

## Schedule 5(t)

## Glossary of Terms, Abbreviations, and Definitions

## California High-Speed Rail Authority



## Standard Specifications

## TSCC Specification

## SPEC-0024 – Glossary of Terms, Abbreviations, and Definitions

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# 1 ACRONYMS AND ABBREVIATIONS

| Abbreviation | Description                                       |
|--------------|---------------------------------------------------|
| <b>2</b>     |                                                   |
| 2FA          | Two Factor Authentication                         |
| <b>3</b>     |                                                   |
| 3GPP         | 3 <sup>rd</sup> Generation Project Partnership    |
| <b>A</b>     |                                                   |
| ADA          | Americans with Disabilities Act                   |
| ADAAG        | ADA Accessibility Guidelines                      |
| AFILS        | Audio-Frequency Induction Loops                   |
| ANSI         | American National Standards Institute             |
| ASTM         | American Society for Testing and Materials        |
| ASP          | Axle Load speed Profile                           |
| ATAF         | Automatic Track Ahead Free                        |
| ATO          | Automatic Train Operation                         |
| ATR          | Automatic Train Reporting                         |
| ARS          | Automatic Route Setting                           |
| <b>B</b>     |                                                   |
| BBU          | Baseband Unit                                     |
| BG           | Balise Group                                      |
| BMCA         | Best Master Clock Algorithm                       |
| BRDS         | Broken Rail Detection System                      |
| <b>C</b>     |                                                   |
| CA           | Certificate Authority                             |
| CALEA        | Communications Assistance for Law Enforcement Act |
| CBC          | California Building Code                          |
| CBI          | Computer-Based Interlocking                       |
| CBM          | Condition-Based Monitoring                        |
| CCPA         | California Consumer Privacy Act                   |
| CCS          | Control-Command and Signaling                     |
| CCTV         | Closed Circuit Television                         |
| CDR          | Call Detail Records                               |
| CES          | Conditional Emergency Stop                        |
| CHSR         | California High Speed Rail                        |
| CIDs         | Customer Information Displays                     |
| CIS          | Customer Information System                       |
| CLI          | Command Line Interface                            |
| C-RAN        | Centralized Radio Access Network                  |
| COPPA        | Children's Online Privacy Protection Act          |
| COTS         | Commercial Off The Shelf (hardware and software)  |
| COS          | Class of Services                                 |



| Abbreviation  | Description                                                                                      |
|---------------|--------------------------------------------------------------------------------------------------|
| <b>CPR</b>    | Coupled Power Ratio                                                                              |
| <b>CSOC</b>   | Cybersecurity Operations Center                                                                  |
| <b>CWDM</b>   | Coarse Wavelength Division Multiplexing                                                          |
| <b>D</b>      |                                                                                                  |
| <b>DANS</b>   | Dynamic Ambient Noise Sensors                                                                    |
| <b>DAS</b>    | Distributed Antenna System                                                                       |
| <b>DC</b>     | Direct Current                                                                                   |
| <b>DCM</b>    | Design Criteria Manual                                                                           |
| <b>DCN</b>    | Digital Communications Network                                                                   |
| <b>DDS</b>    | Derailment Detection System                                                                      |
| <b>DMI</b>    | Driver Machine Interface                                                                         |
| <b>DMZ</b>    | Demilitarized Zone                                                                               |
| <b>DSCP</b>   | Differentiated Services Code Point                                                               |
| <b>DWDM</b>   | Dense Wavelength Division Multiplexing                                                           |
| <b>E</b>      |                                                                                                  |
| <b>E911</b>   | Enhanced 911                                                                                     |
| <b>EACS</b>   | Electronic Access and Control System                                                             |
| <b>EAMS</b>   | Electronic Asset Management System                                                               |
| <b>ECCS</b>   | Energy Control and Command System                                                                |
| <b>eCPRI</b>  | Enhanced Common Public Radio Interface                                                           |
| <b>EMC</b>    | Electromagnetic Compatibility                                                                    |
| <b>EMI</b>    | Electromagnetic Interference                                                                     |
| <b>EN</b>     | European Norm                                                                                    |
| <b>EoA</b>    | End of Authority                                                                                 |
| <b>EoL</b>    | End of Life                                                                                      |
| <b>EOS</b>    | Early Operating Segment                                                                          |
| <b>EoS</b>    | End of Support                                                                                   |
| <b>ERA</b>    | European Union Agency for Railways                                                               |
| <b>ERCS</b>   | Emergency Responder Communication System                                                         |
| <b>ERTMS</b>  | European Railway Traffic Management System                                                       |
| <b>ETCS</b>   | European Train Control System                                                                    |
| <b>ETSI</b>   | European Telecommunications Standards Institute                                                  |
| <b>EU</b>     | European Union                                                                                   |
| <b>EUG</b>    | ERTMTS Users Group                                                                               |
| <b>EULYNX</b> | European initiative to standardize interfaces for digital railway control and signaling systems. |
| <b>EVACS</b>  | Emergency Voice/Alarm Communication Systems                                                      |
| <b>EVPN</b>   | Ethernet Virtual Private Network                                                                 |
| <b>F</b>      |                                                                                                  |
| <b>FAC</b>    | Local facility / Facility                                                                        |
| <b>FAR</b>    | First Article Demonstration Review (System Development Life Cycle Milestone)                     |
| <b>FAT</b>    | Factory Acceptance Testing                                                                       |
| <b>FCC</b>    | Federal Communications Commission                                                                |
| <b>FCS</b>    | First Construction Section                                                                       |
| <b>FDR</b>    | Final Design Review (System Development Life Cycle Milestone)                                    |
| <b>FIPS</b>   | Federal Information Processing Standards                                                         |
| <b>FIM</b>    | Free Issue Material                                                                              |



| Abbreviation  | Description                                                    |
|---------------|----------------------------------------------------------------|
| <b>FO</b>     | Fiber Optic                                                    |
| <b>FPS</b>    | Fire Protection System                                         |
| <b>FRMCS</b>  | Future Railway Mobile Communication System                     |
| <b>FS</b>     | Full Supervision (ETCS mode)                                   |
| <b>FTR</b>    | Field Testing Review (System Development Life Cycle Milestone) |
| <b>G</b>      |                                                                |
| <b>GD NTC</b> |                                                                |
| <b>GNSS</b>   | Global Navigation Satellite System                             |
| <b>GPS</b>    | Global Positioning System                                      |
| <b>GTFS</b>   | General Transit Feed Specification                             |
| <b>GUI</b>    | Graphical User Interface                                       |
| <b>H</b>      |                                                                |
| <b>HABDS</b>  | Hot-Axle Box Detection System                                  |
| <b>HDEWS</b>  | Hazard Detection and Early Warning System                      |
| <b>HMF</b>    | Heavy Maintenance Facility                                     |
| <b>HMI</b>    | Human Machine Interface                                        |
| <b>HST</b>    | High Speed Train                                               |
| <b>HV</b>     | High Voltage                                                   |
| <b>I</b>      |                                                                |
| <b>ICD</b>    | Interface Control Document                                     |
| <b>ICMP</b>   | Internet Control Message Protocol                              |
| <b>ICSS</b>   | Integrated Control and Supervisory System                      |
| <b>IEC</b>    | International Electrotechnical Commission                      |
| <b>IEEE</b>   | Institute of Electrical and Electronics Engineers              |
| <b>IERS</b>   | International Earth Rotation and Reference Systems Service     |
| <b>IFRA</b>   |                                                                |
| <b>IM</b>     | Infrastructure Manager                                         |
| <b>IMF</b>    | Infrastructure Maintenance Facility                            |
| <b>IMS</b>    | IP Multimedia Subsystem                                        |
| <b>IP</b>     | Internet Protocol OR Ingress Protection                        |
| <b>IPVPN</b>  | Internet Protocol Virtual Private Network                      |
| <b>ISO</b>    | International Organization for Standardization                 |
| <b>ISP</b>    | Internet Service Provider                                      |
| <b>IT</b>     | Information and Telecom                                        |
| <b>IWF</b>    | Inter Working Function                                         |
| <b>IXL</b>    | Interlocking                                                   |
| <b>J</b>      |                                                                |
| <b>JRU</b>    | Juridical Recording Unit                                       |



| <b>L</b>       |                                                                           |
|----------------|---------------------------------------------------------------------------|
| <b>L2</b>      | ETCS Level 2                                                              |
| <b>LCC</b>     | Life Cycle Cost                                                           |
| <b>LF</b>      | Local Facility                                                            |
| <b>LMF</b>     | Light Maintenance Facility                                                |
| <b>LMR</b>     | Land Mobile Radio                                                         |
| <b>LT</b>      | ETCS level transition                                                     |
| <b>LV</b>      | Low Voltage                                                               |
| <b>LVPS</b>    | Low Voltage Power System                                                  |
| <b>M</b>       |                                                                           |
| <b>MA</b>      | Movement Authority                                                        |
| <b>MB</b>      | Marker Board                                                              |
| <b>MCData</b>  | Mission-Critical Data                                                     |
| <b>MCPTT</b>   | Mission-Critical Push-to-Talk                                             |
| <b>MCDS</b>    | Meteorological Condition Detection System (wind, rain, flood, earthquake) |
| <b>MCVideo</b> | Mission-Critical Video                                                    |
| <b>MCX</b>     | Mission-Critical Services                                                 |
| <b>MDM</b>     | Maintenance & Data Management                                             |
| <b>MEWP</b>    | Mobile Elevating Work Platform                                            |
| <b>MFA</b>     | Multi-Factor Authentication                                               |
| <b>MIB</b>     | Management Information Base                                               |
| <b>MM</b>      | Multi Mode (Optical Fiber)                                                |
| <b>MOCN</b>    | Multi-Operator Core Network                                               |
| <b>MORAN</b>   | Multi-Operator Radio Access Network                                       |
| <b>MOS</b>     | Mean Opinion Score                                                        |
| <b>MOWF</b>    | Maintenance Of Way Facility                                               |
| <b>MOWS</b>    | Maintenance Of Way Siding                                                 |
| <b>MPE</b>     | Maximum Permissible Exposure                                              |
| <b>MV</b>      | Medium Voltage                                                            |
| <b>N</b>       |                                                                           |
| <b>N32</b>     | Network Interface 32                                                      |
| <b>NEC</b>     | National Electrical Code                                                  |
| <b>NFPA</b>    | National Fire Protection Association                                      |
| <b>NIST</b>    | National Institute of Standards and Technology                            |
| <b>NMS</b>     | Network Management System                                                 |
| <b>NTP</b>     | Notice to Proceed                                                         |
| <b>NTPS</b>    | Non-traction power supply                                                 |
| <b>NTS</b>     | Network Timing System                                                     |
| <b>NVR</b>     | Network Video Recorder                                                    |
| <b>O</b>       |                                                                           |
| <b>O&amp;M</b> | Operations and Maintenance                                                |
| <b>OAuth</b>   | Open Authorization                                                        |
| <b>OB</b>      | On-Board                                                                  |
| <b>OBU</b>     | ETCS On-Board Unit                                                        |
| <b>OCC</b>     | Operation Control Centre                                                  |
| <b>OCS</b>     | Overhead Contact System                                                   |
| <b>ODF</b>     | Optical Distribution Frame                                                |
| <b>ONVIF</b>   | Open Network Video Interface Forum                                        |



|                |                                                                     |
|----------------|---------------------------------------------------------------------|
| <b>OS</b>      | On-Sight (ETCS mode)                                                |
| <b>OC</b>      | Object Controller                                                   |
| <b>OT</b>      | Operational Technology                                              |
| <b>OTDR</b>    | Optical Time Domain Reflectometer                                   |
| <b>P</b>       |                                                                     |
| <b>P25</b>     | Project 25                                                          |
| <b>PABX</b>    | Private Automatic Branch Exchange                                   |
| <b>PAS</b>     | Public Address System                                               |
| <b>PACIS</b>   | Public Address and Customer Information System                      |
| <b>PBD</b>     | Permitted Braking Distance                                          |
| <b>PCI DSS</b> | Payment Card Industry Data Security Standard                        |
| <b>PDT</b>     | Pacific Daylight Time                                               |
| <b>PG</b>      | Platform Gate System                                                |
| <b>PHP</b>     | Passenger Help Point                                                |
| <b>PIR</b>     | Project Initiation Review (System Development Life Cycle Milestone) |
| <b>PKI</b>     | Public Key Infrastructure                                           |
| <b>PLMN</b>    | Public Land Mobile Network                                          |
| <b>PoE</b>     | Power over Ethernet                                                 |
| <b>PSP</b>     | Power Supply Point                                                  |
| <b>PST</b>     | Pacific Standard Time                                               |
| <b>PSTN</b>    | Public Switched Telephone Network                                   |
| <b>PTP</b>     | Precision Time Protocol                                             |
| <b>PTT</b>     | Push-to-Talk                                                        |
| <b>PWS</b>     | Passenger Wi-Fi System                                              |
| <b>Q</b>       |                                                                     |
| <b>QoS</b>     | Quality of Service                                                  |
| <b>R</b>       |                                                                     |
| <b>RAM</b>     | Reliability, Availability, Maintainability                          |
| <b>RAMS</b>    | Reliability, Availability, Maintainability and Safety               |
| <b>RAN</b>     | Radio Access Network                                                |
| <b>RaSTA</b>   | Rail Safe Transport Application protocol                            |
| <b>RBAC</b>    | Role-Based Access Control                                           |
| <b>RBC</b>     | Radio Block Centre                                                  |
| <b>RCM</b>     | Reliability Centred Maintenance                                     |
| <b>RF</b>      | Radio Frequency                                                     |
| <b>RFI</b>     | Radio Frequency Interference                                        |
| <b>RFID</b>    | Radio Frequency Identification                                      |
| <b>ROW</b>     | Right-of-Way                                                        |
| <b>RRH</b>     | Remote Radio Head                                                   |
| <b>RSRP</b>    | Reference Signal Received Power                                     |
| <b>RSRQ</b>    | Reference Signal Received Quality                                   |
| <b>RT</b>      | Reverberation Time                                                  |
| <b>RTMS</b>    | Rail Temperature Monitoring System                                  |
| <b>RVDS</b>    | Road Vehicle Detection System (vehicle, rock, landslide)            |
| <b>S</b>       |                                                                     |
| <b>SAML</b>    | Security Assertion Markup Language                                  |
| <b>SAT</b>     | Site Acceptance Testing                                             |
| <b>SCADA</b>   | Supervisory Control and Data Acquisition                            |
| <b>SCI</b>     | Standard Communication Interface                                    |





|              |                                                                    |
|--------------|--------------------------------------------------------------------|
| <b>SCP</b>   | Session Control Protocol                                           |
| <b>SDR</b>   | System Definition Review (System Development Life Cycle Milestone) |
| <b>SEP</b>   |                                                                    |
| <b>SIEM</b>  | Security Information and Event Management                          |
| <b>SIG</b>   | Signaling                                                          |
| <b>SIL</b>   | Safety Integrity Level                                             |
| <b>SINR</b>  | Signal-to-Interference-plus-Noise Ratio                            |
| <b>SIP</b>   | Session Initiation Protocol                                        |
| <b>SIT</b>   | System Integration Testing                                         |
| <b>SH</b>    | Shunting (ETCS mode)                                               |
| <b>SL</b>    | Sleeping (ETCS mode)                                               |
| <b>SL-A</b>  | Security Level Achieved                                            |
| <b>SL-C</b>  | Security Level Capability                                          |
| <b>SL-T</b>  | Security Level Target                                              |
| <b>SNMP</b>  | Simple Network Management Protocol                                 |
| <b>SM</b>    | Single Mode (Optical Fiber)                                        |
| <b>SoM</b>   | Start of Mission                                                   |
| <b>SPD</b>   | Surge Protection Device                                            |
| <b>SPL</b>   | Sound Pressure Level                                               |
| <b>SR</b>    | Staff Responsible (ETCS mode)                                      |
| <b>SSP</b>   | Static Speed Profile                                               |
| <b>STI</b>   | Speech Transmission Index                                          |
| <b>SuC</b>   | System under Consideration                                         |
| <b>T</b>     |                                                                    |
| <b>TAP</b>   | Telematic Applications Program for Passenger services              |
| <b>TCEH</b>  | Train Control Equipment Housing                                    |
| <b>TCF</b>   | Train Certification Facility                                       |
| <b>TCR</b>   | Technical Contract Requirements                                    |
| <b>TCS</b>   | Train Control System                                               |
| <b>TD</b>    | Train Describer                                                    |
| <b>TDS</b>   | Train Display System                                               |
| <b>TDG</b>   | Time-Distance Graph                                                |
| <b>TEL</b>   | Telephony System                                                   |
| <b>TETRA</b> | Terrestrial Trunked Radio                                          |
| <b>TLS</b>   | Transport Layer Security                                           |
| <b>TMS</b>   | Traffic Management System                                          |
| <b>TOD</b>   | Time-of-Day                                                        |
| <b>TS</b>    | Track Side                                                         |
| <b>TSA</b>   | Temporary Shunting Area                                            |
| <b>TSCC</b>  | Track and Systems Construction Contract                            |
| <b>TSF</b>   | Training and Simulation Facility                                   |
| <b>TSI</b>   | Technical Specifications for Interoperability                      |
| <b>TSR</b>   | Temporary Speed Restriction                                        |
| <b>TTM</b>   | Timetable Management                                               |
| <b>TTS</b>   | Text-to-Speech                                                     |
| <b>TVP</b>   | Track Vacancy Proving                                              |
| <b>U</b>     |                                                                    |
| <b>UES</b>   | Unconditional Emergency Stop                                       |
| <b>UIC</b>   | International Union of Railways                                    |



|                |                                       |
|----------------|---------------------------------------|
| <b>UL</b>      | Underwriters Laboratories             |
| <b>UM</b>      | User Management                       |
| <b>UPF</b>     | User Plane Function                   |
| <b>UPS</b>     | Uninterruptable Power Supply          |
| <b>UTC</b>     | Coordinated Universal Time            |
| <b>V</b>       |                                       |
| <b>V&amp;V</b> | Verification and Validation           |
| <b>VAS</b>     | Video Analytics System                |
| <b>VLAN</b>    | Virtual Local Area Network            |
| <b>VMS</b>     | Video Management System               |
| <b>VoWi-Fi</b> | Voice over Wi-Fi                      |
| <b>VPN</b>     | Virtual Private Network               |
| <b>VRS</b>     | Voice Recording System                |
| <b>VWD</b>     | Video Wall Display                    |
| <b>VXLAN</b>   | Virtual Extensible Local Area Network |
| <b>W</b>       |                                       |
| <b>WCS</b>     | Wireless Communication Systems        |
| <b>WDM</b>     | Wavelength Division Multiplexing      |
| <b>WS</b>      | Workstation                           |



## 2 DEFINITIONS

| Terms                                           | Description                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>As Low As Reasonably Practicable (ALARP)</b> | It means the risk management principle whereby the degree of risk in a particular situation can be balanced against the time, trouble, cost and physical difficulty of taking measures to avoid the risk.                                                                                                                        |
| <b>Asset Information</b>                        | Means the combined set of static data (asset identification, description, specification, serial number, drawings, manuals, plans, certificates, etc.) dynamic data (condition, status, faults, event, alarms, cycles, meters, etc.) required to support the management of assets through the Enterprise Asset Management System. |
| <b>Authority</b>                                | California High Speed Rail Authority                                                                                                                                                                                                                                                                                             |
| <b>Backhaul</b>                                 | The connection between the cell site (BBU/RRH) and the core network (e.g. the internet or operator's central systems). It carries user data and signaling to and from the wider network.                                                                                                                                         |
| <b>Business-critical</b>                        | A label for a type of service. Potentially impacts revenue or customer service. It causes disruption but does not stop services.                                                                                                                                                                                                 |
| <b>Call-on route</b>                            | Certain locations are permitted to allow more than one train into a single section, e.g. to join trains or enable two trains to use one platform. The movement of the second train into an occupied section is authorized by setting a "call-on" route.                                                                          |
| <b>CCS TSI</b>                                  | CCS TSI stands for the Technical Specification for Interoperability for "Control-Command and Signaling". The TSI aims to facilitate the development and deployment of the European Rail Traffic Management System (ERTMS) by setting common standards and requirements for the relevant subsystems.                              |
| <b>Certificate Authority</b>                    | A trusted entity that issues, validates, and manages digital certificates used for authentication and encrypted communication.                                                                                                                                                                                                   |
| <b>Computer Based Interlocking (CBI)</b>        | Safety equipment that contains the interlocking logic which processes the route setting activity based on the TMS commands, and the control of the wayside objects. The CBI is usually composed of several racks centrally located in the OCC buildings:                                                                         |



| <b>Terms</b>                                | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Conditional Emergency Stop (CES)</b>     | In ETCS, a message from the Radio Block Centre (RBC) to the trainset on-board equipment, initiating a forced brake application unless the system acknowledges and revokes the emergency stop message before passing a defined point.                                                                                                                                                           |
| <b>TSCC Contractor</b>                      | Company, or entity engaged by the Authority to deliver the works as described in the TSCC Contract documents.                                                                                                                                                                                                                                                                                  |
| <b>Danger Point (ETCS)</b>                  | In ETCS, refers to the location beyond the End Of Authority that can be reached by the front of the train without creating a hazardous situation.                                                                                                                                                                                                                                              |
| <b>Debris Class A</b>                       | A type of ETCS Eurobalises specified in CCS TSI SUBSET-036.                                                                                                                                                                                                                                                                                                                                    |
| <b>Degraded Operation</b>                   | Means the state of continuing operations with significant unplanned failures.                                                                                                                                                                                                                                                                                                                  |
| <b>Demilitarized Zone</b>                   | A network segment that sits between either internal and external systems (IT Environments) or between IT and OT systems (OT Environments). The purpose is to add a controlled buffer where traffic can be controlled and filtered, usually with multiple firewalls. Supporting services and security services (such as authentication servers and anti-malware servers) are hosted in the DMZ. |
| <b>Design Life</b>                          | The expected operational lifespan of the system.                                                                                                                                                                                                                                                                                                                                               |
| <b>Digital Communications Network (DCN)</b> | The optical fiber infrastructure and associated network equipment used for all inter-site connectivity between CHSR locations, based upon IP/MPLS.                                                                                                                                                                                                                                             |
| <b>Earthing and Bonding System</b>          | The arrangement of earth conductors and bonding conductors, typically including an earth grid, earth electrodes, overhead earth wires, cable sheaths, equipotential bonding cables, earth continuity conductors and parallel earthing conductors.                                                                                                                                              |
| <b>Electromagnetic Compatibility (EMC)</b>  | The ability of a piece of equipment or system to function satisfactorily in its electromagnetic environment without introducing electromagnetic disturbances to anything in that environment.                                                                                                                                                                                                  |



| Terms                                                  | Description                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Electronic Access Control System (EACS)</b>         | A networked security solution that provides centralized management, monitoring, intrusion detection, and control of physical access to CHSR infrastructure and facilities designated as EACS Protected Areas. The EACS comprises electronic locks, access control devices (e.g. RFID readers, keypads, biometric scanners), control panels, communication interfaces, and a central management platform. |
| <b>Emergency Responder Communication System (ERCS)</b> | A subsystem of WCS that enables OCC personnel to interoperate with Emergency Responders via non-public network communications.                                                                                                                                                                                                                                                                           |
| <b>Enterprise Asset Management System (EAMS)</b>       | A subsystem composed of tools, software and hardware to manage CHSR assets across their entire life.                                                                                                                                                                                                                                                                                                     |
| <b>EULYNX</b>                                          | European initiative to standardize interfaces for digital railway control and signaling systems.                                                                                                                                                                                                                                                                                                         |
| <b>Eurobalises</b>                                     | Passive, trackside transponders used in the ETCS to transmit information to Trainsets.                                                                                                                                                                                                                                                                                                                   |
| <b>European Train Control System (ETCS)</b>            | Standardized European train control system defined in the CCS TSI. ETCS consists of 2 major parts: <ul style="list-style-type: none"> <li>• Trackside equipment, in TSCC scope of work</li> <li>• On-board (on trainsets) equipment in Trainset contractor scope of work</li> </ul>                                                                                                                      |
| <b>External Interface</b>                              | Interface between TSCC systems and systems provided by other CHSR contractors (civils packages, stations contractor, facilities contractor, Solar PV and BESS contractors);                                                                                                                                                                                                                              |
| <b>Facilities</b>                                      | In the context of California High Speed Rail, Facilities refers to: <ul style="list-style-type: none"> <li>• Operation Control Center (OCC)</li> <li>• Heavy Maintenance Facility (HMF)</li> <li>• Maintenance Of Way Facilities (MOWF)</li> <li>• Light Maintenance Facility (LMF)</li> <li>• Train Certification Facility (TCF)</li> </ul>                                                             |



| <b>Terms</b>                                             | <b>Description</b>                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Factory Acceptance Test (FAT)</b>                     | Test or series of Tests undertaken on equipment and systems to ensure all design and manufacturing problems for both hardware and software are resolved before full manufacturing begins.                                                                                                           |
| <b>Failover</b>                                          | The capability to switch to a redundant or standby system upon the failure of the currently active system.                                                                                                                                                                                          |
| <b>Free Issue Material</b>                               | Free Issue Material (FIM) refers to materials or equipment supplied by the client (e.g. CHSR Authority) to a contractor or supplier free of charge, for use in executing a project or contract.                                                                                                     |
| <b>Fronthaul</b>                                         | The high-speed connection between the Baseband Unit (BBU) and the Remote Radio Head (RRH) at the cell site. It carries the raw radio signals for processing and needs very low delay.                                                                                                               |
| <b>Future Radio Mobile Communication System (FRMCS)</b>  | <p>A subsystem of WCS that provides mission-critical voice and data communication between all operational user groups and locations across the rail network.</p> <p>FRMCS is an international wireless communications standard for railway communication and applications specified in CCS TSI.</p> |
| <b>Handing Over RBC</b>                                  | Refers to an RBC/RBC Handover process within the ETCS, where communication and control responsibility for a train are transferred from one RBC to an adjacent RBC.                                                                                                                                  |
| <b>Handover</b>                                          | The process of transferring an ongoing call or data session from one channel connected to the core network to another.                                                                                                                                                                              |
| <b>Hazard Detection and Early Warning System (HDEWS)</b> | A collection of integrated technologies and sensors designed to oversee and manage various auxiliary components of the trainsets and wayside infrastructure to monitor and control the trainset health, broken rail or falling vehicles detection, among others.                                    |
| <b>Headway</b>                                           | The interval of time between Trains moving in the same direction on the same route.                                                                                                                                                                                                                 |
| <b>Human Factors</b>                                     | The discipline that applies knowledge of human capabilities and limitations to the design, operation and maintenance of technological systems                                                                                                                                                       |



| Terms                                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Information Technology</b>                    | Systems, hardware, and software used to create, process, or store information, information is data that is used for business or project purposes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Integrated Control and Supervision System</b> | <p>The control systems used to control and monitor the operation in a safe, reliable, and accurate manner, including:</p> <ul style="list-style-type: none"> <li>• Digital Communication Network</li> <li>• Wireless Communication System</li> <li>• Electronic Access Control System</li> <li>• Network Timing System</li> <li>• Closed Circuit Television System</li> <li>• Public Address and Customer Information System</li> <li>• Network Timing System</li> <li>• Hazard Detection and Early Warning System</li> <li>• Enterprise Asset Management System</li> <li>• LV Power Supply System</li> <li>• Fire Protection System</li> <li>• Building Management System (Lighting, Elevators, Escalators, HVAC</li> </ul> |
| <b>Interlocking (IXL)</b>                        | <p>The TSCC system is to ensure protection against the following hazardous situations:</p> <ul style="list-style-type: none"> <li>• Collision of trains;</li> <li>• Train derailment;</li> <li>• Operation mishandling by the Dispatcher</li> </ul> <p>The Interlocking system is composed of:</p> <ul style="list-style-type: none"> <li>• Computer Based Interlocking (CBI)</li> <li>• Object Controllers (OC)</li> <li>• Wayside Objects</li> <li>• Interlocking Maintenance and Diagnostic Terminal (MDT)</li> </ul>                                                                                                                                                                                                     |
| <b>Internal Interface</b>                        | Means interface between two systems within the TSCC Contractor's own scope of work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Interoperability</b>                          | The ability of different systems, devices, or organizations to work together. Can be used to describe technology interoperating and user groups or organizations interoperating.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



| <b>Terms</b>                                 | <b>Description</b>                                                                                                                                                                                                                         |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Low Voltage Power System (LVPS)</b>       | As defined in the STS Medium Voltage and Low Voltage Power Systems                                                                                                                                                                         |
| <b>Markers Boards</b>                        | Visible, colored, and retroreflective panels placed trackside to convey specific information to the train driver during degraded modes of operation of ETCS.                                                                               |
| <b>Medium Voltage Power System (MVPS)</b>    | As defined in the STS Medium Voltage and Low Voltage Power Systems                                                                                                                                                                         |
| <b>Mission-critical</b>                      | A label for a type of service. Essential for safe and continuous train operations. Failure causes immediate operational impact.                                                                                                            |
| <b>Mission-Critical Push-to-Talk (MCPTT)</b> | A feature of FRMCS that supports individual and one to many talk group calling, emergency call initiation, call priority management, and other critical communication functions                                                            |
| <b>Movement Authority</b>                    | In ETCS, a Movement Authority (MA) is a digital permission that allows a train to proceed into a specific track section, specifying the permitted speed, braking curves for safe stopping, and the authorized distance (End of Authority). |
| <b>Non-critical</b>                          | A label for a type of service. Has no direct impact on safety, operations, or customer service. Failure causes minimal or no disruption.                                                                                                   |
| <b>Operational Technology</b>                | Refers to the hardware and software systems that facilitate the operation of the CHSR, used to distinguish assets from IT assets.                                                                                                          |
| <b>Operations Control Center (OCC)</b>       | The central facility where the coordination, supervision, and control of all rail operations across the CHSR System takes place.                                                                                                           |
| <b>Overhead Contact System (OCS)</b>         | The overhead contact system used to transmit electrical energy to Trainsets.                                                                                                                                                               |
| <b>Passenger Information Display (PIDS)</b>  | The digital signage system and devices used to show real-time service, operation and navigation information to passengers.                                                                                                                 |





| <b>Terms</b>                        | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Passenger Wi-Fi System (PWS)</b> | A non-critical subsystem of WCS that provides a seamless, reliable, secure, high-capacity, and high-speed wireless internet service accessible to passengers.                                                                                                                                                                                                                                                                |
| <b>Power SCADA System</b>           | <p>The control systems used to control and monitor the operation in a safe, reliable, and accurate manner, including:</p> <ul style="list-style-type: none"> <li>• Traction Power Systems</li> <li>• Medium Voltage Power Systems</li> <li>• Photovoltaic (PV) farms and Battery Electrical Storage System (BESS)</li> </ul>                                                                                                 |
| <b>Protected Areas</b>              | Intrusion detection, and control of physical access to CHSR infrastructure and facilities by EACS system.                                                                                                                                                                                                                                                                                                                    |
| <b>Radio Access Network (RAN)</b>   | The Radio Access Network (RAN) is the part of a FRMCS/5G network that connects user devices (like phones or trainset radios) to the core network.                                                                                                                                                                                                                                                                            |
| <b>Radio Block Center</b>           | Device used at ETCS Level 2 acting as a centralized safety unit. Using radio connection, it receives train position information and sends Movement Authority and further information required by the train for its movement.                                                                                                                                                                                                 |
| <b>Redundancy</b>                   | <p>Is defined for a system as 'N-x', where:</p> <ul style="list-style-type: none"> <li>• "N" is the number of items, components or sub-systems required to be operational to ensure all operations activities can be undertaken; and</li> <li>• "x" is the minimum number of items, components or sub-systems that may 'fail' or be removed from service without affecting or reducing the operations activities,</li> </ul> |
| <b>Safety Integrity Level (SIL)</b> | Means the relative level of risk-reduction provided by a safety function, or to specify a target level of risk reduction based on the CENELEC standards EN 50126, EN50128 and EN5012                                                                                                                                                                                                                                         |
| <b>Security Levels</b>              | A defined level of cybersecurity robustness required for a system or zone based on threat, risk, and consequence, based on the IEC62443 standard.                                                                                                                                                                                                                                                                            |



| <b>Terms</b>                            | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Shelters</b>                         | Housing and protection for TSCC equipment located on wayside ensuring safety, security, and operational reliability from environmental elements and hazards.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Site Acceptance Tests (SAT)</b>      | Tests that are carried out on all installed Assets, or groupings thereof to ensure that the installation has been correctly completed and meet the design requirements                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Static Speed Profile (SSP)</b>       | In ETCS, the description of the fixed speed restrictions of a given line. The speed restrictions can be related to such items as maximum line speed, curves, points, tunnel profiles, bridges.                                                                                                                                                                                                                                                                                                                                              |
| <b>System Breakdown Structure (SBS)</b> | Means a hierarchical decomposition of the entire system into its constituent subsystems, and components.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>System Owner</b>                     | Entity accountable for mitigating cybersecurity risk, nominated for each system, as defined in the cybersecurity standard.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>System under Consideration</b>       | The complete set of infrastructure, devices, endpoints, components, personnel, processes, and supporting technologies that contribute to the operation and security of the assets identified for cybersecurity consideration.                                                                                                                                                                                                                                                                                                               |
| <b>Telecommunication Systems</b>        | <p>In CHSR project context, Telecommunication Systems refers to the following systems:</p> <ul style="list-style-type: none"> <li>• CCTV System</li> <li>• Electronic Access Control System (EACS)</li> <li>• Enterprise Asset Management System (EAMS)</li> <li>• Hazard Detection and Early Warning Systems (HDEWS)</li> <li>• Integrated Control and Supervision Systems (ICSS)</li> <li>• Public Address and Customer Information System (PACIS)</li> <li>• Telephony System</li> <li>• Wireless Communication Systems (WCS)</li> </ul> |
| <b>Third Party Interface</b>            | Means interface between a system within the TSCC Contractor's scope of work and a system within a Third-Party scope of work.                                                                                                                                                                                                                                                                                                                                                                                                                |



| <b>Terms</b>                                 | <b>Description</b>                                                                                                                                                                                                                    |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Traction Power System</b>                 | A power delivery system containing electro-mechanical components used to transfer power from the traction power supply system to the pantograph of electric Trainsets.                                                                |
| <b>Train Control System</b>                  | <p>In CHSR project context, Train Control Systems refers to the following systems:</p> <ul style="list-style-type: none"> <li>• European Train Control System</li> <li>• Interlocking</li> <li>• Traffic Management System</li> </ul> |
| <b>Unconditional Emergency Stop (UES)</b>    | In the ETCS, a command that causes the train's brakes to apply immediately and unconditionally, without driver override, when the system detects a dangerous situation such as exceeding a Movement Authority.                        |
| <b>UNISIG</b>                                | The technical body responsible for the development, maintenance and updating of the CCS/TMS technical specifications which include ETCS and ATO.                                                                                      |
| <b>Validation</b>                            | Means confirmation that the final system fulfills its intended use, meets The Authority needs, and supports the Concept of Operations.                                                                                                |
| <b>Verification</b>                          | Means confirmation, through the provision of objective evidence, that specified requirements have been fulfilled.                                                                                                                     |
| <b>Verification and Validation (V&amp;V)</b> | Means both Verification and Validation.                                                                                                                                                                                               |
| <b>Verification Cross Reference Matrix</b>   | Means a matrix of Verification activities details appended to requirements.                                                                                                                                                           |
| <b>Verification Evidence</b>                 | Means the documented information that proves a requirement has been successfully verified according to the specified verification method.                                                                                             |
| <b>Verification Method</b>                   | Means the specific approach or technique used to determine whether a requirement has been fulfilled: Test, Demonstration, Inspection, Analysis, and Review.                                                                           |



| Terms                                       | Description                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Verification Procedure</b>               | Means the detailed step-by-step process that defines how a verification method will be applied to confirm that a requirement is met.                                                                                                                                                                                                                          |
| <b>Wayside Objects (Interlocking)</b>       | <p>The equipment controlled and monitored by the Interlocking System shall be capable of controlling and monitoring at least the following wayside objects and monitoring their status:</p> <ul style="list-style-type: none"><li>• Switch Machines</li><li>• Derailers</li><li>• Signals</li><li>• Axle counters</li><li>• Staff Protection System</li></ul> |
| <b>Wireless Communication Systems (WCS)</b> | The systems are designed to provide secure voice, data, and video communications in a high-speed rail environment. Includes passenger wi-fi.                                                                                                                                                                                                                  |
| <b>Zone and Conduit</b>                     | Zone and Conduits are defined in the IEC62443 and CENELEC TS 50701. They are cybersecurity groupings of assets into “zones” based on several factors (see cybersecurity standard) with controlled and security connectivity between zones, known as “conduits”.                                                                                               |

