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Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink®; Part 29: Schedule Data Service

CAUTION

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

The present document is part 29 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.1].

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document is part of the MirrorLink® specification which specifies an interface for enabling remote user interaction of a mobile device via another device. The present document is written having a vehicle head-unit to interact with the mobile device in mind, but it will similarly apply for other devices, which provide a colour display, audio input/output and user input mechanisms.

The present document specifies schedule data service based on SBP (Service Binary Protocol) framework. The service is used to provide schedule data in car environments.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 103 544-27 (V1.3.0): "Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink®; Part 27: Basic Meta Data Service".

[2] ISO 8601:2004: "Data elements and interchange formats -- Information interchange -- Representation of dates and times".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TS 103 544-1 (V1.3.0): "Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink®; Part 1: Connectivity".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

EMail	Electronic Mail
SBP	Service Binary Protocol

4 Data Service Definition

4.1 Schedule Data Service Version 1.0

```
/** This specification defines data objects for the Schedule data
 *  service to be carried over by SBP. By receiving this data, the
 *  schedule data sink can provide schedule information to the
 *  driver through instrument cluster display panel. The Schedule
 *  Source may be implemented in a Mirrorlink Client or a Mirrorlink
 *  Server.
 *  @version 1.0
 */
SERVICE com.mirrorlink.schedule
     : com.mirrorlink.meta.basic version 1.0 {

/** High-level schedule object
 */
STRUCTURE Schedule {

  /** The type of event: 0x0000 – Event; 0x0001 – Task;
   *  0x0002 – Anniversary
   *  @optional, @uid 0x554fb7af
   */
  SHORT eventType;

  /** The name of the event
   *  @mandatory, @uid 0x32525e60
   */
  STRING eventName;

  /** Date expressed according to ISO 8601 [2].
   *  @mandatory, @uid 0x144a7773
   */
  STRING date;

  /** Server Local Time Zone as difference from UTC which takes both
   *  "+" and "-" values.
   *  @mandatory, @uid 0x2d64662d
   */
  SHORT ltz;

  /** Event time in UTC (from when to when) structure
   *  @mandatory, @uid 0xafe05520
   */
  STRUCTURE<Time> timeInfo;

  /** Location information
   *  @optional, @uid 0x7d1eda7a
   */
  STRING location;

  /** Event Description
   *  @optional, @uid 0xebdc4037
   */
  STRING description;

  /** Contacts structure
   *  @optional, @uid 0x3881ad06
   */
  STRUCTURE_ARRAY<Contacts> contactsInfo;
  };
```

```
/** STRUCTURE holding event time details. Schedules are notified
 *  15 mins prior to 'from' by default.
 *  @version 1.0, @optional
 */
STRUCTURE Time {

  /** From time in UTC
   *  @mandatory, @uid 0x79b21f4f
   */
  TIME from;

  /** To time in UTC
   *  @mandatory, @uid 0x5a2fff80
   */
  TIME to;
  };

/** STRUCTURE holding contact details
 *  @version 1.0
 *  @optional
 *  @UID: TBD
 */
STRUCTURE Contacts {

  /** First name
   *  @mandatory, @uid 0x0c921876
   */
  STRING firstName;

  /** Last name
   *  @optional, @uid 0x48217786
   */
  STRING lastName;

  /** Phone Number
   *  @optional, @uid 0x57fb2cd2
   */
  STRING phoneNumber;

  /** EMail
   *  @optional, @uid 0xdead6817
   */
  STRING email;
  };

/** The ScheduleConfig object is set from data sink, to configure the
 *  behavior of data source
 *  @mandatory, @writable, @uid 0x7772b4fe
 */
OBJECT ScheduleConfig {

  /** Maximum number of items to be returned ranging from 1~4.
   *  Default value is 1.
   *  @optional, @uid 0x577142c9
   */
  INT maxNoOfItems;
  /** UTC start time of event
   *  @optional, @uid 0x92b68a6a
   */
  TIME startTime;

  /** UTC end time of event
   *  @optional, @uid 0xa9a217e3
   */
  TIME endTime;
```

```
  };
/** The ScheduleList object contains a list of schedules currently
 *  stored.
 *  @mandatory, @readable, @uid 0x2a28f5ba
 */
OBJECT ScheduleList {

  /** List of Schedule Items ranging from 0~4.
   *  @mandatory, @uid 0x844c24cd
   */
  STRUCTURE_ARRAY<Schedule> scheduleItemList;
  };

};
```

5 SBP Binding

A SBP Sink endpoint shall be able to access the *schedule* object using SBP *Subscribe* and *Get* commands. A SBP Source endpoint shall support the ON_CHANGE SBP subscription type. The *schedule* object stores the next upcoming schedule and is updated 15 minutes before the actual schedule time.

If the SBP Source endpoint is not able to retrieve schedule information temporarily, the SBP Source endpoint shall have the following behavior within the SBP protocol:

- The SBP Source endpoint shall return an SBP *response* message with a `"Not available"` SBP error code in response to a SBP *Get* command to the *schedule* object.
- The SBP Source shall provide a valid *schedule* object, as soon as the schedule information becomes available again.
- The SBP Source endpoint shall send an SBP *response* message with a `"Not available"` SBP error code in response to a SBP *Subscribe* command to the *schedule* object. The SBP Sink endpoint should then send a new *Subscribe* command again not earlier than 5s and not later than 30 s to receive notifications.

The Schedule Meta Data Service uses the following objects and their access capabilities, as defined in [1]:

name / uid	accessType	subscriptionType	minIntervalTime	MaxIntervalTime
Schedule	READABLE	ON_CHANGE	NA	NA
ScheduleConfig	WRITABLE	NONE	NA	NA
ScheduleList	READABLE	NONE	NA	NA

6 Theory Of Operations

6.1 Getting Schedule Information

The following sequence diagram shows how a schedule data sink retrieves metadata about the current schedules from the schedule data source.

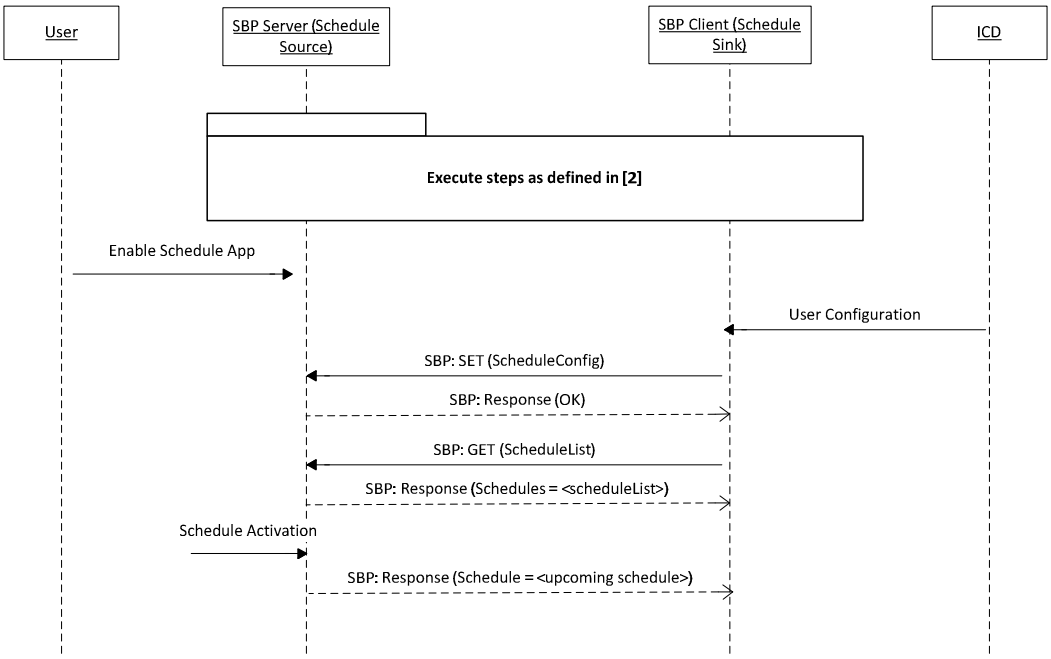

Figure 1: Message Sequence Diagram – Retrieve Schedule metadata

It consists of the following steps, after the data service has been setup as defined in [1]:

1) User wants to know schedules currently stored. Schedule Sink sends SBP: *SET* message to the *ScheduleConfig* object to set filtering conditions on retrieved data. The Schedule Source responds with an SBP: *Response* message confirming the setting.

2) Schedule Sink sends SBP: *GET* message to the *ScheduleList* object. The Schedule Source responds with the SBP: *Response* message, containing all the stored schedule objects (limiting to 4 schedules only).

3) After sometime, one of the schedules is about of become active, then Schedule Source sends an SBP: *Response* message for the *Schedule*, containing the *Schedule* object.

Annex A (informative):

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History

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