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Tourism and related services — Semantics applied to tourism destinations

Tourisme et services connexes — Sémantique appliquée aux destinations touristiques

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by the Technical Committee ISO/TC 228, *Tourism and related services*.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

An increasing number of tourism destinations are becoming more digitalized. This digital transition involves various challenges but is a necessary condition for ensuring the sustainability and competitiveness of this strategic sector. Through the use of technology, destinations can influence tourists' behaviour to improve their experience, enhance their satisfaction and increase tourist expenditure. One of the key elements that helps to achieve this is providing relevant and customized information to tourists, before, during and after their stay at the destination.

Tourism involves both intensive generation and use of data. Information plays an important role in the decision-making process for the tourist, the destination manager and the business sector. With this constant information flow between digital systems and people, there is a need to standardize a semantic base in the tourism sector to ensure mutual understanding.

With their high processing capacity, digital systems allow complex operations and can offer information in real time both to the destination and the tourist. For the destination, digital systems provide the ability to anticipate and manage different scenarios, for example to adjust public services to the actual volume of people. For tourists, digital systems act as an interface of the destination and an agile facilitator of information, aligned with the tourist's preferences.

Digital systems process information and lines of code with instructions. Semantics endows an object with a machine-interpretable meaning, providing additional information that can be understood by a computer, thereby facilitating communication between humans and machines and between machines. Digital systems are required to acquire a sufficiently high level of comprehension to be able to interact with the tourist who is connected through different channels (web, app, chatbot, etc.) throughout the trip cycle. Digital systems deliver updated digital content in a flexible, adapted, precise and agile way. In short, the semantic base presented in this document aims to provide digital systems with the context they require for human/machine and machine/machine interaction to be as efficient as possible.

The digital transformation process of a tourism destination shares many aspects with that of smart cities and territories. However, destinations must cater to tourists and visitors which are not foreseen by the city, and which have specific needs for information (i.e. content) and services. This document is aimed at destinations within the tourism ecosystem that aspire towards digital transformations. This document is intended to lay the foundations for using semantics to structure the tourist information that is transmitted in different channels and used by tourists and visitors. This document does not intend to define how it should be generated, stored or processed. Furthermore, this document allows a common data structure to be shared to ensure interoperability among tourism and city platforms managed by different stakeholders.

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Tourism and related services — Semantics applied to tourism destinations

1 Scope

This document provides a semantic base that allows the representation of relevant information related to tourism destinations, including resources and services within the destination, travel experiences, and the destination itself. It establishes the terminology, hierarchy, and the minimum properties and relationships required for the definition of a reference semantic structure, ensuring the interoperability of local, territorial and country tourism information technology (IT) platforms with third-party digital systems.

This document provides tourism destinations with semantic data structures that primarily benefit final users (i.e. tourists and other interested parties), as these structures allow destinations to provide access to relevant information in an intuitive and agile way, and improve the interaction between tourists and the systems that manage, publish, carry transactions and accompany tourists during their journey. Furthermore, destination managers, data managers and data publishers, applying this document can also benefit from such implementation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 639, *Code for individual languages and language groups*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO 4217, *Codes for the representation of currencies*

ISO 8601-1, *Date and time — Representations for information interchange — Part 1: Basic rules*

ISO 8601-2, *Date and time — Representations for information interchange — Part 2: Extensions*

ISO 16520, *Tourism and related services — Restaurants and catering — Vocabulary*

ISO 18513, *Tourism services — Hotels and other types of tourism accommodation — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18513, ISO 16520 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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3.1 Technical terms

3.1.1
semantics
information that defines the meaning rather than the physical representation of data

Note 1 to entry: Semantics potentially cover a very large *domain* (3.1.2), from the simple domain, such as the units of one data *entity* (3.1.5), to a more complex one, such as the *relationship* (3.1.4) between one data entity and another.

[SOURCE: ISO 21961:2003, 017, modified — part of the original definition was moved to Note 1 to entry.]

3.1.2
domain
subject field, sphere of knowledge or activity having its own specialized culture, social context, and linguistic characteristics

[SOURCE: ISO 17100:2015, 2.3.10]

3.1.3
ontology
logical structure of the terms used to describe a domain of knowledge, including both the definitions of the applicable terms and their *relationships* (3.1.4)

[SOURCE: ISO/IEC/IEEE 24641:2023, 3.1.23]

3.1.4
relationship
perceived association among objects, *entities* (3.1.5), among *attributes* (3.1.7)

Note 1 to entry: A relationship itself may be considered an object, entity or property.

[SOURCE: ISO/IEC 20944-1:2013, 3.14.2.6]

3.1.5
entity
semantic/pragmatic unit referenced in discourse, including circumstances, and objects

Note 1 to entry: An entity is represented by a node in a content structure.

3.1.6
instance
specific object (abstract or concrete) that is an element of the set denoted by an atomic *type* (3.1.8) or combination of types (i.e. conjunction or disjunction)

3.1.7
property
attribute
inherent property or characteristic of an *entity* (3.1.5) that can be distinguished quantitatively or qualitatively by human or automated means

[SOURCE: ISO/IEC 25000:2014, 4.1, modified — notes to entry have been deleted]

3.1.8
type
class
set of *instances* (3.1.6) that share the same characteristics

Note 1 to entry: The characteristics can be embodied by the use of *properties* (3.1.7), operations, methods, *relationships* (3.1.4), *semantics* (3.1.1), etc.

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3.1.9
subtype
subclass
type (3.1.8) that inherits *attributes* (3.1.7), operations, methods, *relationships* (3.1.4) and *semantics* (3.1.1) from another type, with some restrictions or extensions

[SOURCE: ISO 28258:2013, 3.32, modified — "subtype" has replaced "subclass" as the preferred term; "class" has been replaced with "type" in this definition.]

3.1.10
serialization
process of translating data structures or object states into a format that can be stored or transmitted and reconstructed later

[SOURCE: ISO/TS 23494-1:2023, 3.16[1)]]

3.1.11
JavaScript Object Notation
JSON
open and text-based exchange format

Note 1 to entry: Data transmitted in JSON formats make it easy to read and write (for humans), parse and generate (for computers).

[SOURCE: ISO/TS 23029:2020, 3.3]

3.1.12
JSON-LD
lightweight format for serializing *linked data* (3.1.13), based on *JSON* (3.1.11), that inherits its human readability, and is widely used to transmit encoded data

3.1.13
linked data
data related to other semantically defined data and which are identified and represented on the web

3.1.14
namespace
common uniform resource identifier (URI) prefix or stem used in identifiers for a set of related resources

[SOURCE: ISO 19150-2:2015, 4.1.26]

3.1.15
extensible markup language
XML
schema that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable

[SOURCE: ISO 29404:2015, 3.28]

3.1.16
RDF
framework for constructing logical languages that can work together in the *semantic web* (3.1.18) and a way of using *XML* (3.1.15) for data rather than just documents

[SOURCE: ISO 5127:2017, 3.1.13.23]

1) Withdrawn and replaced by ISO 23494-1:2026.

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3.1.17
XSD
World Wide Web Consortium (W3C) recommendation that specifies how to formally describe the elements in an *extensible markup language(XML)* (3.1.15) document

[SOURCE: ISO/TS 17451-2:2017, 3.6]

3.1.18
semantic web
version of the internet following Web 2.0 which rather than simply connecting internet addresses and data in their formal form additionally does effect data linking through and in favour of their semantic content or meaning, thus providing enriched and enlarged information answering requests

[SOURCE: ISO 5127:2017, 3.1.9.06]

3.1.19
microdata
format for encoding structured data within hypertext markup language (HTML) code, embedded in websites and emails

3.1.20
data type
definition of the structure of a data element

Note 1 to entry: All data types have a name ending with “Type”

[SOURCE: ISO 28005-2:2021, 3.1.2]

3.1.21
range
class of which a value described by the term is an *instance* (3.1.6)

[SOURCE: ISO 15836-2:2019, 3.1.8]

3.1.22
data manager
person or entity who establishes plans for data quality improvement in an organization, grants data administrators the authority to trace and correct data over the information systems or organization, and maintains data consistency in individual information systems through the organization-wide data architecture

[SOURCE: ISO 8000-2:2022, 3.14.5, modified — "or entity" has been added to the definition.]

3.1.23
interoperability
ability of two or more systems or applications to exchange information and to use the information that has been exchanged

[SOURCE: ISO/TS 27790:2009, 3.39[2)]]

3.1.24
competency question
natural language question that defines the scope and rationale of an *ontology* (3.1.3)

2) Cancelled and replaced by ISO/TS 27790:2026,

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3.2 Tourism terms

3.2.1
event
experience which takes place at a specific time and location

[SOURCE: ISO 22483:2020, 3.6]

3.2.2
activity
something done for enjoyment

3.2.3
certification
proof of compliance with standards, requirements, characteristics or demands

3.2.4
cultural heritage
legacy of physical objects and intangible attributes of a group or a society that are inherited from past generations, maintained and protected in the present and preserved for future generations

[SOURCE: ISO 18461:2016, 2.1.3]

3.2.5
local business
company or commercial establishment operating in a specific physical location providing products or services.

3.2.6
natural heritage
natural features, formations and areas, including ecosystems, biodiversity, geological and geomorphological elements, and natural landscapes, that have environmental, scientific, cultural or aesthetic value and are recognized for their importance to present and future generations

3.2.7
place
any point, building, area, town or country

3.2.8
product
output of an *organization* (3.2.34) that can be produced without any transaction taking place between the organization and the customer

Note 1 to entry: Production of a product is achieved without any transaction necessarily taking place between provider and customer, but can often involve this service element upon its delivery to the customer.

Note 2 to entry: The dominant element of a product is that it is generally tangible.

[SOURCE: ISO 9000:2026, 3.7.6, modified — note 3 to entry has been removed.]

3.2.9
service
output of an organization, with at least one activity necessarily performed between the organization and the customer

[SOURCE: ISO 23592:2021, 3.10]

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3.2.10
special offer
offer of *products* (3.2.8) that vary from the regular *offer* (3.2.21) including, but not limited to, bundles of like or unlike products and sizes, temporary price reductions, free gifts or extra quantities, and offered and perishable products close to their use-by date

[SOURCE: ISO 21041:2018, 3.8]

3.2.11
tourism entity
place (3.2.7), site or element often highlighted for their scenic beauty, historical importance, cultural uniqueness or recreational value, that has significant value and appeal to tourists and is capable of motivating their travel

3.2.12
tourist guide
person who guides visitors in the language of their choice and interprets the *cultural* (3.2.4) and natural *heritage* of an area, which person normally possesses an area-specific qualification usually issued and/or recognised by the appropriate authority

[SOURCE: EN 13809:2003]

3.2.13
tourist information office
physical facility where tourist information services are provided either onsite or online with the aim of meeting and improving the tourists' expectations once they are at the destination

[SOURCE: ISO 14785:2024, 3.1]

3.2.14
tourism destination
physical space with or without administrative and/or analytical boundaries in which a visitor can spend an overnight, consisting of a clustering or co-location of products and services and of activities and experiences along the tourism value chain and a basic unit of analysis of tourism

Note 1 to entry: A destination incorporates various stakeholders and can network to form larger destinations. It is also intangible with its image and identity, which can influence its market competitiveness.

[SOURCE: ISO 21902:2021, 3.17]

3.2.15
trail
narrow road, track or pathway, usually unpaved, in natural surroundings

[SOURCE: ISO 3021:2023, 3.23]

3.2.16
trip
planned or actual journey undertaken by a person from an origin to a *tourism destination* (3.2.14), typically involving one or more stops including transportation, accommodation and activities over a defined time period

3.2.17
accommodation establishment
establishment providing tourist accommodation

[SOURCE: ISO 21401:2018, 3.2]

3.2.18
accommodation offer
proposal of an *accommodation establishment* (3.2.17) to sell a specific set of *products* (3.2.8) (accommodation) or *services* (3.2.9) under specific conditions or rates, for a certain price.

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3.2.19
civic structure
publicly accessible physical or institutional entity serving a civic function, such as town halls, libraries, post offices or public squares, that supports community life and governance

3.2.20
holiday rental
private house in which tourist accommodation is provided in a studio, an apartment or the entire house.

3.2.21
offer
statement of terms under which a product or service is made available (e.g. for purchase, rental), including price, availability, and conditions of use

3.2.22
administrative area
geographically defined region with established governance or administrative boundaries, such as a country, state, province or municipality, used for official purposes

3.2.23
audio object
digital file or stream containing recorded sound, such as guided tour narration, ambient audio or language translations, intended for playback in the tourism context

3.2.24
contact point
designated means of communication (e.g. phone number, email, website) through which a person or organization can be reached for inquiries or support

3.2.25
creative work
an original intellectual or artistic production

EXAMPLE A brochure, documentary film or cultural performance.

3.2.26
day of week
one of the seven named periods (Monday through Sunday) that constitute a standard weekly cycle, used to define recurring schedules or events

3.2.27
geo coordinates
pair of numerical values (latitude and longitude) that uniquely identify a point on the Earth's surface, referenced to a standardized geodetic system that can also include elevation

3.2.28
image object
digital representation of a visual scene or object

EXAMPLE A photograph, map or illustration.

3.2.29
item list
ordered or unordered collection of items

3.2.30
list item
individual member of a list

[SOURCE: ISO 24183:2024, 3.7.3.2]

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3.2.31
location feature specification
structured description of a location's characteristics (e.g. accessibility, amenities) that enables precise identification and classification within a tourism context

3.2.32
media object
digital file containing audio, video or image content

3.2.33
opening hours specification
structured declaration of the times during which a service or facility is available to visitors, including regular hours, exceptions, and seasonal variations

3.2.34
organization
provider offering tourism *services* (3.2.8) and *products* (3.2.9)

[SOURCE: ISO/PAS 5643:2021, 3.10]

3.2.35
payment method
method used by the customer to pay for the service

[SOURCE: ISO 14452:2012, 2.30]

3.2.36
person
any *entity* (3.1.5) which is a natural or legal person

[SOURCE: ISO/IEC 23126:2021, 3.15]

3.2.37
physical effort
amount of physical exertion required to complete the route, taking into account extension and unevenness (uphill and downhill), based on an average participant

3.2.38
postal address
address, possibly inclusive of the explicit identity of an addressee, where the addressable object is an actual or potential delivery point for a postal item

[SOURCE: ISO 19160-4:2023, 3.11]

3.2.39
practice condition
relevant specific conditions of a *trail* (3.2.15) including the locomotion mode (walk trail, etc.), as well as any other condition (weather, seasonality, etc.)

3.2.40
price specification
structured definition of the cost associated with a tourism offer, including amount, currency, validity period, and applicable taxes or discounts

3.2.41
property value
specific value assigned to an attribute (e.g. "name"), representing its state or characteristic at a given time

3.2.42
quantitative value
measurable quantity expressed as a number with an associated unit (e.g. 5 km), that can be used to describe dimensions of tourism services or experiences

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3.2.43
route navigation orientation
degree of difficulty in orientation, such as the presence of signs, well-marked *trails* (3.2.15), single-track trails or the presence of landmarks needed to complete the route

3.2.44
schedule
time based-plan that defines when an activity, service or event occurs repeatedly or at specific intervals (e.g. seasonal events)

Note 1 to entry: It can be used to represent validity periods of a price specification.

3.2.45
severity of the environment
dangers and other difficulties arising from the natural environment, such as temperature, rainfall, risk of falls, ease of rescue or self-rescue, which can be encountered along the way

3.2.46
terrain conditions
aspects found on the route in relation to the ground and its conditions, such as types of terrain, sections with obstacles, sections with loose stones

3.2.47
theme
attribute of a tourism entity that a tourist may find sufficiently attractive to motivate a visit or trip

3.2.48
thing
anything that is or can be thought about or perceived

Note 1 to entry: This definition is taken from ISO 15926-2, in which thing is an entity but not a defined term, including material and non-material objects, ideas and actions.

[SOURCE: ISO 15926-6:2024, 3.1.22]

3.2.49
video object
digital moving image sequence with synchronized audio

4 Purpose and motivation

4.1 Purpose

Tourism destinations aim to place tourists at the centre of the action, so that tourists can both benefit from and contribute to some services involving data and information. The tourist's perception of the destination is global, made up of a multitude of micro-experiences resulting from their interaction with different service providers, for which the tourist does not know whether they are public or private. This vision can only be realized to its full potential if the different technologies used by destinations to respond to the demands of the connected tourist and their own management incorporate a common semantic core.

The value that destinations offer their tourists is concentrated in flows of information organized and stored in the content management system (CMS) and distributed through all channels: web portal, applications (apps), social media campaigns, tourist information offices, etc. Semantics optimizes the delivery of useful and relevant information for the tourist, as it allows the segmentation of this information — namely, hierarchized according to their motivations and preferences — in the shortest possible time by means of an agile and predictive search.

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