Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 2: Scenarios
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Foreword

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

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.1].
1 Scope
The present document classifies and specifies all communication scenarios that shall be supported by GeoNetworking.

2 References
References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

• For a specific reference, subsequent revisions do not apply.
• Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references
The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.


2.2 Informative references
The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

[i.1] ETSI TS 102 636-1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 1: Requirements".

3 Definitions and abbreviations

3.1 Definitions
For the purposes of the present document, the terms and definitions given in [1] apply.

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

R2R Roadside-to-Roadside
4 Classification of communication scenarios

The basic communication scenarios are classified in the following way:

- **Scenarios according to the type of communication endpoints:**
  
  A. Vehicle-to-Vehicle (V2V) communication: communication from an ITS vehicle station to other ITS vehicle stations;
  
  B. Roadside-to-Vehicle (R2V) communication: communication from an ITS roadside station to ITS vehicle stations;
  
  C. Vehicle-to-Roadside (V2R) communication: communication from an ITS vehicle station to ITS roadside stations.

  **NOTE 1:** The ITS roadside station is not necessarily connected with other networks, such as the Internet.

  **NOTE 2:** R2R communication is out of scope of GeoNetworking, however it is basically enabled. In complex scenarios, the concatenation of basic scenarios is possible, for example, V2R + R2V.

- **Communication between different communication endpoints may be realised by the following types of connection:**
  
  1. point-to-point: communication from an ITS station to another;
  
  2. point-to-multipoint: communication from an ITS station to multiple ITS stations;
  
  3. GeoAnycast: communication from an ITS station to an arbitrary ITS station within a geographical target area;
  
  4. GeoBroadcast: communication from an ITS station to all ITS stations within a geographical target area.

  Point-to-point and point-to-multipoint communication are legacy communication scenarios. GeoAnycast and GeoBroadcast are special scenarios in GeoNetworking.

- **Scenarios according to the way how to access the ITS network and transport layer:**
  
  - direct mode: applications access directly the ITS network and transport layer, e.g. safety and traffic efficiency applications;
  
  - indirect mode: applications indirectly access the ITS network and transport layer, i.e. applications access the ITS network and transport layer via an intermediate layer such as IPv6.

  **NOTE 3:** Number of hops, e.g. single hop or multi-hop is not distinguished in the scenarios. Communication is assumed to be n-hop communication, and single-hop communication may be considered as one-hop communication, thus, a special case of multi-hop communication.

  **NOTE 4:** Performance requirements, e.g. latency and reliability etc. are also not considered in the classification.
5 Communication scenarios

5.1 A: V2V scenarios

5.1.1 General
V2V scenarios cover the communication among ITS vehicle stations without support from a communication infrastructure. For each scenario list below, both direct and indirect modes shall be supported.

5.1.2 A1: V2V point-to-point
Communication starts from a single ITS vehicle station and ends at another ITS vehicle station.

5.1.3 A2: V2V point-to-multipoint
Communication starts from a single ITS vehicle station and ends at multiple ITS vehicle stations.

5.1.4 A3: V2V GeoAnycast
Communication starts from a single ITS vehicle station and ends at an arbitrary ITS vehicle station within a geographical area.

5.1.5 A4: V2V GeoBroadcast
Communication starts from a single ITS vehicle station and ends at multiple ITS vehicle stations within a geographical area.

5.2 B: R2V scenarios

5.2.1 General
R2V scenarios cover communication starting from an ITS roadside station and ending at ITS vehicle stations. For each scenario list below, both direct and indirect modes shall be supported.

5.2.2 B1: R2V point-to-point
Communication starts from a single ITS roadside station and ends at a single ITS vehicle station.

5.2.3 B2: R2V point-to-multipoint
Communication starts from a single ITS roadside station and ends at multiple ITS vehicle stations.

5.2.4 B3: R2V GeoAnycast
Communication starts from a single ITS roadside station and ends at an arbitrary ITS vehicle station within a geographical area.

5.2.5 B4: R2V GeoBroadcast
Communication starts from a single ITS roadside station and ends at multiple ITS vehicle stations within a geographical area.
5.3 C: V2R scenarios

5.3.1 General

V2R scenarios cover communication starting from an ITS vehicle stations and ending at ITS roadside stations. For each scenario list below, both direct and indirect modes shall be supported.

5.3.2 C1: V2R point-to-point

Communication starts from a single ITS vehicle station and ends at a single ITS roadside station.

5.3.3 C2: V2R point-to-multipoint

Communication starts from a single ITS vehicle station and ends at one or multiple ITS roadside stations.

5.3.4 C2: V2R GeoAnycast

Communication starts from a single ITS vehicle station and ends at an arbitrary ITS roadside station within a geographical area.

5.3.5 C4: V2R GeoBroadcast

Communication starts from a single ITS vehicle station and ends at one or multiple ITS roadside stations within a geographical area.
### History

#### Document history

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