

Objectives

CAR 2 CAR Communication Consortium



About the C2C-CC

Enhancing road safety and traffic efficiency by means of Cooperative Intelligent Transport Systems and Services (C-ITS) is the dedicated goal of the CAR 2 CAR Communication Consortium. The industrial driven, non-commercial association was founded in 2002 by vehicle manufacturers affiliated with the idea of cooperative road traffic based on Vehicle-to-Vehicle Communications (V2V) and supported by Vehicle-to-Infrastructure Communications (V2I). Today, the Consortium comprises 73 members, with 12 vehicle manufacturers, 33 equipment suppliers and 28 research organisations.

Over the years, the CAR 2 CAR Communication Consortium has evolved to be one of the key players in preparing the initial deployment of C-ITS in Europe and the subsequent innovation phases. CAR 2 CAR members focus on wireless V2V communication applications based on ITS-G5 and concentrate all efforts on creating standards to ensure the interoperability of cooperative systems, spanning all vehicle classes across borders and brands as well as other road users. As a key contributor, the CAR 2 CAR Communication Consortium works in close cooperation with the European and international standardisation organisations such as ETSI and CEN.

Disclaimer

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Document information

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Table 1: Document information

Changes since last version

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Table 2: Changes since last version

Table of contents

| | |
|--|----|
| About the C2C-CC | 1 |
| Disclaimer | 1 |
| Document information | 2 |
| Changes since last version..... | 3 |
| Table of contents..... | 4 |
| List of figures..... | 4 |
| List of tables | 4 |
| 1 Introduction | 5 |
| 2 Scope..... | 6 |
| 3 Conventions to be used..... | 7 |
| 3.1 Modal verbs terminology | 7 |
| 3.2 Item identification | 7 |
| 3.3 Provisions from referenced documents | 7 |
| 3.4 Requirements quality..... | 8 |
| 4 Definitions and abbreviations..... | 9 |
| 4.1 Abbreviations | 9 |
| 5 Objective specifications..... | 10 |

List of figures

| | |
|--|---|
| Figure 1: Example structure of the relation between objectives, features/feature requests and requirements/requirements requests. | 6 |
|--|---|

List of tables

| | |
|---|---|
| Table 1: Document information..... | 2 |
| Table 2: Changes since last version | 3 |
| Table 3: Abbreviations..... | 9 |

1 Introduction

Other (informational)

RS_OBJ_147

Cooperative Intelligent Transport Systems (C-ITS) are a specific subset of Intelligent Transport Systems (ITS) and are defined as a network of systems in which communication partners (vehicles, traffic infrastructure and service providers) exchange information as the basis for a new level of traffic safety and efficiency improvement. As a result of this definition C-ITS is seen as a key technology to fulfill the EU objective “vision zero”. This means that almost no more traffic participants are killed or have a heavy accident in traffic.

The wide scope of the C-ITS definition affects all parts of traffic and thus involves many different stakeholders. This set of stakeholders may also comprise international entities or Standards Developing Organizations (SDO) of different nations. A stakeholder representing automotive industry in field of C-ITS is the CAR 2 CAR Communication Consortium (C2C-CC), an association of vehicle manufacturers, suppliers and research organizations. The primary objective of the C2C-CC is to ensure interoperability in field of C-ITS between different vehicle manufacturers.

2 Scope

Other (informational)

RS_OBJ_146

The present document provides objectives regarding C-ITS from C2C-CC point of view. They focus on vehicles but can be applied to other traffic participants too.

In terms of C2C-CC an objective is defined as an abstract requirement without any further specification about its details. An objective itself is always further detailed by at least one of two ways:

- by a feature, which describes a desired ability in scope of vehicles. The feature again is detailed by one or more pure requirements, which contains the implementation details.
- by a feature request, which describes an expected ability for every other entity outside vehicle scope (e.g. other traffic participants). The feature request again is detailed by one or more requirement requests, if necessary.

Thus an objective can be considered as the most abstract requirement. This implies that an objective itself is not directly testable. An objective can be assumed as “tested”, if all of its detailing features or feature requests are assumed as “tested”. An exemplary structure of this relation between the mentioned requirement layers is shown in Figure 1.

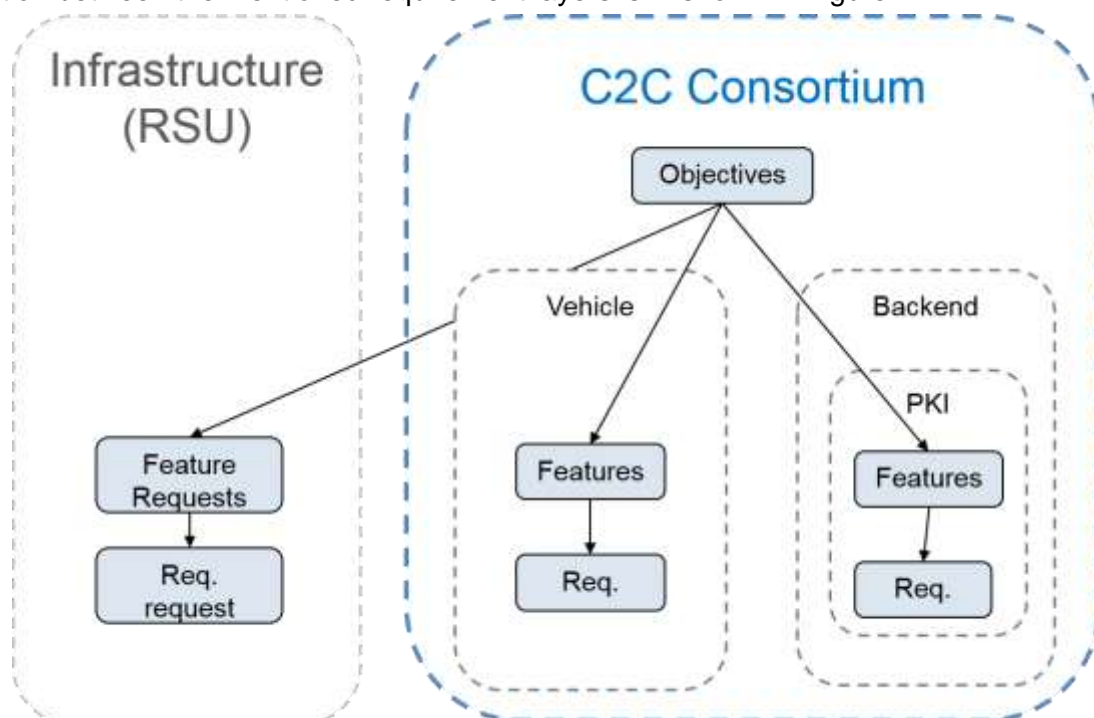


Figure 1: Example structure of the relation between objectives, features/feature requests and requirements/requirements requests.

3 Conventions to be used

3.1 Modal verbs terminology

Other (informational)

RS_OBJ_152

In this document the following verbal forms are used:

- **must:** indicates an absolute requirement of the specification due to legal issues
- **must not:** indicates an absolute prohibition of the specification due to legal issues
- **shall:** indicates an absolute requirement of the specification
- **shall not:** indicates an absolute prohibition of the specification
- **should:** indicates a recommendation. It means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
- **should not:** indicates that something is not recommended. It means that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
- **may:** indicates that something is permitted/possible
- **can:** indicates that something is possible/capable
- **cannot:** indicates that something is not possible/capable
- **will / will not:** indicates the inevitable behavior of the described system
- **is / is not:** indicates facts

3.2 Item identification

Other (informational)

RS_OBJ_422

Each item of this document has its unique identifier starting with "RS_OBJ_" as prefix. For any review annotations, remarks and/or questions please refer to this unique ID rather than chapter or page numbers!

3.3 Provisions from referenced documents

Other (informational)

RS_OBJ_153

Unless otherwise specified in the present document, the normative requirements included in the referenced documents supporting the required functionality of the C2C-CC Basic System shall apply. The verbal forms for the definition of provisions of referenced documents are defined either inside the document, or generally by the SDO (standardization organization) or the organization providing them. For example normative requirements in ETSI documents are indicated by the verbal form "shall".

In case of more than one option in the standard, this document specifies which one is the recommended choice to ensure interoperability and/or sufficient performance. This document supplements the standards in case where standards are open for interpretation or believed not to contain all necessary requirements to ensure interoperability and/or sufficient performance.

This document might also supplement standards in cases where, for performance reasons, it is believed that more stringent requirements than the minimum requirements in the standard shall be applied to ensure sufficient performance.

3.4 Requirements quality

Other (informational)

RS_OBJ_424

All Requirements shall have the following properties:

- **redundancy:** Requirements shall not be repeated within one requirement or in other requirements
- **clearness:** All requirements shall allow one possibility of interpretation only. Only technical terms of the glossary may be used. Furthermore, it must be clear from the requirement, what object the statement is a requirement on. Examples:
 - The <...> module shall/should/may ...
 - The <...> module's environment shall ...
 - The <...> configuration shall...
 - The function <...> shall ...
 - The hardware shall ...
- **atomicity:** Each Requirement shall only contain one requirement. A Requirement is atomic if it cannot be split up in further requirements.
- **testability:** Requirements shall be testable by analysis, review or test.
- **traceability:** The source and status of a requirement shall be visible at all times.
- **formulation:** All requirements shall be formulated so that they can be interpreted without the surrounding context (for example: "the function Xyz..." instead of "this function...").

4 Definitions and abbreviations

4.1 Abbreviations

Other (informational)

RS_OBJ_150

| | |
|--------|--|
| C2C-CC | Car2Car communications Consortium |
| C-ITS | Cooperative Intelligent Transport System |
| ITS | Intelligent Transport System |
| ITS-S | ITS Station |
| SDO | Standards Developing Organization |

Table 3: Abbreviations

5 Objective specifications

Objective**RS_OBJ_426**

Improvement of road safety shall be supported based on communication between geographically scattered entities. The communication shall have the following characteristics:

- ad hoc: This means that no specific network infrastructure is required to establish a communication link.
- local: This means that only communication with entities in vicinity of the originator is necessary.
- low Latency: This means that the time between the transmission of information and reception of those information is minimal.

Detailed by:

Objective**RS_OBJ_427**

To improve the quality of the environmental information for each traffic participant, ITS-Ss shall enable cooperative perception with trusted information.

Detailed by:

Objective**RS_OBJ_428**

To enable major benefits for all traffic participants, a single ITS-S shall be able to communicate with different types of traffic participants. Beside vehicles this includes Roadside Units and Vulnerable Road Users.

Detailed by:

Objective**RS_OBJ_429**

To enable and support future cooperative driving functions, data exchange between ITS-Ss shall create a new source of beneficial information for each ITS-S.

Detailed by:

Objective**RS_OBJ_430**

Improvement of traffic efficiency shall be supported by providing traffic related information based on communication between ITS-Ss.

Detailed by:

Objective**RS_OBJ_431**

An ITS-S shall only transmit plausible information to other ITS-S. This is a common base for improving road safety.

Detailed by:

Objective**RS_OBJ_157**

The C2C-CC Basic System shall provide services for integrity and authenticity protection.

Note: The integrity of the in vehicle network should be protected against unwanted actions emitted by the C2X C2C-CC Basic System. This protection is out of scope of this document.

Detailed by:

Objective

RS_OBJ_408

The C2C-CC Basic System shall provide measures to protect the privacy of the driver/vehicle.

Detailed by:
