
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 88 members, with 18 vehicle manufacturers, 39 equipment suppliers and 31 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 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.

The present document has been developed within the CAR 2 CAR Communication Consortium and might be further elaborated within the CAR 2 CAR Communication Consortium. The CAR 2 CAR Communication Consortium and its members accept no liability for any use of this document and other documents from the CAR 2 CAR Communication Consortium for implementation. CAR 2 CAR Communication Consortium documents should be obtained directly from the CAR 2 CAR Communication Consortium.

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Table 1: Document information

Changes since last version

Title: CAR 2 CAR Communication Consortium Objectives

Explanatory notes:

1	0	24.11.2016	Split former BSP into single documents for objectives, features and requirements as part of CAR 2 CAR Release 1.2.0	Henrik Antoni, Thomas Biehle, Robert Pflug
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Issue	Rev.	Date	Changes	Edited by	Approved
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Table 2: Change history

Open Issues

The document should be handled as a working draft.

RS_OBJ_152: Definitions of terms, as used up to now in the BSP (derived from ETSI), does not completely match to the definition of terms as defined by release management (derived from AUTOSAR). Shall and should are the same, but the others differs.

Table of contents

About the C2C-CC	1
Document information	2
Changes since last version.....	3
Open Issues	4
Table of contents.....	5
List of figures.....	5
List of tables	5
1 Introduction	6
2 Scope.....	7
3 Conventions to be used.....	8
3.1 Modal verbs terminology	8
3.2 Item identification	8
3.3 Provisions from referenced documents	8
3.4 Requirements quality.....	9
4 Definitions and abbreviations.....	10
4.1 Abbreviations	10
5 Objective specifications	11

List of figures

Figure 1: Example structure of the relation between objectives, features/feature requests and requirements/requirements requests.	7
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List of tables

Table 1: Document information.....	2
Table 2: Change history	3
Table 3: Abbreviations.....	10

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 all 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 contain 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 none 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.

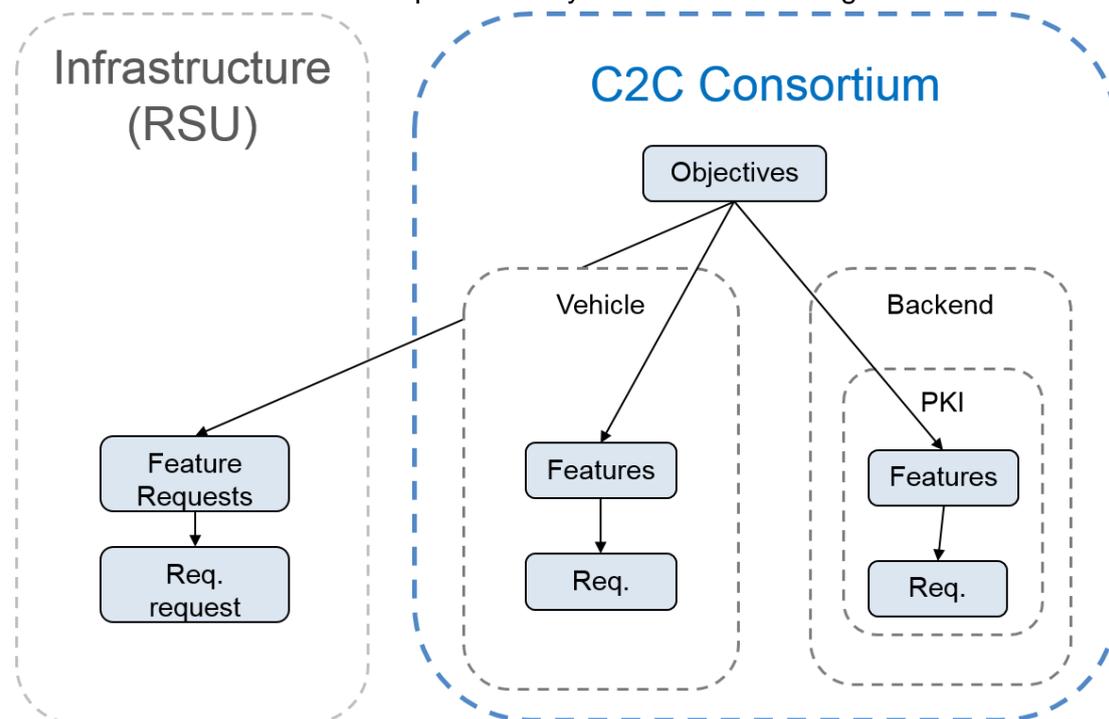


Figure 1: Example structure of the relation between objectives, features/feature requests and requirements/requirements requests.

3 Conventions to be used

3.1 Modal verbs terminology

Other (informational)**RS_OBJ_152**

In this document the following verbal forms are used to indicate requirements:

- Shall
- Shall not

Recommendations shall be indicated by the verbal forms:

- Should
- Should not

Permissions shall be indicated by the verbal forms:

- May
- May not

Possibility and capability shall be indicated by the verbal forms:

- Can
- Cannot

Inevitability, used to describe behavior of systems beyond of scope of this deliverable shall be indicated by:

- Will
- Will not

Facts shall be indicated by the verbal forms:

- Is
- Is not

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 or the organization providing them. For example normative requirements in ETSI documents are indicated by the verbal form “shall”.

When the requirements defined in the standards published by the various organizations stand in conflict, or contradict the requirements specified inside this document, the ones specified inside this document shall always outweigh the requirements included inside the referenced documents.

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 Communication 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 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: RS_FEA_176