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## **Intelligent transport systems — Systems architecture — Use of unified modelling language (UML) in ITS International Standards and deliverables**

*Systèmes intelligents de transport — Architecture de systèmes — Emploi du langage de modélisation unifié (UML) dans les Normes internationales ITS et produits livrables*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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ISO/TR 24529 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

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## Introduction

The objective of this Technical Report is to provide guidance on the use of the “Unified Modeling Language” [UML] in the development of standards for “Intelligent Transport Systems” [ITS].

The advantages of applying UML to the development of ITS include the following:

- UML provides an Internationally Standardized form of system model that should be readily interpreted anywhere world-wide;
- UML enables cohesive description from multiple user views;
- There is available extensive training and tool support for UML;
- UML is capable of manipulation by a metadata registry for ITS;
- UML tools enable conversion directly to computer coding;
- UML is very widely used in the architecture, design and development of software-intensive systems.

The disadvantages of using UML include the following:

- UML is not understood by many stakeholders who are not also software developers;
- UML uses a larger amount of unfamiliar language and jargon which, while it may be necessary for precision, is daunting and off-putting to the non specialist and lay reader;
- UML is not yet developed enough to support the full scope of systems engineering;
- UML is still under active development and therefore the compatibility of UML models may be an issue.

There are therefore some risks in using UML but nevertheless the benefits are widely judged as exceeding the disadvantages. This document is intended to provide guidance to stakeholders who are considering the use of UML for ITS.