/20 µs (I_{max})	≥ 40KA	≥ 40KA
6	Response time (T_r)	≤ 25 ñs	≤ 25 ñs
7	Voltage protection level (U_p)	≤ 1.5 KV	≤ 1.5 KV
8	Operating temperature / RH	- 25 ^{O}C to + 80 ^{O}C/ 95%	- 25 ^{O}C to + 80 ^{O}C/ 95%
9	Mounted on	Din rail	Din Rail
10	Indication	Mandatory	Mandatory
11	Pluggability	Mandatory	Mandatory
12	Potential free contact for remote monitoring	Mandatory	Mandatory
13	Degree of protection	IP20	IP 20
14	Housing	Fire retardant as per UL 94	Fire retardant as per UL 94
15	Approvals as per IEC- 61643-11-2011	National/ International Labs like KEMA, VDE etc. or any other accredited test lab (Details of accreditation shall be submitted)	National/ International Labs like KEMA, VDE etc. or any other accredited test lab (Details of accreditation shall be submitted)

Annexure 'B'

SN	Parameters	Limits (between Line & neutral)	Between Neutral & Earth
1	Nominal Voltage (U_0)	230V	230 V
2	Maximum continuous operating voltage (U_C)	≥ 253V	≥ 253V
3	Temporary Over Voltage (UT_{OV}) withstands for 120 minutes	438V	438 V
4	Nominal discharge current 8/20 µs (I_n)	≥ 10KA	≥ 10KA
5	Maximum discharge current 8/20 µs (I_{max})	≥ 40KA	≥ 40KA
6	Response time (T_r)	≤ 25 ns	≤ 25 ns
7	Voltage protection level (U_p)	≤ 1.5 KV	≤ 1.5 KV
8	Operating temperature / RH	- 25 ^{O}C to + 80 ^{O}C/ 95%	- 25 ^{O}C to + 80 ^{O}C/ 95%
9	Mounted on	Din rail	Din Rail
10	Health Indication/End of life indication	Mandatory	Mandatory
11	Pluggability	Mandatory	Mandatory
12	Potential free contact for remote monitoring	Mandatory	Mandatory
13	Degree of protection	IP20	IP 20
14	Housing	Fire retardant as per UL 94	Fire retardant as per UL 94
15	Approvals	National/ International Labs like KEMA, VDE etc. or any other accredited test lab (Details of accreditation shall be submitted)	National/ International Labs like KEMA, VDE etc. or any other accredited test lab (Details of accreditation shall be submitted)