



BSI Standards Publication

## **Intelligent transport systems - Location referencing harmonization for Urban ITS**

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State of the art and guidelines

## National foreword

This Published Document is the UK implementation of CEN/TR 17297-1:2019.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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**CEN/TR 17297-1**

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English Version

## Intelligent transport systems - Location referencing harmonization for Urban ITS - Part 1: State of the art and guidelines

Intelligente Verkehrssysteme -  
Ortsreferenzierungsharmonisierung für Urbane ITS -  
Teil 1: Stand der Technik und Richtlinien

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## **European foreword**

This document (CEN/TR 17297-1:2019) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

## Introduction

Location is an ever-present feature of travel-related data and information services. Systems and services are deployed and evolve using a myriad of ways of defining and describing locations. As we move towards more sophisticated ITS services benefits will be accrued in the urban environment by the provision of multimodal offerings to the traveller. This often combines data from the different modes, which in turn will involve the harmonization of location referencing. Further strong trends are emerging with the drive towards greater levels of open data, regulated obligations for access to travel data under various European Union initiatives, and the almost ubiquitous expectation on instant access to travel data by users via the smartphone or other connected devices. Historically, it is appreciated that many of the services will have their bespoke location referencing systems that suit their applications well, and that it would never be successful to oblige city authorities to change their legacy systems, without significant cost, disruption and risk. Therefore, it is preferable to set out a vision towards greater integration, including encouraging cities to consider a standardized location referencing system when they develop or commission new services but support them integrating all systems, both legacy and new.

This document pulls together the many existing referencing systems, classifies them, and then describes them in selected scenarios with use cases, looking at the advantages and disadvantages and the challenges. The primary intended purpose of this document is to act as a kind of “handbook” or “primer” for city engineers and urban administrators who need to combine data from all the transport services that are in the city domain and those transport services that come into the city, to allow a truly multimodal offering, be it traveller information, traffic control, urban logistics, public transport, etc. However this document can be of high interest for every actor dealing with location referencing.

This document has been produced by the CEN/TC 278/WG 17 Project Team 1703 - Location Referencing Harmonization. The project was formed because in the CEN/TC 278/WG 17 PT 1701 report on U-ITS (PD CEN/TR 17143), in which location referencing harmonization was the most supported requirement among the stakeholders consulted. Despite the name of this project, its purpose is not to invent new location referencing systems or to create a “super set” of location references to achieve harmonization; that would not be worthwhile. This document is complemented by a Part 2 that normatively specifies methods for managing the identified challenges, e.g. translating between selected location referencing methods.

Development of this document was based on an outreach to organizations across Europe to identify what is being presently used and to ensure that today's requirements are captured; this document also reflects on emerging application and service requirements and potential foreseeable future needs.

Due to evolving standardization works on indoor location determination and referencing, reference to these are not yet included in this document. Indoor location determination and referencing are likely to be considered in future standards.

At the time of production of this document, referencing to precise road-related location referencing, which is sometimes referred to as lane level referencing, is not yet mature enough to be included.

The audience of this document is those who need to combine data which use different location referencing methods due to their different applications, modes or vendors.

## 1 Scope

This document presents:

- a concise tutorial on location referencing methods;
- applicable location referencing specifications, standards and directives;
- an introduction into challenges given by a multiplicity of different location referencing systems.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **data set**

set of road and traffic data (provided by the data owner)

[SOURCE: SPA - Coordinated Metadata Catalogue]

### 3.2

#### **geographic identifier**

identifier of a geographic location, e.g. a street name with house number

## 4 Symbols and abbreviations

AVM	automatic vehicle monitoring
CRS	coordinate reference system
CS	coordinate system
EPSG	European Petroleum Survey Group
ETRS	European terrestrial reference system
EU	European Union
GALILEO	name of the European satellite navigation and time reference system
GIS	geographic information system
GLONASS	Global Navigation Satellite System
	NOTE 1 Russian: globalnaja nawigazionnaja sputnikowaja sistema.
	NOTE 2 Name of the satellite navigation and time reference system of the Russian Federation.
GLR	geographic location referencing
GML	geography markup language