

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19

ISO/IEC ~~draft~~ DTS 5928

ISO ~~TC~~/IEC JTC 1/SC 38 ~~AWG 2~~

Secretariat: ANSI

Date: ~~2022-12-20~~ 2023-03-28

**Title:** Information technology. — Cloud computing and distributed platforms — Taxonomy for digital platforms

**DTS** *Technologies de l'information — Informatique en nuage et plates-formes distribuées — Taxonomie pour les plates-formes numériques*

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0f1a-4d19-9c0a-f6136ec85ac2/iso-iec-dts-5928>

**Warning for WDs and CDs**  
This document is not an ISO International Standard. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an International Standard.  
Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

ISO #####-#:####(X)

© ISO 2022

# iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/IEC DTS 5928

<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0f1a-4d19-9c0a-f6136ec85ac2/iso-iec-dts-5928>

1 [© ISO/IEC 2023](#)

2 All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this  
3 publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical,  
4 including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can  
5 be requested from either ISO at the address below or ISO's member body in the country of the requester.

6 ISO copyright office  
7 CP 401 • Ch. de Blandonnet 8  
8 CH-1214 Vernier, Geneva  
9 Phone: +41 22 749 01 11  
10 ~~Email~~E-mail: [copyright@iso.org](mailto:copyright@iso.org)  
11 Website: ~~www.iso.org~~[www.iso.org](http://www.iso.org)

12 Published in Switzerland

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

[ISO/IEC DTS 5928](#)

<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0fla-4d19-9c0a-f6136ec85ac2/iso-iec-dts-5928>

**Contents**

13

14

15

16 2 Normative references ..... 1

17 3 Terms and definitions ..... 2

18 3.1 Basic terms ..... 2

19 3.2 Terms relating to platform participation ..... 2

20 3.3 Terms related to digital technology platforms ..... 3

21 3.4 Terms related to digital economic platforms ..... 3

22 4 Abbreviated terms ..... 4

23 5 Digital platform overview ..... 6

24 5.1 General ..... 6

25 5.1.1 Meanings of “platform” ..... 6

26 5.1.2 Meanings of “digital platform” ..... 7

27 5.2 The ambiguity of “platform” for digital services ..... 7

28 5.3 Characteristics of digital platforms ..... 9

29 5.3.1 Network effects ..... 9

30 5.3.2 “Private” vs “Open” platforms ..... 9

31 5.3.3 Cross-cutting considerations ..... 10

32 6 Digital technology platforms ..... 10

33 6.1 General ..... 10

34 6.2 Cloud service capabilities types indicative of digital technology platforms ..... 12

35 6.3 Cloud services offering infrastructure capabilities type ..... 13

36 6.4 Cloud services offering platform capabilities type ..... 13

37 6.4.1 Platform as a Service (PaaS) ..... 13

38 6.4.2 Data Storage as a Service (DSaaS) ..... 14

39 6.4.3 Communications as a Service (CaaS) ..... 14

40 6.4.4 Emerging cloud services with platform capabilities ..... 14

41 6.5 Software development platforms ..... 15

42 6.6 Example of digital technology platforms in context ..... 16

43 6.7 One-sided and multi-sided technology platforms ..... 17

44 6.7.1 One-sided technology platform ..... 18

45 6.7.2 Two-sided or Multi-sided digital technology platform ..... 18

46 7 Digital economic platforms ..... 18

47 7.1 General ..... 18

48 7.2 Common characteristics of digital economic platforms ..... 18

49 7.2.1 Digital economic platforms as matchmakers ..... 18

50 7.2.2 Payment for use of a digital economic platform ..... 19

51 7.3 Taxonomy of digital economic platforms ..... 20

STANDARD PREVIEW  
 (standards1feb.ai)  
 ISO/IEC DTS 5928  
<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0f1a-4d19-9c0a-f6136cc85ac2/iso-iec-dts-5928>

52	7.3.1	Exchange platform.....	20
53	7.3.2	Application marketplace.....	22
54	7.3.3	Payment platform .....	22
55	7.3.4	Ad-funded platforms.....	25
56	8	Impact of platform characteristics on participant behaviour .....	27
57	8.1	General .....	27
58	8.2	Network effects .....	27
59	8.2.1	Positive network effects.....	27
60	8.2.2	Negative network effects .....	28
61	8.2.3	Impact of network effects.....	28
62	8.3	Customer inertia .....	28
63	8.4	Stickiness.....	28
64	9	Observations and conclusion.....	29
65		(informative).....	30
66	Annex A	Illustrative taxonomic hierarchies .....	31
67		(informative).....	40
68	Annex B	Comparison of monetisation and network effects.....	41
69	Bibliography .....		43
70			

IT-IT STANDARD PREVIEW  
(standards.iteh.ai)

ISO/IEC DTS 5928

<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0f1a-4d19-9c0a-f6136ec85ac2/iso-iec-dts-5928>

71 **Foreword**

72 ISO (the International Organization for Standardization) ~~is a and IEC (the International Electrotechnical~~  
73 ~~Commission) form the specialized system for worldwide federation of national~~  
74 ~~standards standardization. National bodies (that are members of ISO member bodies). The work or IEC~~  
75 ~~participate in the development of preparing International Standards is normally carried out through ISO~~  
76 ~~technical committees. Each member body interested in a subject for which a technical committee has~~  
77 ~~been established has the right to be represented on that committee. International by the respective~~  
78 ~~organization to deal with particular fields of technical activity. ISO and IEC technical committees~~  
79 ~~collaborate in fields of mutual interest. Other international organizations, governmental and non-~~  
80 ~~governmental, in liaison with ISO and IEC, also take part in the work. ISO collaborates closely with the~~  
81 ~~International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.~~

82 The procedures used to develop this document and those intended for its further maintenance are  
83 described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the  
84 different types of ~~ISO documents~~ document should be noted. This document was drafted in accordance  
85 with the editorial rules of the ISO/IEC Directives, Part 2 (~~see [www.iso.org/directives/2](http://www.iso.org/directives/2) (see~~  
86 ~~[www.iso.org/directives](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).~~

87 ~~Attention is drawn~~ ISO and IEC draw attention to the possibility that ~~some of the elements~~ implementation  
88 of this document may ~~be involve~~ the ~~subject~~ use of (a) patent rights. ISO(s). ISO and IEC take no position  
89 ~~concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the~~  
90 ~~date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be~~  
91 ~~required to implement this document. However, implementers are cautioned that this may not represent~~  
92 ~~the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents)~~  
93 ~~and <https://patents.iec.ch>. ISO and IEC shall not be held responsible for identifying any or all such patent~~  
94 ~~rights. Details of any patent rights identified during the development of the document will be in the~~  
95 ~~Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).~~

96 Any trade name used in this document is information given for the convenience of users and does not  
97 constitute an endorsement.

98 For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and  
99 expressions related to conformity assessment, as well as information about ISO's adherence to the World  
100 Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), ~~see~~  
101 ~~[www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html)) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). In the IEC, see~~  
102 ~~[www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).~~

103 This document was prepared by ~~Joint~~ Technical Committee ~~ISO/IEC JTC-1, Information technology,~~  
104 ~~Subcommittee SC 38, Cloud Computing computing and Distributed Platforms distributed platforms.~~

105 Any feedback or questions on this document should be directed to the user's national standards body. A  
106 complete listing of these bodies can be found at ~~[www.iso.org/members.html](http://www.iso.org/members.html)~~ ~~[www.iso.org/members.html](http://www.iso.org/members.html)~~  
107 ~~and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).~~

## Introduction

Technologies such as cloud computing are supporting the evolution of digital business and accelerating the shift to living and working (in part) online, in ways that would have been impossible a few years ago.

Increased debate about socio-technical developments always runs the risk of multi-disciplinary terminological confusion, due to the potential for the same word to be used for two or more distinct concepts. Moreover, polysemy (the capacity for a word or phrase to have multiple related meanings) is an attribute of many words. Any attempt to provide a single definition for a polysemic word needs to be sufficiently broad to account for all potential meanings.

Terms with alternative meanings in economic, societal, political, regulatory and technical contexts are being labelled with the same or similar names.

Adding clarity on concepts and definitions can assist in the formulation of well-informed policies in important areas such as security, privacy and governance. One of the terms that has been at the forefront of these changes is “platform”.

Note that the economic, societal, political, regulatory and technical uses of the word “platform” predate cloud computing by many years.

Taxonomic structures serve many purposes and their topological structure, incorporation (or not) of orthogonal dimensions (as we see here), levels of refinement, and the decision about the order and approach in which to apply the structuring factors lead to very different outcomes. The terminology and concepts presented in this document can be combined in different ways, depending on the problem being considered, and the factors that potentially influence the decisions driving such structuring are presented with the related concepts.

In a situation where two or more distinct interpretations of the word “platform” are relevant, but only one is taken into account, or where collaborators used two distinct interpretations at cross-purposes, confusion can arise.

Therefore, it is important to understand the difference between the technical, economic and general uses of the word platform in the context of digital services.

The audience for this document is technologists, economists, policy makers, social scientists and others who wish to precisely and unambiguously use these terms (e.g. in multi-disciplinary conversations).





## Information technology — Cloud computing and distributed platforms — Taxonomy for digital platforms

### 1 Scope

This document ~~provides definitions for terms~~specifies a taxonomy related to digital platforms.

~~Specifically, this document provides, by providing~~ definitions and supporting information that disambiguates different uses of the term “platform” as it applies to digital services (such as cloud computing and other distributed computing systems).

### ~~2~~ Normative References

~~3~~2 ~~There are no normative references in this document.~~

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO/IEC DTS 5928

<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0f1a-4d19-9c0a-f6136ec85ac2/iso-iec-dts-5928>

## ISO/IEC DTS 5928:(E)

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/IEC 22123-1, *Information technology — Cloud computing — Part 1: Vocabulary*

ISO/IEC TS 23167, *Information technology — Cloud computing — Common technologies and techniques*

### 4.3 Terms and Definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 22123-1, ISO/IEC TS 23167 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>

Field Code Changed

Field Code Changed

#### 4.23.1 Basic terms

##### 3.1.1 digital service

service offered by one party to another party by means of digital hardware or software technology, or both, including communication over a network

Note 1 to entry:— In the context of this document, a service comprises one or more digital capabilities such as a cloud computing, edge computing, or some other distributed computing capability. Such a service will be subject to contract and typically have defined qualities of service, terms, and conditions for use.

Note 2 to entry:— Cloud service, edge service, network service, broadcast service, and mobile service are all types of digital service. Not all types are discussed in this document.

##### 3.1.2 digital platform

###### distributed platform

set of *digital services* (3.1.1(3.1.1)) that collectively exhibits the characteristics of either (or both) a *digital economic platform* (3.4.2(3.4.2)) creating a multi-sided market, or a *digital technology platform* (3.3.1(3.3.1)) providing a means to create applications

Note 1 to entry:— A digital platform enables and assists other participant digital services in conducting business with their customers, either by creating and facilitating a multi-sided market for those services, or by enabling the technological creation and operation of those services, or both.

Note 2 to entry:— “Distributed platform” is often used as a synonym to emphasise those elements of a digital service, such as edge computing and mobile computing that go beyond classical datacentres of cloud computing.

#### 4.3.2 Terms relating to platform participation

##### 3.2.1 platform participant

<digital platform> party that makes use of or otherwise engages with a *digital platform* (3.1.2(3.1.2))

Note\_1\_to entry:- A party can be an individual end user or organisation.

Note\_2\_to entry:- A platform participant can be a member of one or more *participant groups* (3.2.2(3.2.2)).

### 3.2.2

#### participant group

group of *platform participants* (3.2.4(3.2.1)) that share a common set of business requirements that differ significantly from the requirements of one or more other groups of *platform participants* (3.2.4(3.2.1))

Note\_1\_to entry:- Participant groups are not specific to digital services.

Note\_2\_to entry:- Examples of such participant groups include purchasers, vendors, and developers. Purchasers are platform participants seeking to acquire something, vendors are platform participants seeking to offer something, while developers are platform participants seeking to create and sell (or operate) software (or services). Thus, the members of each group have a common objective which is not shared with members of the other participant groups.

## 4.4.3.3 Terms related to digital technology platforms

### 3.3.1

#### digital technology platform

<technology> *digital platform* (3.1.2(3.1.2)) that provides engineering components required to support applications and services

Note\_1\_to entry:- Elements provided can include cloud computing resources (see ISO/IEC 22123 and ISO/IEC 17789), which can include execution environments, storage, networking, location and mapping services, graphics rendering and specialist processing (such as machine learning or quantum computing).

Note\_2\_to entry:- Popular examples of such digital technology platforms include varieties of the cloud service categories “infrastructure capabilities type” and “platform capabilities type” (see ISO/IEC 22123-1).

Note\_3\_to entry:- This definition is distinct from those in ISO/IEC TS 25025:2021 and ISO/IEC TS 25011:2017.

### 3.3.2

#### software development platform

<technology> *digital technology platform* (Error! Reference source not found.)(3.3.1) that enables or assists the development of software code

## 4.5.3.4 Terms related to digital economic platforms

### 3.4.1

#### economic platform

<economics> set of services that provide market intermediation to reduce search and/or transactions costs

Note\_1\_to entry:- Platforms are environments, computing or otherwise, that connect different groups and derive benefits from others participating in the platform (Azoulay & Tucker)

Note\_2\_to entry:- A shopping mall provides a non-computing economic platform, connecting merchants (participant group) with visiting customers (participant group) and providing distinct services to each participant group such as a pleasant environment, electricity, storage, parking, network connectivity, and security.

## ISO/IEC DTS 5928:(E)

### 3.4.2

#### digital economic platform

<economics> one or more *digital platforms* (3.1.2(3.1.2)) which provide goods, services or licensed rights to two or more distinct *participant groups* (3.2.2(3.2.2)) who need each other in some way

Note\_1\_to\_entry: Examples of licensed rights can include the right to view a movie, to use commercial business data, or to use specific software, each delivered as a license.

Note\_2\_to\_entry: While a digital economic platform is constructed with digital technology, often on top of a digital technology platform (Error! Reference source not found.)(3.3.1), this does not mean that the digital economic platform is a subtype of digital technology platform (any more than a car is a subtype of a road); these two terms are orthogonal.

Note\_3\_to\_entry: A digital economic platform can optionally comprise more than one digital platform. For instance, an exchange platform can be combined with a payment platform and appear to the end-user as a single digital economic platform.

### 3.4.3

#### ad-funded platform

<economics> *digital economic platform* (3.4.2(3.4.2)) where a platform generates revenue by charging advertisers to show advertisements to customers of the service

Note\_1\_to\_entry: Advertisers are one participant group, those who view the advertisements are a second, and those who display the advertisements alongside their own content are a third.

### 3.4.4

#### exchange platform

<economics> *digital economic platform* (3.4.2(3.4.2)) which brings together vendors and potential purchasers and enables them to sell and buy goods and services, potentially generating value for the platform provider by intermediating the transaction

### 3.4.5

#### payment platform

<economics> *digital economic platform* (3.4.2(3.4.2)) which facilitates the secure completion of payments between *platform participants* (3.2.4(3.2.1))

### 3.4.6

#### application marketplace

<economics> *digital economic platform* (3.4.2(3.4.2)) where the platform provides means for software developers and publishers to provide applications to customers via the platform

Note\_1\_to\_entry: This document describes this concept in the economic platform domain. See also ISO/IEC 19944-1:2020, 3.2.2 for the definition in the device platform domain.

## 5.4 Abbreviated Terms

AIaaS—artificial intelligence as a service

~~CaaS<sup>1</sup>—communications as a service~~

~~CaaS—containers as a service~~

~~CSC—cloud service customer~~

~~CSP—cloud service provider~~

~~DSaaS—data storage as a service~~

~~FaaS—function as a service~~

~~GPU—graphics processing unit~~

~~IaaS—infrastructure as a service~~

~~MLaaS—machine learning as a service~~

~~PaaS—platform as a service~~

~~QCaaS—quantum computing as a service~~

~~SaaS—software as a service~~

~~SME—Small- or Medium-sized Enterprise~~

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO/IEC DTS 5928

<https://standards.iteh.ai/catalog/standards/sist/c5e07e2f-0f1a-4d19-9c0a-f6136ec85ac2/iso-iec-dts-5928>

<sup>1</sup>Note that the acronym CaaS is unfortunately used by industry for multiple purposes, two of which are listed here, so it is usually best to use the correct expanded term to ensure the reader has the correct context.

## ISO/IEC DTS 5928:(E)

<a href="#">AIaaS</a>	<a href="#">artificial intelligence as a service</a>
<a href="#">CaaS<sup>a</sup></a>	<a href="#">communications as a service</a>
<a href="#">CaaS<sup>a</sup></a>	<a href="#">containers as a service</a>
<a href="#">CSC</a>	<a href="#">cloud service customer</a>
<a href="#">CSP</a>	<a href="#">cloud service provider</a>
<a href="#">DSaaS</a>	<a href="#">data storage as a service</a>
<a href="#">FaaS</a>	<a href="#">function as a service</a>
<a href="#">GPU</a>	<a href="#">graphics processing unit</a>
<a href="#">IaaS</a>	<a href="#">infrastructure as a service</a>
<a href="#">MLaaS</a>	<a href="#">machine learning as a service</a>
<a href="#">PaaS</a>	<a href="#">platform as a service</a>
<a href="#">QCaaS</a>	<a href="#">quantum computing as a service</a>
<a href="#">SaaS</a>	<a href="#">software as a service</a>
<a href="#">SME</a>	<a href="#">Small- or medium-sized enterprise</a>

<sup>a</sup> The acronym CaaS is unfortunately used by industry for multiple purposes, two of which are listed here, so it is best to use the expanded term to ensure the reader has the correct context.

## 6.5 Digital platform overview

### 6.45.1 General

The term “platform” is used in the English language with a very wide range of meanings, and some of these uses are ambiguous in the context of online or digital services.

This document defines a taxonomy of terms for digital platforms of various kinds; and shows how these terms can be structured into a hierarchy (see [Annex A](#)–[Annex A](#)).

#### 6.45.1.1 Meanings of “platform”

These uses include but are not limited to the following. These groupings are potentially overlapping, they are not mutually exclusive.

- The traditional non-ICT uses of the term, such as a wooden platform to stand on, a political platform of policies, or a railway platform from which trains will depart, highlight the highly context-dependent use of the word “platform”.
- There are online, broadcast and printed media and public discourse settings, that serve as platforms for free expression, expression of political and social viewpoints, artistic and musical expression, discussion and debate. This includes social media.
- There are what ~~we define~~[can be defined](#) as “economic platforms”, which is a way to describe certain business approaches that create multi-sided markets, where two or more distinct groups of participants can do some kind of business together via an intermediary platform. This means that the platform brings together two or more different participant groups and provides a meeting place to facilitate interactions between the participant groups through the platform. Platforms serving two participant groups are called two-sided platforms, and more generally platforms serving two or more such groups are called multi-sided platforms.
- There are many examples of two-sided markets supported by intermediary platforms, including but not limited to: publishers, academic journals and conferences; airports and ports; stock markets,

auction houses and real estate brokers; dating and employment agencies; and credit card payment cloud computing systems. An economic platform does not need to involve any technology.

#### EXAMPLE

A bricks-and-mortar department store or shopping mall creates a multi-sided market between a group of merchants and a group of customers. This type of economic platform existed long before modern digital technology.

- There have also been “technology platforms” for many years, long predating the arrival of online services. Early computer operating systems such as on mainframes were often described as providing a platform for customer ~~program~~ ~~programme~~ development. Specialised systems such as telephone networks provided platforms for the deployment of (then) advanced services such as free-phone and premium-rate telephone lines. PBX systems provided platforms for customer development of early call-centre services. All of these existed long before the arrival of the World Wide Web.
- For these technology products and services, the term “platform” is widely used, both as a simple indicator of layering – with many distinct products and services built on a single underlying base – and to articulate a specific purpose for a product, (e.g. providing a platform for self-expression of social interaction).

#### 6.1.25.1.2 Meanings of “digital platform”

With the arrival of the World Wide Web, many of the platform concepts described above were adapted to the world of online services, such as online shopping services, online dating, online social networks, and many others. Some of these competed with the pre-online service equivalents, while others were wholly new.

In particular, a market demand rapidly emerged for technology companies to provide means for their customers to rapidly enter the online business world without having to develop everything from scratch themselves. In the same way that companies adopted common operating systems on which to build their applications without having to write specific code for every printer and other device, so the online services need platforms that provided the components common to all or most online services, allowing them to concentrate on those components that were unique to their own service offering.

Thus ~~we saw~~, the parallel development of digital platforms include both digital economic platforms (business models for multi-sided markets) and digital technology platforms (services and components providing customers with the tools to build their own services).

This document is focused on digital platform as it is used in the context of online or digital services of these two types.

#### 6.25.2 The ambiguity of “platform” for digital services

Within the realm of digital technologies there are specific situations in which the use of “platform” of even “digital platform” becomes ambiguous.

Both terms are sometimes used for both digital economic platforms and digital technology platforms.

- Digital economic platform is described as one or more digital platforms which provide goods, services or licensed rights to two or more distinct participant groups who need each other in some way. The term “platform” in association to economics, is meant to identify multi-sided business relationships.
- Digital technology platform is described as any kind of system that supports the creation, modification, or addition of significant software functionality by the platform customer rather than by the platform service provider.