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**Systems and software engineering —  
Engineering and management of  
websites for systems, software and  
services information**

*Ingénierie des systèmes et du logiciel — Ingénierie et gestion de sites  
web pour les systèmes, logiciels et services d'information*

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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Institute of Electrical and Electronics Engineers, Inc  
3 Park Avenue, New York  
NY 10016-5997, USA

Email: [stds.ipr@ieee.org](mailto:stds.ipr@ieee.org)  
Website: [www.ieee.org](http://www.ieee.org)

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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/IEC documents 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](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).

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

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in cooperation with the Systems and Software Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This second edition cancels and replaces the first edition (ISO/IEC/IEEE 23026:2015), which has been technically revised.

The main changes are as follows:

- updates relating to enhanced technical capabilities for website design and sustainment;
- attention to threats to data privacy and website integrity;
- reorganization to present both the life cycle processes of website information for informational websites and the requirements for website features.

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](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

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## Introduction

Continuing improvements in Internet capabilities for technical communication, and the accelerating development of new technical protocols, products and services for website development and hosting, have both simplified and complicated the engineering and management of websites. This document is intended to account for new capabilities, approaches, and interests in using websites to communicate technical information. To a large extent, use of digital communications, particularly those accessible through the Internet or intranets, has supplanted printed publications for conveying technical information. This trend applies to information for users, systems and services documentation, and operational plans, policies, and procedures.

Other factors have also affected the design and operation of websites. The increasing sophistication of information security threats to technical enterprises and their information, as well as concerns for the privacy of Internet users, have markedly complicated the process of delivering information and communication technology (ICT) information over the Web. This document therefore has increased emphasis on information security and privacy concerns.

The diversity of websites for commercial marketing and social networking purposes reflects different interests and media choices from those websites that deliver ICT reference information. This document applies primarily to websites whose purpose is to deliver information about ICT systems, software, and services. It includes increased emphasis on the human factors concerns for making information easily retrievable and usable for the intended audience. It recommends practices for websites based on World Wide Web Consortium (W3C) and related industry guidelines. It continues to address the entire life cycle of website strategy, design, engineering, testing and validation, and management and sustainment, which are the responsibility of the website owner and website provider.

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# Systems and software engineering — Engineering and management of websites for systems, software and services information

## 1 Scope

This document defines system engineering and management requirements for the life cycle of websites, including strategy, design, engineering, testing and validation, and management and sustainment for intranet and extranet environments. This document applies to those using web technology to present information and communications technology (ICT) information, such as information for users of systems and services, plans and reports for systems and software engineering projects, and documentation of policies, plans, and procedures for IT service management. This document provides requirements for website owners and website providers, managers responsible for establishing guidelines for website development and operations, website engineers, designers, developers, and operations and maintenance staff, who can be external or internal to the website owner's organization. It applies to websites for public access and for limited access, such as for users, customers, and subscribers seeking information on IT systems, products and services.

The requirements and recommendations in this document address the following aspects of usability of informational websites and ease of maintenance of managed website operations:

- a) locating relevant and timely information;
- b) applying information security management;
- c) facilitating accessibility and ease of use;
- d) providing for consistent and efficient development and maintenance practices.

This document is not particularly applicable to websites used primarily for marketing or sales, to deliver instructional material (tutorials), or to provide graphical user interfaces (GUI) for business or consumer transactional application processing. However, this document can provide useful insights for managing such sites.

This document does not address vendor and product considerations for website engineering and management. This document does not include specifications for application development tools, programming and scripting languages used for websites, metadata tags, or protocols for network communications. It does not address tools or systems used for management or storage of information content (data, documents) that can be presented on websites.

This document does not address the design and architecture of software and systems supporting the Internet.

## 2 Normative references

There are no normative references for this document.

## 3 Terms, definitions and abbreviated terms

### 3.1 Terms and definitions

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

ISO, IEC, and IEEE 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>
- IEEE Standards Dictionary Online: available at <https://dictionary.ieee.org>.

NOTE For additional terms and definitions in the field of systems and software engineering, see ISO/IEC/IEEE 24765, which is published periodically as a “snapshot” of the SEVOCAB (Systems and Software Engineering Vocabulary) database and is publicly accessible at [www.computer.org/sevocab](http://www.computer.org/sevocab).

### 3.1.1

#### archival page

*content* (3.1.5) that is preserved as a record and not expected to change

Note 1 to entry: Due to technology upgrades, some archival pages cannot be readily rendered unless they are upgraded along with active pages.

### 3.1.2

#### audience

category of users sharing the same or similar characteristics and needs (e.g. purpose in using the information for users, tasks, education level, abilities, training, and experience) that determine the *content* (3.1.5), structure, and use of the intended information

Note 1 to entry: There can be different audiences for information for users (e.g. management, data entry, maintenance, engineering, business professionals).

### 3.1.3

#### breadcrumb trail

navigational aid with a displayed series of *links* (3.1.15) which lead from the *home page* (3.1.12) or another page to the current page

### 3.1.4

#### browser

application allowing a person to retrieve and read hypertext, to view the *contents* (3.1.5) of hypertext nodes [*web page* (3.1.26)], to navigate from one web page to another, and to interact with the content, such as changing the visual appearance of the displayed content

### 3.1.5

#### content

interactive or non-interactive object containing information represented by text, image, video, sound, or other media

### 3.1.6

#### cookie

small file created by the user's web *browser* (3.1.4) that is stored in and retrieved from the user's device to maintain state information, including identification of users and transaction coherency

### 3.1.7

#### extranet

*intranet* (3.1.14) that is accessible to authorized external users for the retrieval or exchange of information

### 3.1.8

#### faceted search

progressive search which allows users to narrow the results by selecting values for one or more attributes

**3.1.9****feature**

functional or non-functional distinguishing characteristic of a system, usually an enhancement to an existing system

**3.1.10****frame**

element that divides a *browser* (3.1.4) window into independent windows for displaying different *content* (3.1.5), or different parts of the same content (document)

**3.1.11****global navigation**

set of *navigation* (3.1.17) *links* (3.1.15) available on all pages of a *website* (3.1.27)

**3.1.12****home page**

*web page* (3.1.26) through which users typically enter the *website* (3.1.27), and whose *URL* (3.1.23) is typically published or linked as the main web address of the site or organization

Note 1 to entry: Types of home pages include: centre page, front page, index page, main page, start page, top page.

**3.1.13****Internet**

worldwide interlinked computer systems and networks connected by gateways that enable the transfer of data between them

**3.1.14****intranet**

*managed network* (3.1.16) operating within an organization with controlled and limited access

**3.1.15****link**

hyperlink <https://standards.iteh.ai/catalog/standards/sist/b24ed822-0413-439a-8b03-ISO/IEC/IEEE 23026:2023>  
reference from some part of one document to some part of another document or another part of the same document

**3.1.16****managed network**

network or set of networks established and controlled by one or more organizations to meet specific organizational or business needs

**3.1.17****navigation**

process of accessing on-screen information by moving between different locations in a *website* (3.1.27) or electronic document

**3.1.18****orphan page**

page on a *website* (3.1.27) with no *link* (3.1.15) from any other page on the website

**3.1.19****persistent URI**

persistent Uniform Resource Identifier  
reference that does not need to change at the *link* (3.1.15) in a document and can still reach the desired object even though that object can have changed locations

**3.1.20****responsive web design****RWD**

method for *web page* (3.1.26) construction to detect the user's screen size and orientation and dynamically change the layout accordingly

**3.1.21**

**site map**

textual or graphical overview of the *navigation* (3.1.17) structure of a *website* (3.1.27)

**3.1.22**

**thumbnail**

miniature image file displayed for quick identification of a larger image or video file

**3.1.23**

**URL**

Uniform Resource Locator

mechanism for identifying resources on the *Internet* (3.1.13) [such as a *web page* (3.1.26)] by specifying the address of the resource and the access protocol used

Note 1 to entry: The term as specified by the IETF is Uniform Resource Identifier (URI) of which URL is a subset.

**3.1.24**

**user profile**

set of attributes that are unique to a specific user or user group, such as job function or subscription to a service, used to control the parts of the system or *web page* (3.1.26) that users can access

**3.1.25**

**web lead**

person or group responsible to the *website owner* (3.1.28) for ongoing maintenance of the site's presentation and availability

**3.1.26**

**web page**

coherent presentation of a set of *content* (3.1.5), objects and associated interaction objects delivered to users through a *browser* (3.1.4) in accordance with *Internet* (3.1.13) protocols

Note 1 to entry: A web page can be generated dynamically from the server side, and can incorporate multimedia, applets or other elements active on either the client or server side.

**3.1.27**

**website**

collection of logically connected *web pages* (3.1.26) managed as a single entity

Note 1 to entry: A website may contain one or more subordinate websites.

**3.1.28**

**website owner**

organization responsible for the site *content* (3.1.5) and site design

Note 1 to entry: The website owner may select a supplier as the *website provider* (3.1.29) or may also be the website provider.

**3.1.29**

**website provider**

organization responsible for operation of the *website* (3.1.27) and delivery of site *content* (3.1.5) to users

Note 1 to entry: The website provider may also be the site owner, *web lead* (3.1.25), site designer, or the *Internet* (3.1.13) or cloud service provider for the site.

**3.1.30**

**wiki**

*website* (3.1.29) that allows a group of users to add and edit *content* (3.1.5) collaboratively

### 3.2 Abbreviated terms

3D	three-dimensional
AI	artificial intelligence
API	application programming interface
ARIA	Accessible Rich Internet Application
CI	configuration item
CFR	Code of Federal Regulations
CSS	cascading style sheets
CVE	common vulnerabilities and exposures
CVSS	Common Vulnerability Scoring System
DITA	Darwin Information Typing Architecture
DNS	Domain Name Service
DOI	Digital Object Identifier
DTD	Document Type Definition (for XML or SGML specifications)
FIDO	fast identity online
FTP	File Transfer Protocol
GDPR	General Data Protection Regulation
GIF	Graphics Interchange Format
GUI	graphical user interface
HIPAA	Health Insurance Portability and Accountability Act
HREF	HTML reference designator
HTML	hypertext markup language
HTTP	hypertext transfer protocol
HTTPS	hypertext transfer protocol secure
ICT	information and communications technology
IETF	Internet Engineering Task Force
IoT	Internet of Things
IP	Internet Protocol
IPR	intellectual property rights
JPEG	Joint Photographic Experts Group (image format)
JSON	Java Script Object Notation

MAC	Media Access Control
MFA	multi-factor authentication
OAUTH	open authentication
OTP	one-time password
PCI DSS	Payment Card Industry Data Security Standard
PHP	hypertext preprocessor
PICS	Platform for Internet Content Selection
PII	personally identifiable information
PIN	personal identification number
PIPEDA	Personal Information Protection and Electronic Documents Act
PNG	Portable Network Graphics
RDF	Resource Description Framework
SGML	Standard Generalized Markup Language
SQL	Structured Query Language
SSL	Secure Sockets Layer
SSO	single sign-on
TCP	Transport Control Protocol
TLS	Transport Layer Security
TZD	time zone designator
URI	Uniform Resource Identifier
UTC	Coordinated Universal Time
WAI	Web Accessibility Initiative (W3C)
WCAG	Web Content Accessibility Guidelines
W3C	World Wide Web Consortium
XHTML	Extended HyperText Markup Language
XML	Extensible Markup Language

## 4 Planning websites

### 4.1 Defining the purpose, users, and context of the website

This document addresses websites that have the general purpose of providing information about ICT systems, software, or service management. Within this scope, a broad range of purposes, audience (users), and resulting types of content can be included, such as policies, plans, specifications, operating procedures and instructions (user manuals), service descriptions, service agreements, knowledge management articles, help desk scripts, test plans, technical reports, and descriptions of concepts.

When planning for the website, the website owner shall document the purpose and intended users of the website. This information may be placed in a plan, charter, or policy and represented by use cases or scenarios. It influences the decisions on what information content belongs on the website and how to organize and present the content. This governing document or another explicit statement of purpose, suitable for use by possible stakeholders, should be posted as part of the website.

A website may address one or more diverse sets of users. The users of the website can include internal management and technical staff, external customers, or the public. Thus, the website content can include general user information or procedures and specialized technical information for trained technical users. Websites may be intended for a specific group, such as internal helpdesk or external customers. Some websites may allow users to add content as part of a collaborative community or post comments in a wiki. Some sites include both technical information for existing customers and marketing presentations for prospective customers. The owner of the technical information can host some sites; other sites can run on services offered by unrelated website providers, who may have their marketing information and third-party advertisements displayed alongside the website owners' technical content. Sites can be intended for local or global use and offered in one or multiple languages.

Websites are often developed to serve several purposes and users of different technical backgrounds. Therefore, the site should be designed to allow users to understand the content's scope and functionality. The introductory pages of the site should include a description of the purpose and intended uses of the website, with links to topics accessible within one link or search which satisfies the information needs of casual users. Global navigation features and search functions should allow more technical users to access needed information quickly (see [9.2](#)).

The effective communication of the content to the user is the primary purpose of an informational website. Ease of access to information by targeted-user communities is an example of one of the possible design goals.

The website designers should consider responsive website design to accommodate different devices. Websites may consist of static pages, system-generated pages, and dynamic pages, including user-generated content. Furthermore, any of these options may be combined to provide the intended information to the website's users. The target user community can have a wide diversity of connection speeds, display devices, or selected presentation formats within the display windows; this may establish some presentation constraints (consider displaying web pages to small screens on mobile devices).

The size and resolution of the screen should be considered in the design and usability of the website. For example, most smart phones and tablets use pop-up screen keyboards which can be too small to use without a stylus.

Website planning shall identify the target web browsers. In some cases, the website should target all major browsers. In other cases, it may be acceptable to target a small subset of browsers or a specific browser. The users should receive a clear notification if the site is not compatible with their browser.

Use of the terminology in this document is for ease of reference and is not mandatory for conformance with this document.

## 4.2 Establishing the informational website design and sustainment strategies

### 4.2.1 General

Organizational effectiveness, competitive success, and even meeting legal obligations and avoiding liabilities can depend on timely access to critical information within an organization. Website design should consider the need for timely access to information, as the Internet is used to displace other methods for information delivery. Usability testing and other methods of obtaining user feedback should be actively pursued as part of this process.

The owner of the website should consider how the company's technical and strategic direction should influence construction and feature choices that are extensible or scalable for future use. The website designer should consider performance considerations affecting the site and data store design: the