interface. (1) point at which two or more logical, physical, or both, system elements or software system elements meet and act on or communicate with each other *(ISO/IEC/IEEE 12207:2026 Systems and software engineering--Software life cycle processes, 3.1.33) (ISO/IEC/IEEE 15288:2023 Systems and software engineering--System life cycle processes, 3.20)* **(2)** shared boundary between two functional units, defined by various characteristics pertaining to the functions, physical signal exchanges, and other characteristics *(ISO/IEC 2382:2015 Information technology -- Vocabulary)* **(3)** abstraction of the behavior of an object that consists of a subset of the interactions of that object together with a set of constraints on when they can occur *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 8.5)* **(4)** shared boundary between two systems or system elements, defined by functional characteristics, common physical interconnection characteristics, signal characteristics, or other characteristics *(INCOSE Systems Engineering Handbook, 5th ed., 2023)* **(5)** declaration of the meaning and the signature for a property or constraint *(ISO/IEC/IEEE 31320-2:2012, Information technology -- Modeling Languages -- Part 2: Syntax and Semantics for IDEF1X97 (IDEFobject), 3.1.93) Note:* The interface states what a property (responsibility) knows or does or what a constraint (responsibility) must adhere to. The interface speciﬁcation consists of the meaning (semantics) and the signature (syntax) of a property or constraint.

interface design document (IDD). (1) documentation that describes the architecture and design interfaces between system and components *(IEEE 1012-2024 IEEE Standard for System, Software, and Hardware Verification and Validation, 3.1.16)* **(2)** description of the architecture and design of interfaces between system and components *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) Note:* These descriptions include control algorithms, protocols, data contents and formats, and performance. *See also:* interface requirements specification (IRS)

interface requirements specification (IRS). (1) documentation that specifies requirements for interfaces between or among systems and components *(IEEE 1012-2024 IEEE Standard for System, Software, and Hardware Verification and Validation, 3.1.17) Note:* These requirements include constraints on formats and timing. *See also:* interface specification, interface design document

interface specification. (1) description of essential functional, performance, and design requirements and constraints at a common boundary between two or more system elements *(ISO/IEC/IEEE 24765f:2016)* **(2)** document that specifies the interface characteristics of an existing or planned system or component *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) Note:* This includes interfaces between humans and hardware or software, as well as interfaces between humans themselves. *See also:* interface requirements specification

interface control. (1) in configuration management, the administrative and technical procedures and documentation necessary to identify functional and physical characteristics between and within configuration items provided by different developers, and to resolve problems concerning the specified interfaces *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(2)** in configuration management, identifying the functional and physical characteristics relevant to the interfacing of configuration items and confirming that proposed changes to these characteristics are evaluated and approved prior to implementation *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) Note:* Interface control can involve one or multiple organizations. *See also:* configuration control

interface requirement. (1) requirement that specifies an external item with which a system or system component

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nteracts, or that sets forth constraints on formats, timing, or other factors caused by such an interaction *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* design requirement, functional requirement, implementation requirement, performance requirement, physical requirement

interface testing. (1) testing conducted to evaluate whether systems or components pass data and control correctly to one another *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* component testing, integration testing, system testing, unit test

interface role. (1) role of a community, identifying behavior which takes place with the participation of objects that are not members of that community *(ISO/IEC 15414:2015 Information technology -- Open distributed processing -- Reference model -- Enterprise language, 6.3.5)*

external interface file (EIF). (1) user-recognizable group of logically related data or control information, which is referenced by the application being measured, but which is maintained within the boundary of another application *(ISO/IEC 20926:2009 Software and systems engineering -- Software measurement -- IFPUG functional size measurement method 2009, 3.29) Note:* The primary intent of an EIF is to hold data referenced through one or more elementary processes within the boundary of the application counted. This means an EIF counted for an application is necessarily in an ILF in another application. An external interface file is a type of base functional component. *See also:* internal logical file, external logical file

user interface. (1) components of an interactive system (software or hardware) that provide information and controls for the user to accomplish specific tasks with the interactive system *(ISO/IEC 25063:2014 Systems and software engineering--Systems and software product Quality Requirements and Evaluation (SQuaRE) Common Industry Format (CIF) for usability: Context of use description)* **(2)** ensemble of software and hardware that allows a user to interact with a computer system *(ISO/IEC/IEEE 26514:2022, Systems and software engineering -- Design and development of information for users, 3.1.55) (ISO/IEC/IEEE 26512:2018 Systems and software engineering--Requirements for acquirers and suppliers of information for users, 3.29)* **(3)** set of all the components of an interactive system that provide information and controls for the user to accomplish specific tasks with the interactive system *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.2.2) Syn:* UI

signal interface. (1) interface in which all the interactions are signals *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.6)*

operation interface. (1) interface in which all the interactions are operations *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.7)*

stream interface. (1) interface in which all the interactions are flows *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.8)*

computational interface template. (1) interface template for either a signal interface, a stream interface, or an operation interface *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.10) Note:* A computational interface template comprises a signal, a stream or an operation interface signature as appropriate, a behavior specification and an environment contract specification.

signal interface signature. (1) interface signature for a signal interface *(ISO/IEC 10746-3:2009 Information*

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technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.11) Note: A signal interface signature comprises a finite set of action templates, one for each signal type in the interface. Each action template comprises the name for the signal, the number, names and types of its parameters, and an indication of causality (initiating or responding, but not both) with respect to the object which instantiates the template.

operation interface signature. (1) interface signature for an operation interface *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.12) Note:* An operation interface signature comprises a set of announcements and interrogation signatures as appropriate, one for each operation type in the interface, together with an indication of causality (client or server, but not both) for the interface as a whole, with respect to the object which instantiates the template.

stream interface signature. (1) interface signature for a stream interface *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.13) Note:* A stream interface comprises a finite set of action templates, one for each flow type in the stream interface. Each action template for a flow contains the name of the flow, the information type of the flow, and an indication of causality for the flow (i.e. producer or consumer but not both) with respect to the object which instantiates the template. The phrase "complementary interface signature to X", where X is itself an interface signature describes an interface signature identical to X in all respects except causality, which is opposite to that in X. Many Interface Definition Languages (IDLs) capture only the action templates of a signature and depend upon the context in which the IDL is used to determine the causality that is to be applied.

communication interface. (1) interface of a protocol object that can be bound to an interface of either an interceptor object or another protocol object at an interworking reference point *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 8.1.14)*

engineering interface reference. (1) identifier, in the context of an engineering interface reference management domain, for an engineering object interface that is available for distributed binding *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 8.1.16) Note:* An engineering interface reference is necessary to establish distributed bindings, and is distinct from the binding endpoint identifiers used by a basic engineering object for the purposes of interaction.

engineering interface reference management domain. (1) set of nodes forming a naming domain for the purpose of assigning engineering interface references *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 8.1.17)*

engineering interface reference management policy. (1) set of permissions and prohibitions that govern the federation of engineering interface reference management domains *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 8.1.18)*

container interface. (1) interface of a data repository allowing access to data *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 14.1.1.2)*

asynchronous I/O device interface task. (1) task that interfaces to an I/O device and is activated by interrupts from that device *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

device interface task. (1) concurrent task that hides the characteristics of and interfaces to an external I/O device *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

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interface task. (1) task that is part of the application, which interfaces to the external environment *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

passive I/O device interface task. (1) task that interfaces to a passive I/O device and either reads from it or writes to it on demand *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

periodic I/O device interface task. (1) task that interfaces to a passive I/O device and polls it regularly *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

system interface task. (1) task that hides the interface to and communicates with an external system or subsystem *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

task interface. (1) input or output, events signaled (input or output), external inputs or outputs, or access to passive objects *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

user interface task. (1) task that hides the details of the interface to and interacts sequentially with a human user *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

external interface requirement. (1) system requirement that specifies a hardware, software, or database element with which a system or component interfaces, or that sets forth constraints on formats, timing, or other factors caused by such an interface *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

interface signature. (1) set of action signatures associated with the interactions of an interface *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 9.15)*

user interface element. (1) entity of the user interface that is presented to the user by the software *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.2.7) Note:* User interface elements can be interactive or not, and either entities relevant to the task or entities of the user interface *Syn:* user interface object

serial communication interface (SCI). (1) unit that enables the serial exchange of data between a microprocessor and peripherals *(ISO/IEC/IEEE 24765d:2015) Syn:* serial communications interface

serial peripheral interface (SPI). (1) synchronous (full duplex) serial communication interface used for two devices in embedded systems *(ISO/IEC/IEEE 24765d:2015)*

asynchronous communication interface adapter (ACIA). (1) functional unit to connect interfaces for asynchronous communications *(ISO/IEC/IEEE 24765d:2015)*

serial bus interface (SBI). (1) connection for bidirectional serial data communication *(ISO/IEC/IEEE 24765e:2015)*

serial expansion interface (SEI). (1) connection to serve multiple serial channels *(ISO/IEC/IEEE 24765e:2015)*

test interface. (1) interface to the test item used either to stimulate the test item or to get responses (e.g. actual results), or both *(ISO/IEC/IEEE 29119-5:2024 Software and systems engineering--Software testing--Part 5: Keyword-driven testing, 3.21) Note:* The graphical user interface (GUI), application programming interface (API) or service-oriented architecture (SOA) interfaces are typical test interfaces. Stimulating the test item can involve passing data into it via computer interfaces or attached hardware. Getting responses includes getting information from the test item or associated hardware.

test interface layer. (1) lowest level of abstraction for keywords, which interacts with the test item directly and

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encapsulates the atomic (lowest level) interactions at the test interface *(ISO/IEC/IEEE 29119-5:2024 Software and systems engineering--Software testing--Part 5: Keyword-driven testing, 3.22)*

IT service interface appearance. (1) degree to which the interface of the service has an appearance or other physical properties that are pleasing and satisfying for the user *(ISO/IEC TS 25011:2017 Information technology--Systems and software Quality Requirements and Evaluation (SQuaRE)--Service quality models, 3.2.5.3) Syn:* information technology service interface appearance

application programming interface (API). (1) set of functions, protocols, parameters, and objects of different formats, used to create software that interfaces with the features or data of an external system or service *(ISO/IEC/IEEE 26514:2022, Systems and software engineering -- Design and development of information for users, 3.1.6) Note:* APIs can take several forms. In general terms, an API is a set of clearly defined methods of communication among various components. An API specifies the information and methods that are needed to communicate with another application. Information for users of an API is of two main types: reference information, which contains information about all elements of the API) and developer guide (which explains how to use the API).

application interface. (1) interface that is selected, reused or newly developed by a member product *(ISO/IEC 26553:2018 Information technology -- Software and systems engineering-- Tools and methods for product line realization, 3.3)*

domain interface. (1) reusable interface among the components of a member product within a product line *(ISO/IEC 26553:2018 Information technology -- Software and systems engineering-- Tools and methods for product line realization, 3.11)*

application program interface (API) management platform. (1) proxy for client requests to protect the back-end of an online server from being disabled from too many queries *(IEEE 7005 2021, IEEE Standard for Transparent Employer Data Governance, 3.1) Note:* An API management platform can limit the number of queries for each entity per second or per day. Generally, API management platforms include analytics and usage reporting, API key and authorization management, and live updated documentation. *Syn:* application program interface management platform

API management platform:

logical interface. (1) input-output flow between two or more system elements or software system elements and the function that determines it *(ISO/IEC/IEEE 24748-6:2023 Systems and software engineering Life cycle management Part 6: System and software integration, 3.1.5)*

physical interface. (1) physical link between two or more system elements *(ISO/IEC/IEEE 24748-6:2023 Systems and software engineering Life cycle management Part 6: System and software integration, 3.1.6) Note:* A physical interface can use solid, liquid, gas, vacuum, thermal, electromagnetic field, or other means.

individual interface. (1) physical implementation of one or more user interface elements and content chunks that is presented at a point in time *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.2.9)*

user. (1) individual or group that interacts with a system or benefits from a system during its utilization *(ISO/IEC/IEEE*

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12207:2026 Systems and software engineering--Software life cycle processes, 3.1.70) (ISO/IEC/IEEE 15939:2017 Systems and software engineering--Measurement process, 3.40) (ISO/IEC/IEEE 15288:2023 Systems and software engineering--System life cycle processes, 3.53) **(2)** person who interacts with a system, product or service *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.1.5) (ISO/IEC 25064:2013 Systems and software engineering--Software product Quality Requirements and Evaluation (SQuaRE)--Common Industry Format (CIF) for usability: User needs report, 4.17)* **(3)** the person (or persons) who operates or interacts directly with a software-intensive system **(4)** any person or thing that communicates or interacts with the software at any time *(ISO/IEC 19761:2011 Software engineering -- COSMIC: a functional size measurement method, 2.27) (ISO/IEC 20926:2009 Software and systems engineering -- Software measurement -- IFPUG functional size measurement method 2009, 3.50) (ISO/IEC 14143-1:2007 Information technology--Software measurement--Functional size measurement; Part 1: Definition of concepts) (ISO/IEC 29881:2010 Information technology--Software and systems engineering--FiSMA 1.1 functional size measurement method, 3.9)* **(5)** individual or group that benefits from a system during its utilization *(ISO/IEC 25022:2016, Systems and software engineering -- Systems and software quality requirements and evaluation (SQuaRE) -- Measurement of quality in use, 4.26)* **(6)** person who performs one or more tasks with an automated system; a member of a specific audience *(ISO/IEC/IEEE 26512:2018 Systems and software engineering--Requirements for acquirers and suppliers of information for users, 3.25)* **(7)** person (or instance) who uses the functions of a CBSS via a terminal (or an equivalent machine-user-interface) by submitting tasks and receiving the computed results *(ISO/IEC 14756:1999 Information technology -- Measurement and rating of performance of computer-based software systems, 4.31)* **(8)** individual or group that benefits from a ready to use software product during its utilization *(ISO/IEC 25051:2014 Software engineering -- Software product Quality Requirements and Evaluation (SQuaRE) -- Requirements for quality of Ready to Use Software Product (RUSP) and instructions for testing, 4.1.26)* **(9)** individual or organization that uses the system or software to perform a specific function *(ISO/IEC 25000:2014 Systems and software Engineering--Systems and software product Quality Requirements and Evaluation (SQuaRE) -- Guide to SQuaRE, 4.40)* **(10)** individual who or group that benefits from a system during its utilization *(INCOSE Systems Engineering Handbook, 5th ed., 2023)* **(11)** person who interacts with an autonomous/intelligent system *(IEEE 7010-2020, IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-Being, 2.1)* **(12)** person who interacts with the product *(IEC/IEEE 82079-1:2019 Preparation of information for use (instructions for use) of products: Part 1: Principles and general requirements, 3.47) Note:* User can include persons who install, operate, service, support (including providing training), maintain, or dispose of the system. The user can perform other roles, such as acquirer or maintainer. The role of user and the role of operator can be vested, simultaneously or sequentially, in the same individual or organization. *See also:* developer, end user, functional user, indirect user, operator, secondary user

software requirements specification (SRS). (1) documentation of the essential requirements (functions, performance, design constraints, and attributes) of the software and its external interfaces *(IEEE 1012-2024 IEEE Standard for System, Software, and Hardware Verification and Validation, 3.1.29)*

functional architecture. (1) arrangement of functions and their subfunctions and interfaces (internal and external) that defines the execution sequencing, conditions for control or data flow, and the performance requirements to satisfy the

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requirements baseline *(ISO/IEC/IEEE 24765f:2016)* **(2)** hierarchical arrangement of functions, their internal and external (external to the aggregation itself) functional interfaces and external physical interfaces, their respective functional and performance requirements, and their design constraints *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

requirement. (1) statement that translates or expresses a need and its associated constraints and conditions *(ISO/IEC/IEEE 12207:2026 Systems and software engineering--Software life cycle processes, 4.1.31) (ISO/IEC/IEEE 15288:2023 Systems and software engineering--System life cycle processes, 3.36)* **(2)** condition or capability that is met or possessed by a system, system component, product, or service to satisfy an agreement, standard, specification, or other formally imposed documents *(IEEE 730-2014 IEEE Standard for Software Quality Assurance Processes, 3.2)* **(3)** provision that conveys criteria to be fulfilled *(ISO/IEC 14143-2:2011 Information technology -- Software measurement -- Functional size measurement -- Part 2: Conformity evaluation of software size measurement methods to ISO/IEC 14143-1, 3.10)* **(4)** condition or capability that is necessary to be present in a product, service, or result to satisfy a business need *(A Guide to the Project Management Body of Knowledge (PMBOK(R) Guide) -- Eighth Edition)* **(5)** need or expectation that is stated, generally implied, or obligatory *(ISO/IEC 19770-1:2017 Information technology -- IT asset management -- Part 1: IT asset management systems--Requirements, 3.47)* **(6)** condition or capability that is necessary in a system, system component, product, or service to satisfy an agreement, standard, specification, or other formally imposed documents *(IEEE 982:2024, Standard for Measures of the Software Aspects of Dependability, 3.1) Note:* Requirements exist at different tiers and express the need in high-level form. A requirement is denoted by the word 'shall' and includes both the exclusive and applicable optional requirements. Requirements provide value when delivered, satisfied, or met. Requirements include the quantified and documented needs, wants, and expectations of the sponsor, customer, and other stakeholders. Well-formed requirements are unambiguous, clear, unique, consistent, stand-alone (not grouped), verifiable, and necessary for stakeholder acceptability. *See also:* design requirement, functional requirement, implementation requirement, interface requirement, performance requirement, physical requirement

system requirements specification (SyRS). (1) structured collection of information that embodies the requirements of the system *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(2)** structured collection of the requirements (functions, performance, design constraints, and attributes) of the system and its operational environments and external interfaces *(ISO/IEC/IEEE 29148:2018 Systems and software engineering-Life cycle processes-Requirements engineering, 4.1.29) See also:* software requirements specification, SRS

architectural design. (1) definition of a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* functional design

compatibility. (1) capability of a product to exchange information with other products, or to perform its required functions while sharing the same common environment and resources *(ISO/IEC 25010:2023, Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--Product quality model, 3.3)* **(2)** ability of two or more systems or components to exchange information *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(3)** capability of a functional unit to meet the requirements of a specified interface without appreciable modification *(ISO/IEC 2382:2015 Information technology -- Vocabulary)*

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preliminary design. (1) analysis of design alternatives and definition of the architecture, components, interfaces, and timing and sizing estimates for a system or component *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* detailed design

preliminary design review (PDR). (1) review conducted to evaluate the progress, technical adequacy, and risk resolution of the selected design approach for one or more configuration items; to determine each design's compatibility with the requirements for the configuration item; to evaluate the degree of definition and assess the technical risk associated with the selected manufacturing methods and processes; to establish the existence and compatibility of the physical and functional interfaces among the configuration items and other items of equipment, facilities, software and personnel; and, as applicable, to evaluate the preliminary operational and support documents *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* critical design review, system design review

allocated baseline. (1) approved requirements for a product, subsystem or component, describing the functional, performance, interoperability, and interface requirements that are allocated from higher-level requirements and the verifications required to demonstrate achievement of those requirements, as established at a specific point in time and documented in the allocated configuration documentation *(ISO/IEC/IEEE 24748-7:2026, Systems and software engineering -- Life cycle management -- Part 7: Application of systems engineering on defence programs, 3.1.1) See also:* developmental configuration, functional baseline, product baseline, allocated configuration identification

configuration. (1) arrangement of a computer system or component as defined by the number, nature, and interconnections of its constituent parts *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(2)** in configuration management, the functional and physical characteristics of hardware or software as set forth in technical documentation or achieved in a product *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(3)** arrangement of a system or network as defined by the nature, number, and chief characteristics of its functional units *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(4)** requirements, design, and implementation that define a particular version of a system or system component *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(5)** manner in which the hardware and software of an information processing system are organized and interconnected *(ISO/IEC 2382:2015 Information technology -- Vocabulary)* **(6)** collection of objects able to interact at interfaces *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 10.2) See also:* configuration item; form, fit, and function; version

design phase. (1) period in the software life cycle during which definitions for architecture, software components, interfaces, and data are created, documented, and verified to satisfy requirements *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* detailed design, preliminary design

design requirement. (1) requirement that specifies or constrains the design of a system or system component *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* functional requirement, implementation requirement, interface requirement, performance requirement, physical requirement

encapsulation. (1) software development technique that consists of isolating a system function or a set of data and operations on those data within a module and providing precise specifications for the module *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(2)** concept that access to the names, meanings, and values of the responsibilities of a class is entirely separated from access to their realization *(ISO/IEC/IEEE 31320-2:2012, Information*

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technology -- Modeling Languages -- Part 2: Syntax and Semantics for IDEF1X97 (IDEFobject), 3.1.54) **(3)** idea that a module has an outside that is distinct from its inside, that it has an external interface and an internal implementation *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* data abstraction, information hiding

HMI. (1) human-machine interface *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* user interface

implementation requirement. (1) requirement that specifies or constrains the coding or construction of a system or system component *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* design requirement, functional requirement, interface requirement, performance requirement, physical requirement

information hiding. (1) software development technique in which each module's interfaces reveal as little as possible about the module's inner workings and other modules are prevented from using information about the module that is not in the module's interface specification *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(2)** containment of a design or implementation decision in a single module so that the decision is hidden from other modules *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* encapsulation

integration. (1) process of combining software components, hardware components, or both into an overall system *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)* **(2)** process of planning for and aggregating a progressively more complete set of physical, logical, or both, system elements and activating their interfaces to synthesize a system or part of a system whose properties can be verified and possibly validated *(ISO/IEC/IEEE 24748-6:2023 Systems and software engineering Life cycle management Part 6: System and software integration, 3.1.4) Note:* Integration can apply to the implemented system elements which compose a system and the necessary life-cycle related activities.

notation standard. (1) standard that describes the characteristics of formal interfaces within a profession *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

physical requirement. (1) requirement that specifies a tangible, measurable characteristic of a system or system component *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* design requirement, functional requirement, implementation requirement, interface requirement, performance requirement

port-to-port time. (1) elapsed time between the application of a stimulus to an input interface and the appearance of the response at an output interface *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See also:* response time, think time, turnaround time

shell. (1) computer program or routine that provides an interface between the user and a computer system or program *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

signature. (1) statement of what the interface to a responsibility looks like *(ISO/IEC/IEEE 31320-2:2012, Information technology -- Modeling Languages -- Part 2: Syntax and Semantics for IDEF1X97 (IDEFobject), 3.1.178)* **(2)** mathematical structure comprising a set of sorts and a set of operators *(ISO/IEC 15909-1:2019 Systems and software engineering--High-level Petri nets--Part 1: Concepts, definitions and graphical notation, 3.32) Note:* A signature consists of the responsibility name, along with a property operator and the number and type of its arguments, if any. A type (class) may be speciﬁed for each argument in order to limit the argument values to being instances of that class.

realization. (1) representation of interface responsibilities through specified algorithms and any needed representation

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properties *(ISO/IEC/IEEE 31320-2:2012, Information technology -- Modeling Languages -- Part 2: Syntax and Semantics for IDEF1X97 (IDEFobject), 3.1.156)* **(2)** stage for detailed design and construction *(ISO/IEC 26557:2016 Software and systems engineering -- Methods and tools for variability mechanisms in software and systems product line, 3.10) Note:* The realization states "how" a responsibility is met; it is the statement of the responsibility's method. Realization consists of any necessary representation properties together with the algorithm (if any). A realization can involve representation properties or an algorithm, or both.

N 2 diagram. (1) system engineering or software engineering tool for tabulating, defining, analyzing, and describing functional interfaces and interactions among system components *(ISO/IEC/IEEE 24765e:2015) Note:* The N 2 diagram is a matrix structure that graphically displays the bidirectional interrelationships between functions and components in a given system or structure. *Syn:* N2 diagram

API. (1) application program interface *(ISO/IEC 10746-1:1998 Information technology -- Open Distributed Processing -- Reference model: Overview)* **(2)** application programming interface *(ISO/IEC 19770-2:2015 (corr 2017), Information technology -- Software asset management -- Part 2: Software identification tag, 3.2)*

GUI. (1) graphical user interface *(ISO/IEC 10746-1:1998 Information technology -- Open Distributed Processing -- Reference model: Overview)*

HCI. (1) human computer interface *(ISO/IEC 10746-1:1998 Information technology -- Open Distributed Processing -- Reference model: Overview)* **(2)** hardware configuration item *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) Syn:* HWCI

IDL. (1) Interface Definition Language *(ISO/IEC 10746-1:1998 Information technology -- Open Distributed Processing -- Reference model: Overview)*

boundary. (1) conceptual point of an interface between the software under study and its users *(ISO/IEC 20926:2009 Software and systems engineering -- Software measurement -- IFPUG functional size measurement method 2009, 3.9) (ISO/IEC 29881:2010 Information technology--Software and systems engineering--FiSMA 1.1 functional size measurement method, 3.2)* **(2)** conceptual interface between the software being measured and its functional users *(ISO/IEC 19761:2011 Software engineering -- COSMIC: a functional size measurement method, 2.3) Note:* The boundary provides the measurement analyst(s) with a solid delimiter to distinguish, without ambiguity, what is included inside the measured software from what is part of the measured software's operating environment. The boundary defines what is external to the application; it indicates the border between the software being measured and the user; it acts as a "membrane" through which data processed by transactions pass into and out of the application; it is dependent on the user's external business view of the application; it is independent of non-functional and/or implementation considerations. The boundary is identical when assessing the functional size and the non-functional size. *See also:* system boundary

invocation submit. (1) signal in the implicitly defined signal interface of a client computational object which has the same name and parameters as the invocation of an interrogation or announcement in the original operation interface *(ISO/IEC 14752:2000 Information technology -- Open Distributed Processing -- Protocol support for computational interactions, 3.3.7) See also:* termination submit

invocation deliver. (1) signal in the implicitly defined signal interface of a server computational object which has the same name and parameters as the invocation of an interrogation or announcement in the original operation interface

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(ISO/IEC 14752:2000 Information technology -- Open Distributed Processing -- Protocol support for computational interactions, 3.3.8)

termination deliver. (1) signal in the implicitly defined signal interface of a client computational object which has the same name and parameters as one of the terminations of an interrogation in the original operation interface *(ISO/IEC 14752:2000 Information technology -- Open Distributed Processing -- Protocol support for computational interactions, 3.3.13)*

termination submit. (1) signal in the implicitly defined signal interface of a server computational object which has the same name and parameters as one of the terminations of an interrogation in the original operation interface *(ISO/IEC 14752:2000 Information technology -- Open Distributed Processing -- Protocol support for computational interactions, 3.3.14) See also:* invocation submit, invocation deliver

ODP IDL. (1) Open Distributed Processing Interface Definition Language *(ISO/IEC 14752:2000 Information technology -- Open Distributed Processing -- Protocol support for computational interactions, 4)*

SCI. (1) software configuration item *(ISO/IEC/IEEE 24765i:2020)* **(2)** serial communication interface *(ISO/IEC/IEEE 24765d:2015)*

ICWG. (1) Interface Control Working Group *(ISO/IEC/IEEE 16326:2019 Systems and software engineering -- Life cycle processes -- Project management, 5) Note:* Depending on the size and complexity of a project, can be a group of people, a single person or a function

adapter. (1) software or device that allows incompatible systems to be interfaced *(ISO/IEC/IEEE 24765l:2024)*

internal logical file (ILF). (1) user-recognizable group of logically related data or control information maintained within the boundary of the application being measured *(ISO/IEC 20926:2009 Software and systems engineering -- Software measurement -- IFPUG functional size measurement method 2009, 3.39) Note:* The primary intent of an ILF is to hold data maintained through one or more elementary processes of the application being counted. An internal logical file is a type of base functional component. *See also:* external interface file

functional baseline. (1) description of the system's performance (functional, interoperability, and interface characteristics) and the verification required to demonstrate the achievement of those specified characteristics *(ISO/IEC/IEEE 24748-7:2026, Systems and software engineering -- Life cycle management -- Part 7: Application of systems engineering on defence programs, 3.1.5) See also:* allocated baseline, developmental configuration, product baseline

EIF. (1) external interface file *(ISO/IEC 20926:2009 Software and systems engineering -- Software measurement -- IFPUG functional size measurement method 2009, 4)*

computational viewpoint. (1) viewpoint on an ODP system and its environment which enables distribution through functional decomposition of the system into objects which interact at interfaces *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 4.1.1.3)*

location transparency. (1) distribution transparency which masks the use of information about location in space when identifying and binding to interfaces *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 4.4.1.3)*

relocation transparency. (1) distribution transparency which masks relocation of an interface from other interfaces

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bound to it *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 4.4.1.5)*

replication transparency. (1) distribution transparency which masks the use of a group of mutually behaviorally compatible objects to support an interface *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 4.4.1.6) Note:* Replication is often used to enhance performance and availability.

computational object template. (1) object template which comprises a set of computational interface templates which the object template can instantiate, a behavior specification, and an environment contract specification *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.9)*

channel. (1) approach to distributing products and services from the original supplier to the end-user organization *(ISO/IEC 19770-3:2016 Information technology--IT asset management--Part 3: Entitlement schema, 3.1.3)* **(2)** configuration of stubs, binders, protocol objects and interceptors providing a binding between a set of interfaces to basic engineering objects, through which interaction can occur *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 8.1.8) Note:* Typical channels for software include direct, VAR, OEM, reseller, and educational reseller.

Bindings that require channels are referred to as distributed bindings in the engineering language; bindings between engineering objects that do not require channels (e.g. between engineering objects in the same cluster) are referred to as local bindings. *Syn:* distribution channel

relocator. (1) object that manages a repository of locations for interfaces, including locations of management functions for the cluster supporting those interfaces *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 14.3.1.1)*

service offer. (1) information describing an interface, how to bind to it, and the service that can be invoked using it *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 14.5.1.1)*

service import. (1) interaction with the trading function which searches an identified set of service offers to discover interfaces at which a service satisfying a specified type is available *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 14.5.1.3)*

concurrent communication diagram. (1) diagram depicting a network of concurrent tasks and their interfaces in the form of asynchronous and synchronous message communication, event synchronization, and access to passive information-hiding objects *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

concurrent task architecture. (1) description of the concurrent tasks in a system or subsystem in terms of their interfaces and interconnections *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

I/O task-structuring criteria. (1) category of the task-structuring criteria addressing how device interface objects are mapped to I/O tasks and when an I/O task is activated *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

software requirements management. (1) process of planning and controlling the identification, allocation, and flow-down of requirements from the system level to the module or part level, including interfaces, verification, modifications, and status monitoring *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) See*

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also: requirements management

task behavior specification. (1) specification describing a concurrent task's interface, structure, timing characteristics, relative priority, errors detected, and task event sequencing logic *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

task structuring. (1) software design stage with the objective of structuring a concurrent application into concurrent tasks and defining the task interfaces *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

application frameworks. (1) subsystem design made up of a collection of abstract and concrete classes and interfaces between them *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) Note:* Frameworks are often instantiation of a number of patterns.

functional analysis. (1) systematic investigation of the functions of a real or planned system *(ISO/IEC 2382:2015 Information technology -- Vocabulary)* **(2)** examination of a defined function to identify all the subfunctions necessary to accomplish that function, to identify functional relationships and interfaces (internal and external) and capture these in a functional architecture, to flow down upper-level performance requirements and to assign these requirements to lower-level subfunctions *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

system design. (1) process of defining the hardware and software architecture, components, modules, interfaces and data for a system to satisfy specified requirements *(ISO/IEC 2382:2015 Information technology -- Vocabulary)*

SPI. (1) schedule performance index *(A Guide to the Project Management Body of Knowledge (PMBOK(R) Guide) -- Eighth Edition)* **(2)** serial peripheral interface *(ISO/IEC/IEEE 24765d:2015)*

customer requirement. (1) result of eliciting, consolidating, and resolving conflicts among the needs, expectations, constraints, and interfaces of the product's relevant stakeholders in a way that is acceptable to the customer *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary)*

process architecture. (1) ordering, interfaces, interdependencies, and other relationships among the process elements in a standard process *(ISO/IEC/IEEE 24765:2017 Systems and software engineering-Vocabulary) Note:* Process architecture also describes the interfaces, interdependencies, and other relationships between process elements and external processes, such as contract management.

reading reference. (1) data storage entity or record, or interface record from another software or system containing data retrieved in a BFC *(ISO/IEC 29881:2010 Information technology--Software and systems engineering--FiSMA 1.1 functional size measurement method, 3.8) Note:* The number of reading references is equal to 0 for all BFC types where it is applicable.

writing reference. (1) data storage entity or other record, or interface record to another software or system to which data is written in a BFC *(ISO/IEC 29881:2010 Information technology--Software and systems engineering--FiSMA 1.1 functional size measurement method, 3.10) Note:* The number of writing references is greater than 0 with all BFC types where it is applicable.

IRS. (1) interface requirements specification *(IEEE 1012-2024 IEEE Standard for System, Software, and Hardware Verification and Validation, 3.2)*

interaction point. (1) location at which there exists a set of interfaces *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 8.12)*

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binding behavior. (1) establishing behavior between two or more interfaces, and hence between their supporting objects *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 13.5.1)*

managed role. (1) view of the management interface of an object which is being managed within an ODP system *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 14.4)*

programmatic reference point. (1) reference point at which a programmatic interface can be established to allow access to a function *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 15.3.1)*

interworking reference point. (1) reference point at which an interface can be established to allow communication between two or more systems *(ISO/IEC 10746-2:2009 Information technology -- Open Distributed Processing -- Reference Model: Foundations, 15.3.3)*

computational factory. (1) factory that returns an interface reference to the computational object it creates *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.15)*

computational component. (1) component specified in a computational viewpoint that has a control interface and declared sets of (a) operation interfaces in which it plays a server role (facets), (b) operation interfaces in which it plays a client role (receptacles), (c) operation interfaces originating announcements carrying notifications of typed events (event sources), (d) operation interfaces consuming announcements carrying notifications of typed events (event sinks), (e) operation interfaces supporting accessors and mutators for attributes (attributes) *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.16)*

computational container. (1) container for a declared set of computational component types that has a management interface at which it can be requested to create a computational component of one of the types and add it to the container's content, delete a computational component from the container, list the computational components it currently contains, and list the computational factories it provides *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.17)*

facet. (1) operation interface in which a computational component plays a server role *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.16) Note:* the primary vehicle through which a component exposes its functional application behavior to clients during normal execution

receptacle. (1) operation interface in which a computational component plays a client role *(ISO/IEC 10746-3:2009 Information technology -- Open Distributed Processing -- Reference Model: Architecture, 7.1.16)*

event source. (1) operation interface originating notifications of events to event consumers or an event channel *(ISO/IEC/IEEE 24765l:2024) See also:* event sink

event sink. (1) operation interface consuming announcements carrying notifications of typed events *(ISO/IEC/IEEE 24765l:2024) See also:* event source

usability inspection. (1) evaluation based on the considered judgment of evaluators who examine the usability-related aspects of an interface with respect to specified criteria *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.4.2) Note:* Usability inspection is the generic term for several methods,

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including heuristic evaluation, cognitive walkthroughs, standards inspection, pluralistic walkthroughs, and consistency inspections. The inspectors can include usability specialists, developers, end users or other types of professionals. The evaluative criteria can include good practice or documented principles, guidelines, requirements or standards. The evaluation can be conducted with or without the help of referenced documents.

user interaction. (1) exchange of information between a user and an interactive system via the user interface to complete the intended task *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 2.22) Note:* User interaction specifications focus on user interactions without considering implementation details.

JNDI. (1) Java naming and directory interface *(ISO/IEC/IEEE 24765l:2024)*

IDD. (1) interface design document *(IEEE 1012-2024 IEEE Standard for System, Software, and Hardware Verification and Validation, 3.2)*

ACIA. (1) asynchronous communication interface adapter *(ISO/IEC/IEEE 24765d:2015)*

controller. (1) device or computer chip that interfaces with a peripheral device *(ISO/IEC/IEEE 24765d:2015)*

universal serial bus (USB). (1) serial communication interface with two data lines and two power lines between a computer and peripherals *(ISO/IEC/IEEE 24765d:2015)*

ICD. (1) interface control document *(ISO/IEC/IEEE 24641:2023. Systems and Software engineering--Methods and tools for model-based systems and software engineering, 3.2)*

SBI. (1) serial bus interface *(ISO/IEC/IEEE 24765e:2015)*

SEI. (1) serial expansion interface *(ISO/IEC/IEEE 24765e:2015)* **(2)** Software Engineering Institute *(ISO/IEC/IEEE 24765e:2015)*

application configuration. (1) derivation for member product specific executables from domain assets in realization *(ISO/IEC 26557:2016 Software and systems engineering -- Methods and tools for variability mechanisms in software and systems product line, 3.1)* **(2)** composition results of an application by both binding variability and adding application specific variability *(ISO/IEC 26558:2017 Software and systems engineering -- Methods and tools for variability modelling in software and systems product line, 3.1)* **(3)** structure of a member product, including application components and application interfaces *(ISO/IEC 26555:2015 Software and systems engineering--Tools and methods for product line technical management, 3.2)*

service design. (1) creation of a service solution, typically including the components which create the desired functionality, technology architecture that supports the components, the processes to support and manage the solution, the associated measures (internal performance or customer agreed measures), and the supply chain interfaces *(ISO/IEC 29110-1-2:2024, Systems and software engineering Lifecycle profiles for Very Small Entities (VSEs) Part 1-2: Vocabulary, 3.89)*

configuration parameter. (1) parameter provided by variable components or interfaces, so that its value is selected when bindings occur *(ISO/IEC 26553:2018 Information technology -- Software and systems engineering-- Tools and methods for product line realization, 3.9)*

N2 diagram. (1) graphical representation used to define the internal operational relationships or external interfaces of

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the system of interest *(INCOSE Systems Engineering Handbook, 5th ed., 2023) Syn:* N-squared diagram

software as a service (SaaS). (1) access to resources from client devices through thin client interface or program interface *(IEEE 2675-2021, IEEE Standard for DevOps: Building Reliable and Secure Systems Including Application Build, Package, and Deployment, 3.1) Note:* The level of control over the resource provided to the consumer can vary with the service provider. In DevOps, SaaS can be automated as part of the DevOps pipeline. *See also:* IaaS, PaaS

system boundary. (1) conceptual interface between a system and its environment *(IEEE 7000:2021, IEEE Standard Model Process for Addressing Ethical Concerns during System Design, 3.1)*

IC. (1) interface controller *(IEEE 7005 2021, IEEE Standard for Transparent Employer Data Governance, 3.2)*

cloud service. (1) one or more capabilities offered via cloud computing invoked using a defined interface *(ISO/IEC TS 25052-1:2022, Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE): cloud services--Part 1: Quality model, 3.3.2)*

interaction capability. (1) capability of a product to be interacted with by specified users to exchange information between a user and a system via the user interface to complete the intended task *(ISO/IEC 25010:2023, Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--Product quality model, 3.4) Note:* Interaction capability is a prerequisite for usability. Interaction capability enables interaction by users to complete specific tasks in a variety of contexts of use. On the other hand, usability focuses on outcomes of use to determine whether tasks are achieved by users with effectiveness, efficiency and satisfaction in a specific context of use.

UI. (1) user interface *(ISO/IEC/IEEE 32430:2025, Software engineering Software non-functional size measurement, 3.2)*

user-system interaction. (1) exchange of information between a user and an interactive system via the user interface *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.2.1)*

interaction sequence. (1) exchange of information between a user and an interactive system via the user interface to complete an intended task or to navigate through the interactive system *(ISO TR 25060:2023 Systems and software engineering--Systems and software Quality Requirements and Evaluation (SQuaRE)--General Framework for Common Industry Format (CIF) for usability-related information, 3.2.3)*

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