ERTMS/ETCS – Class 1

Glossary of UNISIG Terms and Abbreviations

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3. GENERAL

3.1. Scope of this document

This document defines the significant Terms and Abbreviations used by UNISIG in the ERTMS / ETCS Class1 System Requirements Specification Version 2.0.0. and related specifications.

3.2. Introduction

Many of the terms and abbreviations used by UNISIG have been defined elsewhere but they are repeated herein where they have a relevance to the Class 1 system. The hierarchy of documents / glossaries consulted was as follows:-

European Interoperability Directive 96/48	1	
Control/Command Standard for Technical Interoperability		2
CENELEC EN50126 – September 1999		3
CENELEC EN50129 - December 1999		4
EEIG General Glossary – Version2	5	
EEIG FRS – Version 4.29		6

Note: 1. Only the highest level terms are repeated from references 3 and 4.

2. Any term not given a numbered reference is by definition a UNISIG defined term.

3. Some terms from the references have been re defined to match the class1 context. These are now UNISIG defined terms

4. Specialist documents such as those relating to Key Management contain their own definitions.

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4. TERMS

ACKNOWLEDGEMENT	Recognition by an entity that it has received information that it needs to take account of.
ADVISORY SPEED	The speed the train is supposed to drive to match the time table.(5)
APPLICATION LEVEL	The different ERTMS / ETCS application levels are a way to express the possible operating relationships between track and train. Level definitions are principally related to the track side equipment used, to the way the track side information reaches the on board units and to which functions are processed in the track side and in the on board equipment respectively.
AUTOMATIC TRAIN PROTECTION	A safety system that enforces either compliance with or observation of speed restrictions and signal aspects by trains. (5)
AVAILABILITY	The ability of a product to be a state to perform a required function under given conditions at a given instant in time or over a given time interval assuming that the required external resources are provided. (3) Definitions for other availability related terms are given in reference 3
BALISE	A passive transponder mounted on the track which can communicate with a train passing over it. (5)
BALISE CO-ORDINATE SYSTEM	The means of defining the inter-relationships within a balise group. For single balises, the concept is extended by means of linking information.
BALISE GROUP	One or more balises which are treated as having the same reference location on the track. (5)
BALISE LINKING	A method by which one balise or balise group can describe the location of another balise or balise group within its telegram. (5) Note: Linking can be provided by an RBC via the radio communication system in levels 2 & 3.
BALISE TRANSMISSION MODULE	On board equipment for intermittent transmission between track and train. It shall be able to receive telegrams from a balise.
BLOCK	A method of controlling the separation between trains by dividing the line into sections with, normally, no more than one train in each section. The block can either be a fixed block or a moving block. (5)
BRAKING CURVE	A graphical representation of the braking distance of a train in relation to the gradient of track, and the braking characteristics of the train. The graph normally shows train speed varying against either distance or time. (5)

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BRAKING DISTANCE; EMERGENCY	The distance in which a train is capable of stopping in an emergency. Dependent upon train speed, train type, braking characteristics, train weight and gradient. (5)
BRAKING DISTANCE; SERVICE	The distance in which a train is capable of stopping, from a given speed, at such a deceleration for a passenger train that the passengers do not suffer discomfort or alarm or at an equivalent deceleration in the case of non-passenger trains. (5)
CLASS 1 FUNCTIONS	The set of mandatory functions defined in the FRS Version 4.29. These functions represent the minimum requirement for technical interoperability.
CLEAR (A SIGNAL)	To change a signal aspect from its most restrictive aspect to a less restrictive aspect. (5)
COMMON-MODE FAULT	Fault common to items which are intended to be independent. (5)
CONDITIONS, FAILURE	The identification of failures and their characterisation in terms of their criticality. ERTMS / ETCS failures are divided in three classes: immobilising; service; minor. See separate entries under Failure.
CONDITIONS, MAINTENANCE	The maintenance criteria adopted for maintaining the system referred to its Operating Conditions. (5)
CONDITIONS, OPERATING	The rated performance required of the system. (5)
CONDITIONS, SYSTEM	The conditions under which the system is called to operate, including: environmental conditions; operating conditions; maintenance conditions. (5)
CONFIGURATION	The structuring and interconnecting of the hardware and software of a system for its intended application. (5)
CONFIGURATION MANAGEMENT	A discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control change to those characteristics, record and report change processing and implementation status and verify compliance with specified requirements. (3)
CONFIRM	The driver's approval/validation that new data/information must be taken into account by the system. (6)

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CONFLICTING MOVEMENTS	Movements that would require trains to occupy the same portion of track over all or part of their length. (5)
CONTACT LENGTH	The distance between the place where a train becomes able to communicate with a device (e.g. a balise) to the place where communication becomes impossible. (5)
CONTINOUS DATA TRANSMISSION	Track-to-train or train-to-track transmission that can take place continuously radio.
CONTROL CENTRE	A signal box covering a large area, usually incorporating other operational functions. (5)
CONTROLLING LOCOMOTIVE	The locomotive which controls the train movement. The driver in that locomotive takes decisions how the train has to move and he is responsible for it. (5) Note: Also called ‘leading unit’
CRITICALITY	The point at which a failure or a number of failures renders the system unusable and/or unsafe. (5)
CROSS-ACCEPTANCE	The status achieved by a product that has been accepted by one Authority of the relevant European Standards and is acceptable to other Authorities without the necessity for further assessment. (5)
CURRENT POSITION	The position of a train at a certain moment measured using defined system co-ordinates.
DANGER (ASPECT)	An indication given by a signal to stop. (5)
DANGER POINT	The location beyond the EOA that can be reached by the front of the train without creating a hazardous situation.
DECELERATION DATA	Data that relates a braking demand to the rate at which a train will slow down.
DEFAULT VALUE	Value stored in the ERTMS / ETCS train borne equipment and used if there is no other value available. (6)
DESIGN AUTHORITY	The body responsible for the formulation of a system design solution in response to a Requirements Specification and for overseeing the changes to that system design it the light of problems or shortcomings.
DIFFERENTIAL (SPEED RESTRICTION)	A speed restriction having two values, applicable to different types of train. (5)
DIVERSITY	A means of achieving all or part of the specified requirements into acceptable design solutions which have the required safety integrity. (5)
DOWN LOADING TOOL	Device to collect the data from the train borne juridical recorder.
DRIVERS IDENTIFICATION	Unique code which identifies a train driver.

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DRIVING ON SIGHT	The driver driving at a speed that allows him to stop the train to avoid obstacles on the track. (6)
DYNAMIC SPEED PROFILE	The speed / distance curve that a train may follow without violating the static speed profile and/or the end of movement authority. This curve depends on the braking characteristics of the train and the train length. (6)
EMERGENCY BRAKE	As identified in UIC leaflet 541-03.(6)
END OF LOOP MARKER	A device (e.g. a balise) intended to define where a “loop” begins or ends. (5)
END OF MOVEMENT AUTHORITY	Location to which the train is permitted to proceed and where target speed = zero. (5)
ENTRANCE SIGNAL	A main signal, intended for trains entering a station. (5)
EQUIPPED LINE	Track side ERTMS/ ETCS equipment installed to provide full supervision mode. (5)
ERROR	A deviation from the intended design which could result in unintended system behaviour or failure. (4)
EUROPEAN RAILWAY TRAFFIC MANAGEMENT SYSTEM	The European Railway Traffic Management System (ERTMS) is made up of all the train borne, track side and line side equipment necessary for supervising and controlling, in real-time, the train operation according to the traffic conditions based on the appropriate Level of Application. (5)
EUROPEAN TRAIN CONTROL SYSTEM	A subset of ERTMS providing a level of protection against over speed and overrun depending upon the capability of the line side infrastructure.
EUROBALISE	The group of technical solutions for balises for use in an ERTMS / ETCS installation.(5)
EUROLOOP	The group of technical solutions for loops for use in an ERTMS / ETCS installation.(5) – see infill loop
EURORADIO	The functions required of a radio network coupled with the message protocols that provide an acceptably safe communications channel between track side and train borne equipment’s
EXIT SIGNAL	A main signal that is intended for trains leaving a station. (5)
EXPECTATION WINDOW	The interval between the outer limits to accept a balise group.
FAIL-SAFE	A design philosophy which results in any expected failure maintaining or placing the equipment in a safe state. (5)
FAILURE	Effect of an error on the intended service. (5)
FAILURE, IMMOBILISING	An ERTMS / ETCS failure which causes two or more trains to be switched into on-sight mode. (5)

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FAILURE, MINOR	An ERTMS / ETCS failure that results in unscheduled maintenance and cannot be classified in the above defined failure conditions. (5)
FAILURE, SERVICE	An ERTMS / ETCS failure that causes the nominal performance of one or more trains to be reduced and/or at most one train to be switched to *on sight* mode. (5)
FAULT	An abnormal condition that could lead to an error in a system. A fault can be random or systematic. (4)
FAULT DETECTION TIME	Time span that begins at the instant when a fault occurs and ends when the existence of the fault is detected. (5)
FAULT NEGATION TIME	Time span that begins when the existence of a fault is detected and ends when a safe state is enforced. (5)
FIXED BALISE	A balise that contains data which does not vary according to the route set or the signal aspect displayed. (5)
FIXED BLOCK	A block in which the extremities of the block sections are at fixed locations. The signalling allows a train to move from one block to the next, normally only when the block ahead is clear. (5)
FOULING POINT	The place where a vehicle standing on a converging line would come into contact with a vehicle on the other line. (5)
FULL SUPERVISION MODE	An ERTMS / TCS train equipment mode giving full protection against over speed and over run.
HANDOVER	The process of passing a train between two Radio Block Centres and/or two countries.
IN ADVANCE	A term indicating a point beyond a specific location on the track.
IN REAR	A term indicating a point on the approach to a specific location on the track.
INDEPENDENCE; TECHNICAL	Freedom from any mechanism which can affect the correct operation of more than one item. (5)
INFILL INFORMATION	Data that is transmitted from track to train at locations other than at main signals. Provides, for example, the ability to inform a train that the signal ahead has cleared. (5)
INFILL LOOP	A loop which is installed at a place (e.g. in rear of a signal) where it is not essential for train safety, but avoids unnecessary delay by transmitting in fill information advising the train at once when the signal clears. (5)
INTERLOCKING	A general term applied to the controlling of the setting and releasing of “signals” and “points” to prevent unsafe conditions arising, and equipment which performs this function. (5)
INTERMITTENT TRANSMISSION	Track-to-train or train-to-track transmission that can only take place when the train passes the information point (balise or short/medium loop or radio). (5)

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INTEROPERABILITY	Interoperability means the ability of the trans-European high-speed rail system to allow the safe and uninterrupted movement of high-speed trains that accomplish the specified levels of performance. (1)
INTEROPERABILITY CONSTITUENTS	The major sub-systems of ERTMS / ETCS that will be subject to cross acceptance criteria. (See the Control/Command TSI)
INTEROPERABILITY, OPERATIONAL	The ability to enable the international safe running of trains on different European networks without: having to stop the train at borders; changing the engine at borders; changing the driver at borders; requiring the train driver to perform any other activity other than the standardised ERTMS operation. (5)
INTEROPERABILITY, TECHNICAL	A subset of operational interoperability. UNISIG SRS defines the requirements for technical interoperability.
INTERROGATOR	A device (e.g. a train antenna) which causes another device (e.g. a balise) to transmit data. (5)
INTERVENTION	Where ERTMS / ETCS takes control from the driver by cutting traction power or applying the full service brake and cutting traction power or applying the emergency brake and cutting traction power. (5)
INTERVENTION CURVE	A graph representing a speed profile, such that if the train speed exceeds the intervention curve then intervention by the system will occur to prevent the train to pass over the supervised location. There are several “intervention curves”. (5)
ISOLATION MODE	When the ERTMS / ETCS train carried equipment is disconnected from the vehicle braking system. Isolation is indicated to the driver.
JURIDICAL RECORDER	Device to record all actions and exchanges relating to the movement of trains sufficient for off line analysis of all events leading to an incident.
KERNEL	The core of the ERTMS / ETCS train borne equipment that predicts the safe speed/distance envelope for a train and initiates braking action to prevent the safe envelope being breached.
KEY	A predefined component necessary to be able to interpret encrypted data. Note: Terms related to data encryption are defined in the Key Management documents subsets. 038 & 051
LANGUAGE (ERTMS / ETCS)	Harmonised rules within which messages can be transmitted and understood.

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LAST RELEVANT BALISE GROUP	It is the first balise group met and correctly read, when the linking information is not known by the train borne equipment. It is the last linked balise group found at the expected location and correctly read when the linking information is known by the train borne equipment. The LRBG is used as a common reference between the train borne and track side equipments in levels 2 & 3
LEADING UNIT	That ERTMS / ETCS train borne equipment which is connected with the MMI in the activated cab. (5)
LEVEL 0	A level of ERTMS / ETCS defined to cover instances when the train borne equipment is operating in an area where the track side is not fitted with operational ERTMS / ETCS equipment.
LEVEL 1	A level of ERTMS / ETCS overlaid onto conventional line side signalling.
LEVEL 2	A level of ERTMS / ETCS that uses radio to pass movement authorities to the train whilst relying on conventional means to determine train location.
LEVEL 3	A level of ERTMS / ETCS that uses radio to pass movement authorities to the train. Level 3 uses train reported advice of location and integrity to determine if it is safe to issue the movement authority.
LEVEL STM	A level of ERTMS / ETCS that allows the kernel of train borne equipment to work with an existing national ATP system.
LIFECYCLE COST (SYSTEM)	The sum of the costs sustained or to be sustained for performing and appropriately supporting the activities occurring in the context of the operational parts of the System Lifecycle.
LIFECYCLE (SYSTEM)	The activities occurring during a period of time that starts when a system is conceived and ends at decommissioning when the system is no longer available for use. (See Reference 3)
LIMIT OF AUTHORITY	The place which the train is not authorised to pass and where target speed ≠ zero. (5)
LINE	A continuous section of railway track. (5)
LINE SIDE ELECTRONIC UNIT	A device for communicating variable signalling data to switchable balises.
LINE SIDE EQUIPMENT	see Track side Equipment. (5)
LINKING DISTANCE	The distance between successive balise groups.
LINKING INFORMATION	Data defining the distance between groups of balises and the action to be taken if a balise group is not detected within given limits.

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LOCAL TIME	The time for ordinary transactions in a locality, which is likely to be shown on station clocks. (5)
LOCATION REFERENCE	This is taken as balise number 1 in a balise group
LOOP	Track mounted device for the transmission of data between track-to-train.
LOOP FREQUENCIES	The carrier frequencies used for transmitting data between a loop and a train. (5)
LOOP MESSAGE FORMAT	The format for transmitting data between a loop and a train. (5)
LOOP TRANSMISSION MODULE	Train borne equipment that reads the track mounted loop data.
MAIN SIGNAL	A fixed signal intended for train movements capable of showing a ‘danger aspect’ and one or more ‘proceed aspects’. In some cases main signals at danger are valid for shunt movements. (6)
MAINTAINABILITY	The probability that a given active maintenance action, for an item under given conditions of use can be carried out within a stated time interval when the maintenance is performed under stated conditions and using stated procedures and resources. (3) (Definitions for other maintenance related terms are given in reference 3).
MALFUNCTION	A deviation from the specified performance causing the system to work incorrectly. This is normally due to an error or fault in the system. (5)
MANDATORY	When it is compulsory to fulfil and to implement a requirement to realise a technically interoperable standard for the ERTMS / ETCS equipment or system.
MAN MACHINE INTERFACE	The ERTMS / ETCS train borne device to enable communication between ERTMS / ETCS and the train driver. (5)
MAY	Is permissible. (5)
MEDIUM LOOP	Semi-continuous transmission device between track and train. (5)
MESSAGE	The combination of application data and protocol data that is transmitted by balise, loop or radio.
MINOR FAILURE	see Failure, Minor (5)
MISSION	An objective description of the fundamental task to be performed by a system. (3)
MODE	A specified split of operational responsibilities within a system state.
MOST RESTRICTIVE SPEED PROFILE	The speed which a train must not exceed. It is the lowest speed taking into account all the various speed profiles.

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MOVEMENT AUTHORITY	Permission for a train to run to a specific location within the constraints of the infrastructure. (5)
MOVING BLOCK	A block whose length is defined by the characteristics of the train occupying the section of track. The minimum block length would be from the rear most part of the occupying train to a point on the track where, if the train braked from its current speed, the front of the occupying train would be when the train came to a stand.
MULTIPLE	Two or more traction units in service, mechanically, pneumatically and electrically coupled, which are operated by one driver. (5)
NATIONAL TRAIN CONTROL SYSTEMS	A previously installed train control system as defined in EC Directive 96/48 and considered as a candidate for a Specific Transmission Module in order to interface with ERTMS / ETCS.
NATIONAL VALUES	Values that are transmitted to a train when entering the infrastructure of an administration related to rules and regulations of the administration. National values may be changed within an administrations area.
NO POWER MODE	Applicable to the train borne equipment; it is where the train borne equipment is not powered up but the emergency brake is applied.
NOMINAL DIRECTION	The usual or normal is indicated by the incremental increase in internal balise numbering within a balise group.
NON-EQUIPPED LINE	A line with without operational track side ERTMS / ETCS equipment.
NON-LEADING MODE	Where the active train borne equipment and driver is not in the leading cab
NON-VITAL	A description applied to those parts of the signalling system whose failure or non-availability does not directly endanger rail traffic or reduce the integrity of the signalling system (5)
OCCUPIED	A track section having any part of a train present upon it. (5)
ODOMETER ACCURACY	The extent to which the odometer might make errors (under-reading or over-reading) in measuring the movement of the train. (5)
ODOMETRIC CONFIDENCE INTERVAL	The distance within which ERTMS / ETCS believes that the train is located based on the odometer reading and the information available about the odometer accuracy. (5)
ODOMETRY	The process of measuring the train's movement along the track. Used for speed measurement and distance measurement. (5)
ODOMETRY REFERENCE LOCATION	The location of the train based on the odometer reading but making no allowance for possible odometer error. (5)
ONBOARD EQUIPMENT	See Train borne Equipment. (5)

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ON SIGHT MODE	An ERTMS / ETCS mode that gives the driver full responsibility for the safe control of his train. This will be at an enforced and limited speed because the train may be entering a section of track which is already occupied.
OVERLAP	The section of line in advance of a stop signal that must be unoccupied and, where necessary, locked before and during a signalled running movement to the rear of the signal to avoid an accident if the train brakes do not perform as well as expected. (5)
PACKET	Packets are multiple variables grouped into a single unit with a defined internal structure.
PANTOGRAPH	Device for transmitting power from the overhead catenary to the train. (5)
PARTIAL SUPERVISION MODES	A named set of modes used where insufficient track data is available to allow full supervision. The set of partially supervised modes are as follows :- unfitted mode on sight mode staff responsible mode shunting post trip mode reversing (5)
PERMISSIVE SIGNAL	A signal aspect or a signal identification, which enables a main signal to be passed at danger under special conditions, without specific permission from the signalman. (6)
PERMITTED SPEED	The speed limit at which a train is allowed to proceed without ERTMS / ETCS warning and / or intervention. (5)
POINTS	A section of track equipped so that train routes may converge or diverge. (5)
POSITION INFORMATION	Information about the geographical position of a device. In the case of a train, its location is related to the line side kilometric values. (5)
POSSESSION; OF SIGNALLING EQUIPMENT	The disconnection or restriction of use of signalling equipment agreed between maintenance and operations staff to enable work to be carried out on the equipment. (5)
POSSIBLE	When it is not compulsory to fulfil and to implement the requirement. Fulfilling the requirement may have an impact on the technical interoperability of the system.
POST TRIP MODE	An ERTMS / ETCS train borne mode that is entered after a train trip when the train has been brought to a stand and the driver has acknowledged the situation.

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PROCEED ASPECT	Any signal aspect which permits the driver to pass the signal. (5)
PROPELLING	A train movement in which the driver is not situated in the leading vehicle. When propelling, the operative cab is next to the train being propelled and the master switch is in forward. A train cannot propel its self (see reversing) but is able to propel another train. (6)
PROPELLING MOVEMENT	A movement involving the pushing of a vehicle or vehicles by a traction unit, except where those vehicles are operating in multiple. (5)
PROTECTED WRONG SIDE FAILURE	A wrong side failure where another part of the signalling system provides an acceptable level of protection. (5)
RADIO BLOCK CENTRE	A centralised safety unit working with an interlocking(s) to establish and control train separation. Receives location information via radio from trains and sends movement authorities via radio to trains.
RADIO BLOCK CENTRE IDENTIFICATION	A unique identifier tagged onto messages to and from a specific Radio Block Centre.
RADIO HOLE	An area where it is not possible to establish a reliable radio communications channel.
RADIO INFILL UNIT	A unit which provides an semi-continuous infill function via a GSM-R channel.
RECOMMENDED	Not fulfilling the requirement will not have any impact on the technical interoperability of the equipment or of the system but it could be fulfilled to facilitate implementation or to enhance performances. (5)
RECORDER (JURIDICAL)	A device (e.g. on a train) which stores data for subsequent analysis. The ERTMS / ETCS train borne recorder is intended to be sufficiently robust to permit a train accident to be analysed. (5)
REDUNDANCY	The provision of one or more additional elements, usually identical, to achieve or maintain availability if one or more of those elements “malfunctions”. (5)
REFERENCE POINT	An alternative term for “reference location”. Information point used for train location updating. Used to correct error of odometry. (5)
RELATIVE BRAKING DISTANCE	A train following another in less than absolute braking distance of the following train. (5)
RELEASE SPEED	A speed value calculated within ERTMS / ETCS to allow a train to approach the end of its movement authority in a safe way. Needed for intermittent transmission to enable the train to approach a signal that has cleared in order to reach the information point at the signal.

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RELIABILITY	The probability that an item can perform a required function under given conditions for a given time interval. (3) Definitions for other reliability related terms are defined in reference 3.
REVERSE	A train movement in which the driver is not situated in the leading vehicle.
REVERSING MODE	An ERTMS / ETCS mode that allows the driver to change the direction of movement of the train whilst controlling the train from the same cab.
REVOCATION OF MOVEMENT AUTHORITY	Cancellation of a previously given permission to move a train to a given location.
RIGHT SIDE FAILURE	A failure that does not result in the level of protection normally provided by the signalling system being reduced. (5)
RISK	The combination of the frequency, probability, and the consequence of a specified hazardous event. (5)
ROLL AWAY	An unintended and non-powered movement of the train in either a forward or reverse direction.
ROUTE	The path along a section of track between one “block” and the next. Track section prepared for train operation. (5)
ROUTE PROVING	The procedure for ensuring that a route is ready for a train to use it. (5)
ROUTE RELEASE	The release of route locking. (5)
ROUTE SUITABILITY DATA	Optional data transmitted to the train borne equipment to allow it to check its ability to run on the track as indicated by the movement authority. It includes data related to loading gauge, traction power supply and axle load.
SAFE STATE	A condition which continues to preserve safety. (5)
SAFETY	Freedom from an unacceptable risk of harm. (3) Definitions for other safety related terms are given in reference 3.
SAFETY ACCEPTANCE	The safety acceptance process and the associated terms are given in reference 4.
SAFETY DISTANCE	Distance between the end of a movement authority and the first possible danger point. (5)
SAFETY LIFE-CYCLE	The safety lifecycle is defined in reference 4.
SCHEDULE ADHERENCE	The ability of a railway system to comply with the train running schedule. (5)
SECTION	A part of the movement authority corresponding to one or more signalling blocks.

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SECTION TIMER	The timer associated with a section as part of the movement authority. When the timer reaches a value defined by the track side equipment the section is no longer available and the movement authority for the train is reduced accordingly.
SEMI-CONTINUOUS TRANSMISSION	Transmission over a small and defined section of a route.
SERVICE BRAKE	See UIC leaflet 541-03
SESSION	The process of establishing a communications link, transferring information and closing the link.
SHALL	Is mandatory. (5)
SHOULD	Is recommended. (5)
SHUNT; PROPELLING	A shunting movement, in which the driver is not situated in the leading vehicle. See also propelling. (5)
SHUNT; HAULING	A shunting movement, in which the driver is situated in the leading vehicle. (5)
SHUNT; ROUTE CLASS	A route used for low speed non-passenger movements. (5)
SHUNTING MODE	ERTMS / ETCS operating modes which allow the train to move in shunting, without available train data. (5)
SHUNTING MOVEMENT	The movement of trains or vehicles other than normal passage along running lines. When vehicles are moved without train data available. (5)
SHUNTING SIGNAL	A signal provided for shunting movements only. A fixed signal intended for shunting movements. In some cases Shunting signals at danger are valid also for train movements. (5)
SIGNAL	A visual display device that conveys instructions or provides advance warning of instructions regarding the driver’s authority to proceed. (5)
SIGNAL LOCATION	The geographical position of a signal. (5)
SIGNALLING SYSTEM	Particular kind of system used on a railway to control and protect the operation of trains. (5)
SLAVE MODE	The ERTMS / ETCS equipment runs in one of the slave modes when it is not the controlling (leading) unit of the train composition. There are the following slave modes: non leading mode, sleeping mode. (5)
SLEEPING MODE	An ERTMS / ETCS mode that is used for the train borne equipment in slave engines controlled by a leading engine.
SOFTWARE LIFECYCLE	The software lifecycle and the associated terms are defined in reference 4.

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SPECIFIC TRANSMISSION MODULE	The train borne equipment of the ERTMS / ETCS must be able to be interfaced with the train borne equipment of an existing train supervision system. The Specific Transmission Module shall perform a translation function between these systems and the ERTMS / ETCS. (5)
SPEED INDICATOR	A track side “indicator” which marks the beginning of the speed restriction and indicates the permitted speed. (5)
SPOT TRANSMISSION	An alternative term for “intermittent transmission”. (5)
STM (EUROPEAN) MODE	A mode used in level STM, it permits the use of a national system but enforces ERTMS / ETCS limits.
STM (NATIONAL) MODE	A mode in level STM, it allows the national system access to the MMI, TIU, and odometer but supervision is to national rules.
STAFF RESPONSIBLE MODE	An ERTMS / ETCS mode that allows a driver to take full responsibility for the movement of a train in a fitted area. The train borne equipment will impose a speed limit in this mode.
STANDBY MODE	An ERTMS / ETCS train borne mode that is a default mode when the train borne equipment is powered up or the cab is closed.
STATIC SPEED PROFILE	The description of the fixed speed restrictions of a given piece of track. The speed restrictions can be related to such items as maximum line speed, curves, points, tunnel profiles, bridges.
STATION	A place where trains stop, or where loading and unloading occurs, and where assistance may be available. Where there can be points (facing or trailing) that makes it possible for the train to use different routes. (5)
STOP SIGNAL	Any main signal capable of showing a stop danger aspect or indication. Position, from where no movement authority is given to a train. It is not necessarily a fixed signal. (5)
SUBSIDIARY SIGNAL	An additional signal installed adjacent to a main signal for controlling shunting movements and movements onto occupied tracks. (5)
SUB-SYSTEM	A combination of equipment, units, assemblies, etc., which performs an operational function and is a major subdivision of the system. (5)
SYSTEM	A composite of equipment, skills, and techniques capable of performing or supporting an operational role , or both. A complete system includes all equipment, related facilities, material, software, services and personnel required for its operation and support to the degree that it can be considered a self-sufficient unit in its intended operational environment. (5)
SYSTEM FAILURE MODE	A train borne mode entered when a fatal failure which could affect safety is found. (5)

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SYSTEM LIFE-CYCLE	The system lifecycle and associated terms are defined in reference 3.
SYSTEMATIC FAULT	An inherent fault in the specification, design, construction, installation, operation or maintenance of a system, sub-system or equipment. (5)
TANDEM	Two or more traction units mechanically but not electrically coupled together, used in the same train. Each traction unit requires a separate driver. (5) Only one unit is designated as leading, the other units are therefore classed as non-leading.
TARGET	Location where the train speed should be below the given target speed
TELEGRAM	A telegram contains one header and an identified and coherent set of packets. A message maybe comprised of one or several telegrams.
TEMPORARY SPEED RESTRICTION	A planned speed restriction imposed for temporary conditions such as track maintenance.
TERMINAL PLATFORM	A platform from which trains can only depart in one direction. (5)
TERMINAL STATION	A station consisting of terminal platforms. (5)
THROUGH STATION	A station from which trains can depart in more than one direction. (5)
TRACK CONDITION	Information transmitted to the train to inform of conditions ahead such as a section without power or a tunnel.
TRACK DESCRIPTION	Information providing as a minimum, the distance of the movement authority, static speed profile and gradient profile. Optionally, it can contain axle load profile, track conditions, route suitability data, areas where shunting is permitted.
TRACK FREE	A route being detected clear of obstacles such that permission may given for a train to enter that route.
TRACK GEOMETRY	The physical arrangement of the track in terms of curvature, gradient and cant. (5)
TRACK OCCUPIED	An object in a route that prevents that route being offered to a train.

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TRACKSIDE EQUIPMENT	The equipment with the aim of exchanging information with the vehicle for safely supervising train circulation. The information exchanged between track and trains can be either continuous or intermittent according to the ERTMS / ETCS level of application and to the nature of the information itself. Track side equipment can be subdivided into two classes: centralised; distributed, (5)
TRACK-TO-TRAIN TRANSMISSION	The transmission of messages from fixed equipment (whether near the track or not) to the train. Transmission of ERTMS / ETCS information from any transmission equipment to a train via balise, loop, radio or other media. Using intermittent transmission (balise or short loop) the information can only be transmitted to a train passing the transmission unit. (5)
TRACTION UNIT	Vehicle from where a train is operated. (5)
TRAIN	A traction unit with or without coupled railway vehicles or a train set of vehicles with train data available. (5)
TRAIN BORNE	The ERTMS / ETCS equipment carried on the train
TRAIN DATA	Data which gives information about the train. Data that characterises a train and which is required by ERTMS / ETCS in order to supervise a train movement. (5)
TRAIN DETECTION	The proof of the presence or absence of trains on a defined section of line. (5)
TRAIN INTEGRITY	The level of belief in the train being complete and not having left coaches or wagons behind.
TRAIN INTERFACE UNIT	The unit that provides the interface between the train borne equipment and the train. It is likely to be unique to a class of train.
TRAIN MOVEMENT	When vehicles are moved with train data available, as a rule from station to station, and as a rule under the authority of proceed aspects from main signals, or similar procedures. (5)
TRAIN ORDER	Control information sent from the ERTMS / ETCS kernel to specific items on the train. E.g Apply emergency brake.
TRAIN TRIP	Initiated when a train passes a danger signal, excluding any occasion when a suppress facility is used, and causes an immediate application of the emergency brake. (5)
TRAINBORNE EQUIPMENT	The equipment with the aim of supervising vehicle operation according to the information received from infrastructure installations, from other non ERTMS / ETCS on-board equipment, from the driver and from the track side signalling system. (5)

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TRAIN-TO-TRACK TRANSMISSION	The transmission of messages from the train to fixed equipment (whether near the track or not). Transmission of ERTMS / ETCS information from a train transmission to any track side equipment via balise, loop, radio or other media. Using intermittent transmission (balise or short loop) the information can only be transmitted from a train passing the transmission unit. (5)
TRANSITIONS	The controlled changes between operating modes and / or levels
TRANSPONDER	See Balise and Eurobalise (5)
TRIP MODE	An ERTMS / ETCS mode that calls for an irrevocable application of the emergency brakes.
UNCOMMISSIONED AREA	Piece of track where ERTMS / ETCS is being installed and the possible ERTMS / ETCS information shall not be taken into account. Train protection cannot be even provided by national systems. (5)
UNFITTED MODE	This mode allows a fitted train to negotiate an unfitted area.
UNPROTECTED WRONG SIDE FAILURE	A wrong side failure where no other part of the signalling system provides protection. (5)
VALIDATION	Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use have been fulfilled. (5)
VALIDATOR	The person or agent appointed to carry out validation. (5)
VARIABLE	A string of bits which is given a unique identity and meaning. (5)
VERIFICATION	Confirmation, by examination and provision of objective evidence, that the specified requirements for the lifecycle phase have been fulfilled. (5)
VERIFIER	The person or agent appointed to carry out verification. (5)
VIGILANCE CONTROL DEVICE	The device in charge of checking the activity of the driver. (5)
VITAL	A description applied to equipment whose correct operation is essential to the integrity of the signalling system. Most vital equipment is designed to fail-safe principles - a wrong side failure of vital equipment could directly endanger rail traffic. (5)
WARNING	Audible and/or visual indication to alert the driver to a condition which requires a positive action by the driver. (5)
WHEELSLIDE	When a braked wheel loses adhesion with the rails and under rotates.
WHEELSLIP	When a traction-driven wheel loses adhesion with the rails and over rotates
WRONG SIDE FAILURE	An equipment failure tending to cause danger to rail traffic. (5)

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5. ABBREVIATIONS

ASP	Axle Load speed Profile
ATC	Automatic Train Control
ATO	Automatic Train Operation
ATP	Automatic Train Protection
AVI	Automatic Vehicle Identification
AWS	Automatic Warning System
BTM	Balise Transmission Module
BTS	Braking to a Target Speed
CEN	Comité Européen de Normalisation
CENELEC	European Committee for Electrotechnical Standardisation (Comité Européen de Normalisation Electrotechnique)
CER	Community of European Railways
CM	Configuration Manager
CRC	Cyclic Redundancy Code
CS	Ceiling Speed
CTS	Centralised Train Signalling
DG	Directorate General
DI	Door Interface
DP	Danger Point
DV	Difference Value between the Permitted Speed to DV_EBI_{min} Emergency Brake Intervention speed (minimum) DV_EBI_{max} Emergency Brake Intervention speed (maximum)
EB	Emergency Braking
EBD	Emergency Brake Deceleration Curve
EBI	Emergency Brake Intervention Curve
EC	European Commission
ECSAG	ERTMS Core SRS Assessment Group
EEIG	European Economic Interest Group.
EIRENE	
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EN	European Norm
EoA	End of Movement Authority
EOLM	End-of-Loop-Marker

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ERRI	European Rail Research Institute
ERTMS	European Rail Traffic Management System
ESROG	Ertms Safety Requirements & Objective Group
ESD	Electrostatic Discharge
ETCS	European Train Control System
EU	European Union
EVC	European Vital Computer
FFFIS	Form-Fit Functional Interface Specification
FFFS	Form-Fit Functional Specification
FIS	Functional Interface Specification
FMEA	Failure Mode and Effects Analysis
FMECA	Failure Mode, Effect and Criticality Analysis
FMS	Functional Module Specification
FRACAS	Failure Reporting and Corrective Actions System
FRS	Functional Requirements Specification
FS	Full Supervision mode
FT	Fault Tolerance Features
GSM	Global System for Mobile Communications
GSM-R	Global System for Mobile Communications - Railways
HEROE	Harmonisation of European rail Rules for Operating ERTMS
I	Immobilising
IEC	International Electro-technical Commission
IL	Integrity Level or Interlocking
IRJ	Insulated Rail Joint
IRSE	Institution of Railways Signal Engineers
IS	Isolation mode
ISM	Industrial Scientific and Medical
ISO	International Standardisation Organisation
KMAC	Authentication Key
KTRANS	Transport Key
LEU	Line side Electronic Unit
LOA	Limit of Movement Authority
LRBG	Last Relevant Balise Group
LTM	Loop Transmission Module
LX	Level crossing
M	Minor
MA	Movement Authority

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MAC	Message Authentication Code
MAR	Movement Authority Request
MMI	Man Machine Interface
MMIU	Man Machine Interface Unit
MRSP	Most Restrictive Speed Profile
MORANE	Mobile Radio for Railway Networks in Europe
MTBF	Mean Time Between Failures
NL	Non Leading mode
NP	No Power mode
OL	Overlap
OS	On Sight mode
P	Permitted speed curve
PCMCIA	Personal Computer Memory Card International Association
PI	Pantograph Interface
PM	Project Manager
PMA	Preventive Maintenance Analysis
PMG	Project Management Group
PT	Post Trip mode
RAM(S)	Reliability, Availability, Maintainability, (Safety)
RAP	Roll Away Protection
RBC	Radio Block Centre
RH	Relative Humidity
RIM	Radio Interface Module
RIU	Radio In-fill Unit
RMP	Reverse Movement Protection
RPP	Reliability Programme Plan
RS	Release Speed
RU	Recording Unit
RV	Reversing mode
S	Service
SB	Service Brake or in the context of modes, Stand By mode
SBD	Service Brake Deceleration Curve
SBI	Service Brake Interface
SBI	Service Brake Intervention Curve
SC	Steering Committee
SE	STM European mode

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SF	System Failure mode
SH	Shunting mode
SIL	Safety Integrity Level
SL	Sleeping mode or Supervised Location
SN	STM National mode
SQA	Software Quality Assurance
SR	Staff Responsible mode
SRS	System Requirements Specification
SSP	Static Speed Profile
SSRS	Sub-System Requirements Specification
STM	Specific Transmission Module
T_{AMT}	Time to Acknowledge Mode Transition
TC	Track Circuit
TCCS	Train Control Command System
TDM	Time Division Multiplex
TF	Time Features
T_{fault}	Time of ERTMS / ETCS fault condition
TI	Traction Interface
TIU	Train Interface Unit
TOU	Time and Odometer Unit
TQM	Total Quality Management
TR	Trip
TSR	Temporary Speed Restriction
T_u	Time of ERTMS / ETCS unavailability per year
UIC	Union International des Chemins de Fer
UN	Unfitted
UNISIG	Proper Name
UTC	Universal Time Co-ordinated
V&V	Verification and Validation
VF	Vital Functions
VRDI	Voice Radio Dialling Interface
W	Warning Curve
WS	Working Site
WSF	Wrong Side Failure

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