INTERNATIONAL STANDARD

**ISO/IEC 24730-1**

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# Information technology — Real-time locating systems (RTLS) —

## Part 1: Application program interface (API)

*Technologies de l'information — Systèmes de localisation en temps réel (RTLS) —*

*Partie 1: Interface de programmation d'application (API)*



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# Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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

ISO/IEC 24730-1 was prepared by Technical Committee ISO/TC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

ISO/IEC 24730 consists of the following parts, under the general title *Information technology — Real-time locating systems (RTLS)*:

— *Part 1: Application program interface (API)*

— *Part 2: 2,4 GHz air interface protocol*

The following part is under preparation:

— *Part 3: 433 MHz air interface protocol*

# Introduction

ISO/IEC 24730 defines two air interface protocols and a single application program interface (API) for real-time locating systems (RTLS) for use in asset management and is intended to allow for compatibility and to encourage interoperability of products for the growing RTLS market.

This part of ISO/IEC 24730, the RTLS application program interface, establishes a technical standard for RTLS. To be fully compliant with this standard, RTLS must comply with this part of ISO/IEC 24730 and at least one air interface protocol defined in ISO/IEC 24730.

Real-time locating systems are wireless systems with the ability to locate the position of an item anywhere in a defined space (local/campus, wide area/regional, global) at a point in time that is, or is close to, real time. Position is derived by measurements of the physical properties of the radio link.

Conceptually there are four classifications of RTLS:

— Locating an asset via satellite (requires line-of-sight) - accuracy to 10 m.

— Locating an asset in a controlled area, e.g., warehouse, campus, airport (area of interest is instrumented) - accuracy to 3 m.

— Locating an asset in a more confined area (area of interest is instrumented) - accuracy to tens of centimetres.

— Locating an asset over a terrestrial area using a terrestrial mounted receiver over a wide area, cell phone towers for example – accuracy 200 m.

There are a further two methods of locating an object which are really RFID rather than RTLS:

— Locating an asset by virtue of the fact that the asset has passed point A at a certain time and has not passed point B.

— Locating an asset by virtue of providing a homing beacon whereby a person with a handheld can find an asset.

The method of location is through identification and location, generally through multi-lateration. The different types are

— Time of Flight Ranging Systems,

— Amplitude Triangulation,

— Time Difference of Arrival (TDOA),

— Cellular Triangulation,

— Satellite Multi-lateration,

— Angle of Arrival.

This part of ISO/IEC 24730 defines an API needed for utilizing an RTLS.

An API is a boundary across which application software uses facilities of programming languages to invoke services. These facilities may include procedures or operations, shared data objects and resolution of identifiers. A wide range of services may be required at an API to support applications. Different methods may be appropriate for documenting API specifications for different types of services.

The information flow across the API boundary is defined by the syntax and semantics of a particular programming language, such that the user of that language may access the services provided by the application platform on the other side of the boundary. This implies the specification of a mapping of the functions being made available by the application platform into the syntax and semantics of the programming language. An API specification documents a service and/or service access method that is available at an interface between the application and an application platform.

This API describes the RTLS service and its access methods, to enable client applications to interface with the RTLS. This RTLS service is the minimum service that must be provided by an RTLS to be API compatible with this standard.

# Information technology — Real-time locating systems (RTLS) —

# Part 1:
# Application program interface (API)



## 1 Scope

This part of ISO/IEC 24730 enables software applications to utilize a real-time locating system (RTLS) infrastructure to locate assets with RTLS transmitters attached to them. It defines a boundary across which application software uses facilities of programming languages to collect information contained in RTLS tag blinks received by the RTLS infrastructure.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 19762-1, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 1: General terms relating to AIDC*

ISO/IEC 19762-3, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 3: Radio frequency identification (RFID)*

ISO/IEC 9075:2003 (all parts), *Information technology — Database languages — SQL*

IETF RFC 2616: June 1999, *Hypertext Transfer Protocol — HTTP/1.1* (http://www.ietf.org/rfc/rfc2616.txt)

*Extensible Markup Language (XML) 1.0*, (Third Edition) W3C Recommendation, World Wide Web Consortium (W3C), 4 February 2004. (http://www.w3.org/TR/REC-xml/)

*XML Schema Part 1: Structures*, W3C Recommendation, World Wide Web Consortium (W3C), Cambridge Massachusetts, 2 May 2001. (http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/)

*XML Schema Part 2: Datatypes*, W3C Recommendation, World Wide Web Consortium (W3C), Cambridge Massachusetts, 2 May 2001. (http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/)

*SOAP Version 1.2 Part0: Primer,* W3C Recommendation, World Wide Web Consortium (W3C), 24 June 2003, (http://www.w3.org/TR/2003/REC-soap12-part0-20030624/)

*SOAP Version 1.2 Part1: Messaging Framework,* W3C Recommendation, World Wide Web Consortium (W3C), 24 June 2003. (http://www.w3.org/TR/2003/REC-soap12-part1-20030624/)

*SOAP Version 1.2 Part2: Adjuncts,* W3C Recommendation, World Wide Web Consortium (W3C), 24 June 2003. (http://www.w3.org/TR/2003/REC-soap12-part2-20030624/)