

DIN CEN/TS 15531-5:2016-07 (E)

Public transport - Service interface for real-time information relating to public transport operations - Part 5: Functional service interfaces situation exchange: Situation Exchange; English version CEN/TS 15531-5:2016

Contents

	Page
European foreword.....	6
Introduction	8
1 Scope.....	10
2 Normative references	11
3 Terms and definitions	11
4 Symbols and abbreviations	16
5 Situations as Software Entities.....	16
5.1 General.....	16
5.2 Structured Situations.....	17
5.3 Distributed Situation processing.....	18
5.3.1 Identity and Write-Only Updates.....	18
5.3.2 Currency and the Situation Life Cycle	19
5.3.3 Representational model for Situation Elements.....	20
5.3.4 Update chains – Causal chains.....	21
5.3.5 Cross-referencing Situations – Causal chains	22
5.3.6 Branching and distributed updates.....	22
5.3.7 Archiving	24
5.4 Summary of Situation Management	24
5.4.1 General.....	24
5.4.2 Situation Identity.....	24
5.4.3 Situation Life Cycle	25
5.4.4 Situation Update Content	25
5.4.5 Example of identifier allocation.....	26
5.4.6 Date time stamps as identifiers.....	26
5.5 Interoperability of Situation management systems.....	26
5.5.1 General.....	26
5.5.2 Datex2 Interoperability	27
5.5.3 TPEG Interoperability	28
5.5.4 Communications Bandwidth.....	28
6 The Situation Model	28
6.1 General.....	28
6.2 Representing a PT Situation in SIRI-SX	29
6.2.1 Summary of PT Situation model	29
6.2.2 PT Situation Element Body	30
6.2.3 PT Situation Body Details.....	31
6.2.4 PT Situation Reason	33
6.2.5 Situation Consequence	36
6.2.6 The PT AffectsScope	37
6.3 Representing a Road Situation in SIRI-SX	43
6.3.1 Summary of Road Situation model	43
6.3.2 Road Situation Element Body	45
6.3.3 Common Accessibility.....	45
6.3.4 Publishing Actions	46
6.3.5 Common Types.....	47

7	Situation Exchange Service [SX]	54
7.1	Purpose.....	54
7.2	Description.....	54
7.3	Reference Data.....	54
7.4	Capability and Permission Matrices	54
7.4.1	Capability Matrix.....	54
7.4.2	Permission Matrix	56
7.5	UML Diagrammatic Representation.....	56
7.5.1	General	56
7.5.2	UML Detailed Diagram of SituationExchangeRequest.....	57
7.5.3	UML Diagram of SituationExchangeDelivery - Summary	59
7.5.4	UML Diagram of SituationExchangeDelivery - Detail	60
7.5.5	UML Diagram of SituationContext	60
7.6	SituationExchangeRequest.....	61
7.6.1	SituationExchangeRequest Definition	61
7.6.2	SituationStatusFilter Definition	63
7.6.3	SituationNetworkFilter Definition	64
7.6.4	SituationStopPlaceFilter Definition	64
7.6.5	SituationJourneyFilter Definition	65
7.6.6	SituationPlaceFilter Definition	65
7.6.7	SituationRoadFilter Definition	65
7.6.8	AccessibilityNeedFilter Definition.....	66
7.6.9	SituationExchangeRequest Example	66
7.7	SituationExchangeSubscriptionRequest	66
7.7.1	SituationExchangeSubscriptionRequest Definition	66
7.7.2	SituationExchangeSubscriptionRequest Example	67
7.8	SituationExchangeDelivery	67
7.8.1	ServiceDelivery with a SituationExchangeDelivery	68
7.8.2	SituationExchangeDelivery Element	68
7.8.3	SituationContext Element.....	68
7.8.4	SituationNetworkContext Element.....	69
7.8.5	PtSituationElement	69
7.8.6	RoadSituationElement	128
8	SituationExchangeDelivery Examples - SituationExchangeDelivery PT Examples	130
A.1	General	133
A.2	Classes.....	133
A.3	Enumerations.....	133
A.4	Groups.....	133
A.5	Notes.....	133
A.6	Relationships.....	133
A.7	Use of Colour.....	134
A.8	Serialisation: Containment and Reference	134
A.9	Alternative Representations of XML Structures in UML.....	135
A.10	XML Fragment for Example	137
A.11	Order of Attributes.....	138
A.12	Direction of Reading.....	138

A.13	Simple Data Types.....	138
A.14	Reusable Complex Data Types.....	138
B.1	SIRI-SX and Datex2	139
C.1	General.....	142
C.2	Use Cases: Capture and Origination of Situations	142
C.3	CAPT#01 Situations entered manually by operator staff.....	142
C.4	CAPT#02 Situations updated manually by operator staff.....	142
C.5	CAPT#03 Situations being generated automatically from a situation analyser	143
C.6	CAPT#04 Situations arising from Facility Monitoring (e.g. lift failure).....	143
C.7	CAPT#05 Situations arising from Control Actions (e.g. short running, platform change).....	143
C.8	CAPT#06 Situations supplied automatically from a related PT network (e.g. rail incidents being fed to bus system) in both SIRI and TPEG formats	143
C.9	CAPT#07 Situations supplied automatically from a related Road network (e.g. road situations being fed to bus system) Datex2 formats	143
C.10	CAPT#08 Road work affecting bus lanes.....	143
C.11	CAPT#09 Parking not available at an interchange to PT.....	143
C.12	CAPT#10 Weather or non-network specific Situation or event.....	144
C.13	CAPT#11 Cross referencing Situations with previous Situations.....	144
C.14	CAPT#12 Workflow for verification, validation and editorial correction.....	144
C.15	CAPT#13 Providing of collective guidance of passengers.....	144
C.16	CAPT#14 Audit trails, retrospectives and process views.....	144
C.17	Use Cases: Relating Situations to other SIRI services.....	144
C.18	XREF#01 Problem affecting a specific vehicle journey	145
C.19	XREF#02 Problem at a stop place affecting some or all journeys for some or all modes	145
C.20	XREF#03 Problem affecting a whole line or a section of a line between two stop places.....	145
C.21	XREF#04 Problems affecting an interchange.....	145
C.22	XREF#05 Problem affecting a whole network	145
C.23	XREF#06 Disruption (e.g. partial blockage) or degradation (e.g. crowding) of normal travel.....	146
C.24	XREF#07 Problems affecting particular classes of users e.g. impaired mobility.....	146
C.25	Use Cases: Onwards Distribution to other systems (e.g. in TPEG and Datex2).....	146
C.26	DIST#01 Distribution of Situations to displays.....	146
C.27	DIST#02 Distribution of Situations to external information services, e.g. broadcasters	146
C.28	DIST#03 Distribution of Situations to staff.....	146
C.29	DIST#04 Distribution of Situations to alerts and travel angels	147

C.30	DIST#05 Projection of Situations on maps.....	147
C.31	DIST#06 Distribution of Situations to journey planners	147
C.32	DIST#07 Distribution of Situations to personal navigators and smart devices.....	147
C.33	DIST#08 Distribution of Situations to other incident management systems	147
C.34	DIST#09 Distribution of updates to existing Situations	147
C.35	DIST#10 Aging of Situations and updates.....	148
D.1	Mapping of SIRI-SX elements to GTFS-realtime.....	149
D.2	Mapping of SIRI-SX Journey Condition to GTFS-realtime ScheduleRelationship	150
D.3	Mapping of SIRI-SX Situation Categories to GTFS-realtime Cause	150
D.4	Mapping of SIRI-SX Service Conditions to GTFS Real-time Effect.....	151
	Bibliography	152