

# Services-Aware Interoperability Framework

Canonical Definition

Glossary

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**Accountability pattern-SAIF**

Accountability pattern is an expression of the relationship between two parties (the responsible party and the commissioning party) — who have come together in the context of a defined set of responsibilities and goals. The most important feature of the pattern is the explicit separation of behaviors between the responsible and commissioning parties. Patterns are empirically proven approaches of conceptualizing and solving problems. The Accountability pattern may be applied irrespective of technology or implementation.

The Accountability Pattern of Martin Fowler (Fowler & Feathers, 1997) defines the notion of a Contract through the explicit representation of Accountability, that is, a Commissioning Party establishes a contract with a Responsible Party to accomplish one or more tasks. The success of the Responsible Party's actions can be assessed by the Commissioning Party via one or more agreed-upon Accountabilities which can take a form such as deliverables or tasks executed (Fowler & Feathers, 1997).

**Activity**

A process flow element that represents a step of work to be performed.

An activity can be composed of further smaller activities, and described as a sub-process (SAIF IG grammars will determine precisely how this decomposition is to be expressed).

**Appeal Process**

A governance process through which a precept is permitted to be overturned or modified by exception

**ArB-SAIF**

Architecture Board (ArB) of Health Level Seven International (HL7)

Architecture Review Board

**Architecture-SAIF**

Fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution

The SAIF CD adopts ISO definition specified in ISO/IEC/IEEE 42010 Systems and software engineering specification

**Artifact-SAIF**

Artifact is any portion of a specification that is controlled and can be versioned. For example, an artifact can be a model, a document, or an XML schema.

**Artifact Conformity Assessment**

A specific form of governance stating level of conformance of artifact implementation vs its specification

**Artifact Consistency Assessment**

A specific form of governance stating level of well-formedness rules for artifact

an artifact

**Artifact Governance**

A form of governance defining relationships and well-formedness rules between artifacts of a specification.

**Artifact Templates**

Organization-specific modelling concepts compliant with the concepts and properties defined in the SAIF-CD, developed to support needs of organization specific IG.

**Authority**

Authority is the ability of a party to act autonomously. In many circumstances authority to act has been delegated according to particular policies. The party with the higher authority is a principal and the delegated party is an agent. Delegated authority from the principal party to the agent usually involves an expectation to be held accountable for the decisions and actions taken. Automated systems typically

sentence fragment - check CD for rest

**BF language**

A set of modelling concepts necessary to define the behavioural aspects of a system, grouped in three subsets expressing semantics of contracts, operations, and processes - that collectively define shared purpose scenarios at a technical level.

Collectively, the BF languages – and their IG-specific grammars – describe “who does what when and how.”

**Behavior**

A collection of actions with a set of constraints on when they may occur. The specification language in use determines the constraints which may be expressed. Constraints may include for example sequentiality, non-determinism, concurrency or real-time constraints [RM-ODP]

Behavior specifications are generally fully specified in a services paradigm. A service is a set of behavioral actions that are bound together at an interface that supports a cohesive and coherent set of actions. Behavior is underspecified in the messaging paradigm because behavior can only be specified on an interaction-by-interaction basis.

**Behavioral Framework (BF)**

One of the SAIF CD frameworks defining languages to specify the dynamic semantics of interactions in a shared purpose interoperability scenario.

**Behavioral Semantics**

Semantics supporting interpretation of behaviour in system, expressed in terms of ODP enterprise and computational viewpoints. **in systems, or in a system**

**Binding-SAIF**

Binding is a contract between two or more object interfaces that is the result of an agreed upon behavior. Bindings support the interfaces and provide the environment where the interactions can be executed. [based on RM-ODP]

**Capability-SAIF**

Capability is an abstract definition of functional software characteristics (function, interface, property, event, and so forth) or nonfunctional software characteristics (scalability, portability, performance, and so forth). [IBM] A capability – exposed as an instance of a service - may be described in terms of the semantics required to integrate that capability into some larger behavioral pattern. For example, an Order Management Capability may be exposed via component realizing an interface specification. This capability could take on a particular role within a given business context, under which auspices it would participate in certain interactions that were driven by certain triggers.

**Class**

A collection of attributes that pertain to a specific encapsulated concept. Note that this definition includes UML classes, OWL classes, and other more loosely defined things such as SNOMED-CT concepts.

**Code**

the symbolic representation of a concept

**Code System**

collection of all concepts in a particular terminology

**Coded Concept**

an idea or representation in the context of a taxonomy or code system that is computable.

**Commissioning agent**

- a party requesting a service or an action. - a role in a contract

**Communication Process**

A governance process for communicating information about precepts and their related processes and metrics the people expected to follow the processes.

Various forms of communication channels may be necessary to raise awareness, clarify specifics, gain agreement and then hold people accountable.

**Community**

Community is a configuration of interacting objects whose purpose is to fulfill an objective according to a contract defining how the objective can be met. (ISO ODP 10746-3)

**Compatibility**

Compatibility is the ability of a device or system to work with another device or system without modification. [IBM]. Relationships between two or more conformance statements that involve two or more specification stack (SS) instances. The relationship identifies whether two or more implementations certified as conformant to the specification stack instances can achieve Working Interoperability without further transformations. If so, the two SS instances and associated implementations are called compatible. **second sentence is a sentence fragment**

**Compliance**

Compliance of one standard or specification is compliant with another standard or specification if all propositions true in the initial standard are also true in the complying standard. The target artifact is compliant with the source artifact if and only if all conformant implementations of the target are also conformant with the source. (RM-ODP). The term compliance is also used to state expectations as to how certain specifications need to satisfy possible legislative or regulatory constraints or requirements. **the definition in the CD is a bit different - maybe we want to grab that one**

**Component Interoperability Specification**

Specifications of an individual component of a system using an organization's IG - used to produce conformant implementations artifacts which can be subjected to conformance testing/validation.

**are these two the same thing with slightly different definitions?**

**Component\_Specification**

Component Specification is an instance of the artifact content and representations specifics defined in the Interoperability Specification Template. They are also referred to as Interoperability Specification Instances (ISIs).

**Computation (Behavioral) Dimension**

A SAIF CD Dimension that focuses on defining the behavioral or dynamic semantics that are relevant with respect to interoperability interactions. It is based on RM-ODP computational viewpoint.

**Concept**

A concept is the basic unit of data used in communication Each concept represents an atomic unit of thought that references a concrete or abstract thing. May be primitive or complex

**Conceptual Information Model**

Models that are interaction of Information Dimension and Conceptual Perspective in the SAIF CD matrix.

**Conceptual Perspective**

A SAIF CD Perspective which contains artifacts of interest to and readable by Domain Experts (DEs) or Subject Matter Experts (SMEs). These artifacts are most commonly focused on the "Problem-Space" rather than the "Solution Space," and contain, distributed across the five columns of an ISM, explicit, unambiguous descriptions of the various dimensions of the component or system that being specified.

**Conformance-SAIF**

Conformance relates an implementation to a standard. Any proposition that is true of the specification must be true in its implementation. (ISO, 2010)

**Conformance Statement**

A conformance Statement is a statement that identifies testable requirements at a specified Conformance Point within a specification, explicitly defining the behavior which must be satisfied at these points. Conformance Statements will only occur in standard which are intended to constrain some feature of a real implementation, so that there exists, in principle, the possibility of testing.

**Conformance assertion**

Conformance assertion is a testable, verifiable statement made about a specific implementation instance against a corresponding Conformance Statement.

**Conformance certification**

The outcome of successful conformance testing, i.e. the results of that testing.

**Conformance points-SAIF**

Conformance points are the evaluation of conformance at specific points in the implementation or specification. See Conformance.

**Conformance testing**

A process whereby a given implementation instance is evaluated to determine which of its various Conformance Assertions are valid implementations of a given specification's Conformance Statements:

**Conformant Component Instance**

Component instance which is conformant to its Interoperability Specification Instance (used to specify this component instance)

**Conformity Assessment Language**

Language used to specify details of artifact conformity assessment

**Consistency**

Consistency is a characterization of the logical coherence of the artifacts that are collected in a particular instance of a specification stack. Consistency is normally assessed on a row-by-row basis. Consistency answers the following question: "Do the artifacts in a given row of an SS instance—artifacts that are, by definition, sorted by RM-ODP viewpoints—have logical consistency in terms of their cross references and contextual dependencies and reuse?" **different from the definition in the CD**

**Consistency Assessment Language**

Language used to express details of template well-formedness assessment

**Consistency and Conformity Semantics**

Semantics to support interpretation of consistency and conformity

**Contract**

**second and last sentences are fragments**

Contract is an agreement covering part of the collective behavior of roles. An artifact that serves to capture essential computational viewpoint semantics (or references to them) for management and reuse. Contracts bind together instances of the different services and applications using behavior patterns to fulfill particular business needs. They incorporate the integration semantics that brings disparate systems together. A specified agreement to some behavior common to a configuration of objects, that tells the environment what to expect. [RM-ODP].

**Contract Semantics**

Semantics supporting interpretation of concepts relating to contracts

**Contract templates-SAIF**

Contract templates are patterns for defining and instantiating accountability in the context of implementations. Contract templates facilitate exchanges of information related to shared state and provide provable accountability along lines of role-based responsibilities.

**Correspondence** **remove ending "**

A statement that some terms or other linguistic constructs in a specification from one ODP viewpoint are associated with (e.g. describe the same entities as), terms or constructs in a specification from a second ODP viewpoint. The forms of association that can be expressed will depend on the specification technique used."

**Cross-Boundary Shared Purposes**

Cross-boundary shared purpose as it is achieved through technical interoperability represents a set of agreements between the human and organizational owners of the components that are ultimately deployed and interact to achieve a defined set of shared objectives.

**DIM (Domain Information Model)-SAIF**

DIM (Domain Information Model) is the least constrained, and can therefore be adapted to a broad range of models covering a certain domain. Domains might include Laboratory, Claims and Reimbursements, Patient care, and so on. DIM's can have multiple entry-points and need not be strictly hierarchical, so that they cannot be serialized for transport.

**Data type-SAIF**

Data type is a constraint placed upon the interpretation of data in a type system, describing representation, interpretation and structure of values or objects stored in computer memory.

**Datatype**

A set of distinct values, characterized by properties of those values, and by operations on those values (ISO 11404)

**Definition**

the definition of a Coded\_Concept

**Definition Process**

Governance process by which a precept and their related components are established agreed to and then maintained as feedback on their use is provided.

**Deployment\_Context**

some of these have underscores. remove?

the size and/or diversity of the community that is negotiating one or more shared purpose scenarios. It can be Enterprise/Global, Inter-institution, Intra-Institution, Local Lab or Not Shared

**Dimensions SAIF not SIAF**

A SIAF dimension is a particular abstraction of a system reflecting concerns of a particular group of stakeholders, e.g. enterprise dimension is of concern to all stakeholders interested in business context of the system to be specified and implemented. SAIF Dimensions are based on the RM-ODP Viewpoints, with additional property of each of them being able to be further partitioned in conceptual, logical and implementable perspectives.

**ECCF language take out defines after ECCF**

The language defined in the Enterprise Consistency and Conformity Framework defines that describes the semantics of the relationships between the cells formed by the intersection of the dimensions (columns) and the perspectives (rows) of the Interoperability Specification Matrix (ISM).

**Engineering (Deployment) Dimension**

A SAIF-CD Dimension that focuses on defining the deployment topologies and infrastructure services that are relevant with respect to interoperability interactions. The RM-ODP (ISO RM-ODP) contains considerable detail about the construct “transparencies.” Discussion of transparencies is beyond the scope of the SAIF-CD. However, certain SAIF-IGs could benefit substantially from including certain transparency constructs in their organization specific IGs.

**Enterprise Architecture**

An architecture that supports the business of the enterprise - from business, information, application and technical perspectives. The purpose of enterprise architecture is to optimize across the enterprise the often fragmented legacy of processes (both manual and automated) into an integrated environment that is responsive to change and supportive of the delivery of the business strategy.(TOGAF 9.1)

**Enterprise Consistency/Conformity Framework (ECCF)**

The Enterprise Consistency and Conformity Framework defines the language that describes the semantics of the relationships between the cells formed by the intersection of the dimensions (columns) and the perspectives (rows) of the Interoperability Specification Matrix (ISM).

**Enterprise Dimension**

The Enterprise Dimension focuses on defining salient aspects of the “organizational context.” In the context of interoperability, this means “the intra- or inter-organizational deployment and interoperability context” for which the specification-specific artifacts are being defined. For each of the three perspectives, the Enterprise Dimension should aspects of the interoperability context that emerge from an understanding of business objectives and business rules. should address aspects? rather than should aspects

Due to the basic nature of the Enterprise dimension, most information at the Logical and Implementable Perspectives originates in the Conceptual Perspective. Very little “new” information is added at the Logical and Implementable Perspectives in the Enterprise Dimension.

**Enumerated Value Set**

A value set consisting of one or many coded concepts, defined by a value set definition and identified by an object identifier.

**Event**

The fact that an action has taken place. When an event occurs, the information about the action that has taken place becomes part of the state of the system and may thus subsequently be communicated in other interactions. Such a communication is called an event notification; it carries the information about the event from the object that performs or observes it to other objects that have a need to take action as a result of it. NOTES 1 An action changes the state of the objects participating in it; an event is the fact that the action has occurred; an event notification is a communication about the event, caused by some the action; the receipt of the notification changes the state of objects not participating in the original action. 2 An event notification may convey information about the fact that an internal action has occurred. For example, an internal action may change the availability of some server and a subsequent event notification may convey this fact to its potential clients. This definition was adopted from RM-ODP standard ITU-T X.902 | ISO/IEC 10746-2, Date: 2010-01-12 This definition is more general than the SAIF-CD description, in which an event is a process flow element that represents some kind of occurrence (“something” that happens), which in turn causes an activity to occur (a trigger) and/or occurs as a consequence of an activity (a result).

**Exception Condition**

exists when an operation fails to fulfill its service guarantees

**Executable Model**

A model, which after a number of transformations, can produce an executable. There is thus traceability from the executable to the model

**Flow elements**

The units used to describe the process and its sequence of steps. In a SAIF IG grammar, the flow elements usually correspond to elements in a particular process description notation.

**GF Language**

The Governance Framework language is made up of four interdependent concepts, which taken together define what the rules are, who makes the rules, what processes are needed to implement the rules and how the rules are measured or enforced.

**Gateway**

A process flow element that controls the divergence and/or convergence of sequence flows. It allows branching, forking, merging, and joining of process flow.

**Governance** we have same defn twice. Also, should be “and the related” or “and related”

Governance is the overarching policy structure and their related processes by which a group exercises its authority, demonstrates accountability for accepted responsibilities within a particular jurisdiction. The management of any aspect of the governance structure or the exercise of such policies to compel or constrain the behavior of people (or systems acting as agents of people) are governance events.

**Governance-SAIF**

Governance is the overarching policy structure and their related processes by which a group exercises its authority, demonstrates accountability for accepted responsibilities within a particular jurisdiction. The management of any aspect of the governance structure or the exercise of such policies to compel or constrain the behavior of people (or systems acting as agents of people) are governance events.

**Governance Framework (GF)**

Governance Framework (GF) defines the administrative context in which the interim deliverables and interoperable functions are produced and maintained. why just interim deliverables

**Governance\_Processes**

Governance processes provide a means to control decisions, enforce policies, and take corrective action in support of the governance system

**Grammars**

The study of how meaningful elements (morpheme) within a language can be combined into utterances. Morphemes can either be free or bound. If they are free to be moved around within an utterance, they are usually called words, and if they are bound to other words or morphemes, they are called affixes. The way in which



meaningful elements can be combined within a language is governed by rules. In standard linguistic theory the rules of the internal structure of words is called morphology. The rules of the internal structure of the phrases and sentences is called syntax. In the generativist tradition of Chomsky morphology is seen as a part of syntax. Grammar (SAIF-CD): The adoption or adaption, optimization, realization, and/or contextualization of the languages specified in the SAIF-CD for use in organization-specific SAIF Implementation Guides( SAIF IG).

**IF Language**

Information Framework language focuses on explicit expression of static/informational semantics

**ISI\_Subject**

Each instance of an Interoperability Template, referred to as an Interoperability Specification Instance (ISI), contains artifacts whose scope collectively defines a particular component, for example, system, sub-system, service, document, or message. This scope is referred to as the Interoperability Specification Instance Subject.

**ISO standard Reference Model – Object Distributed Processing ISO Standard (RM-ODP)**

ISO standard Reference Model – Object Distributed Processing ISO Standard (RM-ODP), ISO/IEC IS 10746ITU-T X, 900

**Immature specification stack instance-SAIF**

Immature specification stack instance - A partially populated specification stack instance, which is not coherent.

**Implementable\_Perspective**

SAIF perspective in which artifacts are typically defined by developers, often through dialogues with designers, architects, or both. Note that the artifacts in the Implementable Perspective are not actual implementations, but rather implementable in a number of implementation instances. Thus all the necessary technical bindings, including data types, value sets, class libraries, and interface specifications, can be found distributed across the ISM dimensions at the Implementable Perspective. These artifacts will enable one or more instances of the specification to be realized by one or more development teams.

**Implementation**

Implementation is an executable realization of a set of functional and non-functional requirements.

**Implementation Guide**

Implementation Guide (IG) is a guidance document that provides a worked-out example of how ECCF, GF, BF, and IF approaches are performed to produce a particular set of interoperable functions.

**Implementation Specification Matrix (ISM)**

Implementation Specification Matrix (ISM) defines a 5-column-by-3-row matrix (“table”) which distributes the multiple aspects of a given component’s specification across the various cells of the matrix.

**Implementation Specification Template**

Implementation Specification Template is a realization of the Interoperability Specification Matrix (ISM) in a specific SAIF IG. An IST defined by a particular SAIF IG specifies the content and representation of specific artifacts in the various dimensions and perspectives of the ISM.

**Information Dimension**

Information Dimension focuses on defining the informational or static semantics that are relevant with respect to interoperability interactions

**Information Framework (IF)**

defines the language describing the various artifact types and inter-relationships of the Informational Viewpoint from the three SAIF Perspectives

**Informational Semantics**

Informational Semantics is semantics associated with the meaning of information objects and their relationships

**Integration point-SAIF**

Integration point is a physical realization of a Conformance statement that allows verification of the assertion. Compliance testing for Conformance and non-conformance to a particular Enterprise Architecture Specification occurs exclusively at defined Integration points.

**Interaction-SAIF**

is a kind of action that occurs as two or more objects have an effect upon one another. RM-ODP defines interaction as an action that involves one or more objects and their environments at an interface; set of services that are offered across a single interface, and are linked to another object with a binding.

**Interface**

A grouping of operations of a service required to be implemented together in a specification.

**Interface-SAIF**

Interface is a point of interaction between components, which is applicable at the level of both hardware and software. This allows a component, whether a piece of hardware such as a graphics card or a piece of software such as an internet browser, to function independently while using interfaces to communicate with other components via an input/output system and an associated protocol.

**Internal architecture-SAIF**

Internal architecture is the set of specifications that HL7 produces that make it easier to accomplish Working interoperability with external (enterprise) architectures. The internal architecture is “how HL7 does its job” and the enterprise architecture is how the healthcare systems interoperate.

**Interoperability-SAIF**

need a space

Interoperability is the ability of two parties, either human or machine, to exchange data or information. (The HL7 interoperability paradigms are messages, Documents, and Services.) The deterministic exchange of data/information in a manner that preserves shared meaning. **add FHIR?**

**Interoperability Paradigm** Why just v3?

Interoperability paradigm (IP) is a set of fundamental principles that establishes the ground rules for the different approaches to HL7 V3-based information exchange. The IP must answer 1. When information is exchanged. 2. How application implementation details are specified. 3. How templates are to be used. 4. In what form it is exchanged. The HL7 interoperability paradigms are messages, documents, and services: a. Messages - The transmission of semantically rigorous, contextually self-contained information structures according to pre-determined trigger conditions along well known interaction paths. b. Documents - A business-oriented container that becomes the focal class that may be exposed through a service interface (for administration, querying, and manipulation), or transmitted via a message. c. Services - A structured behavioral interface being exposed that provides fine-grained control of some capability, often a focal class, such as an order or a transactional process. These capabilities are, in turn, invoked through smaller, function-oriented message structures that retain the semantic rigor of HL7 models without realizing the entirety of the semantic in the message structure.

**Interoperability Specification Instance (ISI)**

An Interoperability Specification Instance (IS) is a specific collection of artifacts in a particular instance of an Interoperability Specification Template (IST).

**Interoperability framework-SAIF**

Interoperability is the ability of two parties, either human or machine, to exchange data or information. (The HL7 interoperability paradigms are messages, documents, and services.) The deterministic exchange of data/information in a manner that preserves shared meaning.

**Jurisdiction** in the CD, we changed geographical to geopolitical

Jurisdiction is the delineation of the boundary conditions of the scope of authority of a party. The boundary is determined by a geographical area and a subject matter or policy scope. Parties have jurisdiction within a particular scope of authority which may be delegated from another party with a higher authority. The relationships between jurisdictions may be implicit or may be codified in regulations or policy. An interoperating community has a jurisdiction of its own that is specified by contract of the agreeing participants.

## Languages

1. Language: When described as a system of symbolic communication, language is traditionally seen as consisting of three parts: signs, meanings and a code connecting signs with their meanings. The study of how signs and meanings are combined, used and interpreted is called semiotics. Signs can be composed of sounds, gestures, letters or symbols, depending on whether the language is spoken, signed or written, and they can be combined into complex signs such as words and phrases. When used in communication a sign is encoded and transmitted by a sender through a channel to a receiver who decodes it (a signal). 2. Language (SAIF-CD): The concepts and relationships defined in the SAIF-CD. Many are taken from the Enterprise Viewpoint and Computational Viewpoint languages of RM-ODP (ISO RM-ODP).

## Literal ?

1. The expression of a concept 2. Is a subclass of datatype 3. may be a sentence

## Localization

Localization is the application of constraints needed to achieve Interoperability in a specific implementation. Localization indicates custom modifications or other alterations to specific Conformance statements in a local context.

## Localized Information Model (LIM)-SAIF

LIM (Local Information Model) are comparable to CIMs, in that they are serializable, implementable models. Because there are no strict guidelines on the design of LIMs, they can be based on the RIM, DIMs, CIMs or other LIMs. LIMs are principally intended to be used as templates, but can be applied to any purpose that calls for specification of constrained HL7 models. **these are from the v3 HDF. do we reference in the IF section?**

## Logical\_Perspective

SAIF perspective in which Artifacts represent traceable translations of Conceptual-level artifacts into a form and format, usable by and useful to architects and “inward-facing analysts. **close the quotes around inward-facing analysts**

## Logical coherence-SAIF

Logical coherence is a characterization of the artifacts that are collected in a particular instance of a specification stack. It implies that they are clear, complete, concise, correct and consistent.

## Logical cohesion-SAIF

Logical cohesion is when parts of a module are grouped because they logically are categorized to do the same thing, even if they are different by nature (e.g. grouping all mouse and keyboard input handling routines).

## Management

Management makes decisions according to governance rules. **this was the first bullet in list of mgt resp. in CD may add the second one about process as well?**

## Message-SAIF

A communication sent from a person or program to another person or program. [IBM]. HL7 V2 messages are designed to ease the exchange of clinical data between different systems. HL7 V3 focuses on healthcare data rather than how to transmit the data. HL7 V3 message development process is based on information models. An information model represents data in an object-oriented way. It has classes with relationships, properties, states, and constraints. The information models are refined and localized to come up with messages that can be exchanged with different systems.

## Methodology

Methodology establishes processes that comply with governance rules and may introduce additional rules.

## Metrics

Metrics provide information that can be used to measure and verify compliance with precepts.

## Milestone-SAIF

Milestone is the expression of some business need that is achieved when behavioral components described in a specification have been invoked.

**Model-Driven Architecture (MDA)-SAIF**

Model-Driven Architecture (MDA) is a software design approach for the development of software systems. It provides a set of guidelines for the structuring of specifications, which are expressed as models. Model-driven architecture is a kind of domain engineering, and supports model-driven engineering of software systems. It was launched by the Object Management Group (OMG) in 2001.

**Non-automated certification-SAIF**

assertions

Non-automated certification is the set of certification of Conformance assertion if the corresponding Conformance statements are made only at the CIM or the PIM level. Only PSM-level Conformance statements have a high chance of fully automated certification.

**Object**

A model of an entity (entity is defined as any concrete or abstract thing of interest). An object is characterized by its behavior and its state.

Objects are the subjects of a contract and fulfill particular roles in services and processes. Note that the concept of object is broader than the traditional notion of software objects or business objects used in building object-oriented and enterprise system. It is a model of any entity.

**Objective**

Practical advantage or intended effect, expressed as preferences about future states [RM-ODP Enterprise Language].

The ODP enterprise language systematically uses the term, objective, and emphasizes the need of expressing objective in measurable terms.

**Obligation**

A prescription that a particular behavior is required.

**Operation**

basic unit of exchange used to specify the details of the interactions within a service act as the link between operation and process semantics

**Operation Semantics**

A set of concepts needed to support interpretation of BF concept of operation.

A set of concepts needed to support interpretation of BF concept of operation. The basic meaningful unit of information exchange is the operation, which may necessitate one or more interactions. It describes the information exchanges required for interoperability, in particular the exchanges between the responsible and commissioning roles of a service.

**Organization-Specific SAIF Implementation Guide (SAIF IG)**

if we change to context specific in CD, should fix here too

A specification instantiated by a particular organization based on the concepts defined in SAIF Canonical Definition (CD). The Implementation Guide thus adopts and defines an organization specific set of modeling languages and grammars, and document artifact templates, that are compliant with the concepts and properties defined in the SAIF-CD.

**Party**

A party is a particular identifiable individual or organization that is expected to participate in one or more communities. A party may be described by its identity or by its general type. Defining participating parties by type requires a mechanism for identifiable parties wishing to participate to be able to express interest and be accepted by the interoperability community, either by consensus, or by meeting preset criteria.

A party is an enterprise object modeling a natural person or any other entity considered to have some of the rights, powers and duties of a natural person [RM-ODP Enterprise Language]

**Pattern-SAIF**

Pattern is a common solution to a common problem in a given context.

**People (Roles)**

People (and groups of people) make decisions in accordance with and within the constraints stipulated by governance precepts.

**Permission**

A prescription that a particular behavior is allowed to occur

**Perspective**

A specific abstraction of a system reflecting specific domain of expertise of people involved in specifying and implementing IT systems. SAIF defines three such abstractions, each of which comes with a specific set of modelling concepts. These are conceptual, logical and implementable perspectives.

**Platform Independent Model (PIM)**

Platform Independent Model (PIM) is a model of a software system or business system that is independent of the specific technological platform used to implement it. The term Platform-Independent Model is defined in the OMG's model-driven architecture (MDA) paradigm. SAIF logical perspective is not semantically equivalent to the PIM model.

SAIF logical perspective is not semanticity equivalent to the PIM model.

**Platform Specific Model (PSM)-SAIF**

Platform Specific Model (PSM) is a model of a software or business system that is linked to a specific technological platform (e.g., a specific programming language, operating system or database). Platform-Specific Models are indispensable for the actual implementation of a system.

**Policy**

A set of rules applied to a particular purpose. A rule can be expressed in terms of obligations, permission, prohibition or authorization [RM-ODP]

Policy is a statement of principle, direction, or intent that compels or constrains the behavior of specified people. Includes, but not limited to legislation, regulations, guidelines, standards, rules, and protocols. As a precept, policy is a key element of the SAIF governance framework.

**Post-condition**

a predicate that a specification requires to be true immediately after the occurrence of an operation

**Pre-condition**

a predicate that a specification requires to be true for an operation to occur

**Precepts**

A precept is an authoritative rule of action. Precepts are the essence of governance because they determine who has authority to make decisions, establish constraints for those decisions, and prescribe consequences for noncompliance.

**Primitive datatype**

the expression of the simplest form of information. is used as a building block for complex datatypes

**Process**

A collection of steps (defined as activities) taking place in a prescribed manner and leading to an objective

**Profile-SAIF**

Profile is a subset of the conformance statements that are useful and might be implemented independently. Functional subsets are from a computational viewpoint and semantic profiles are from an informational viewpoint.

**Prohibition**

A prescription that a particular behavior must not occur.

**Provenance**

Provenance is the documentation that identifies the traceability of the history of a given artifact within a given specification, from its origination (for example, as a requirement) through its implementation.

**Quality of service agreement-SAIF**

Quality of service agreement is a service level agreement (SLA) is a part of a service contract where the level of service is formally defined. In practice, the term SLA is sometimes used to refer to the contracted delivery time

(of the service) or performance. As an example, internet service providers will commonly include service level agreements within the terms of their contracts with customers to define the levels of service being sold in plain language terms.

### RM-ODP viewpoints-SAIF

A viewpoint (on a system) is an abstraction that yields a specification of the whole system related to a particular set of concerns. The five RM-ODP viewpoints cover all the domains of architectural design: 1) The enterprise viewpoint, which is concerned with the purpose, scope and policies governing the activities of the specified system within the organization of which it is a part. 2) The information viewpoint, which is concerned with the kinds of information handled by the system and constraints on the use and interpretation of that information. 3) The computational viewpoint, which is concerned with the functional decomposition of the system into a set of objects that interact at interfaces - enabling system distribution. 4) The engineering viewpoint, which is concerned with the infrastructure required to support system distribution. 5) The technology viewpoint, which is concerned with the choice of technology to support system distribution. For each viewpoint, there is an associated viewpoint language that can be used to express a specification of the system from that viewpoint. The object modeling concepts give a common basis for the viewpoint languages and make it possible to identify relationships between the different viewpoint specifications and to assert correspondences between the representations of the system in different viewpoints.

### Reference Model for Open Distributed Processing (RM-ODP)-SAIF

1. Reference Model of Open Distributed Processing (RM-ODP) is a reference model, which provides a coordinating framework for the standardization of open distributed processing (ODP). It supports distribution, interworking, platform and technology independence, and portability, together with an enterprise architecture framework for the specification of ODP systems. RM-ODP, is an ITU-T Rec. X.901-X.904 and ISO/IEC 10746 standard, is a joint effort by the International Organization for Standardization (ISO), the International Electro technical Commission (IEC) and the Telecommunication Standardization Sector (ITU-T). 2. Reference Model for Open Distributed Processing (RM-ODP) is an object modeling approach to describe distributed systems. Two structuring approaches are used to simplify the problems of design in large complex systems: five 'viewpoints' provide different ways of describing the system. Each viewpoint is associated with a language, which can be used to describe systems from that viewpoint.

### Reference information model (HL7)

HL7 Reference Information Model (RIM) is the HL7 model, which specifies the grammar of HL7 messages and, specifically, the basic building blocks of the language and their permitted relationships. The RIM is not a model of healthcare, although it is healthcare specific, nor is it a model of any message, although it is used in messages. The RIM is used to express the information content for the collective work of the HL7 working group. This information model encompasses the HL7 domain of interest as a whole. The RIM is a coherent, shared information model that is the source for the data content of all HL7 messages. As such, it provides consistent data and concept reuse across multiple information structures, including messages.

Reference Information Model specifies the grammar and, specifically, the basic building blocks of the language and their permitted relationships.

Note that because of its focus on interoperability the description in SAIF is limited to the use of the RIM for interoperability. The use of the RIM as a persistence model or as a processing model (as advocated by RIMBAA) are not covered by SAIF. The above definition is based on a limited view of the world. This is not meant as criticism, but it is caused by the very purpose of the SAIF framework. **RIMBAA is now AID**

### Related Coded Concept

Defines the relationship between coded concepts

### Relevant semantics-SAIF

Relevant semantics refer to all aspects of the specification that are stated to enable a component built from the specification to achieve Working Interoperability with another component. Relevant semantics includes both static and dynamic/behavioral semantics, as required by a given specification.

### Responsibility

Responsibilities are explicit behaviors or actions associated with a community role. Responsibility for acting is stated as a permission (you may act), an obligation (you must act), or sometimes as a prohibition (you must not act), including the conditions under which each action is valid. Responsibility is a set of explicit actions that may be performed or must be performed in order to fulfill a particular role.

**Responsible agent**

- a party supplying a service or an action. - a role within a Contract

**Revitalization Process**

A governance process which serves the purpose of periodically evaluating every precept and its related components - to determine if the related risks are being mitigated effectively, whether the precept is still relevant to the current circumstances, or whether there are possible alignments necessary among interdependent precepts to avoid gaps and confusion.

**Risk**

A probability or threat of a damage, injury, liability, loss, or other negative occurrence that is caused by external or internal vulnerabilities, and that may be neutralized through preemptive action.

[ZM] There was no definition of risk, so I found one in businessdictionary.com. TBD [TJ] Concur **Fix to do notes**

**Role**

A role is a specification of the behavior defined as part of community contract. This behaviour is to be realized by a party needed to carry out its responsibilities specified by the role. A specific name is given to the explicit set of responsibilities that identifies the competence of an organization, a person or an automated component acting as an agent, to perform specified actions. The set of responsibilities may include actions that have been delegated from a higher authority. Behavior is further refined into specific actions that may become operations in an automated system.

A given instance of a party may play more than one role, and multiple instances of a party may assume the same role. A role instance usually asserts itself and is verified by another role instance.

**SAIF-CD**

SAIF-CD is a document that presents the canonical definition of the Service-Aware Interoperability Framework (SAIF).

**SAIF Behavioral Framework**

The Behavioral Framework (BF) provides a set of constructs for defining the behavioral semantics of specifications, which enable Working Interoperability. As a result, the focus of the BF is accountability – a description of “who does what when.” Accountability describes the perspective of the various technology components that are involved in a particular instance or scenario designed to achieve Working Interoperability (WI). The BF is technology-neutral and, therefore, can be used within model-driven Specification stacks, such as the Services-Aware Interoperability Framework (SAIF) Enterprise Conformance and Compliance Framework (ECCF).

**SAIF ECCF** **these are defined on their own without the SAIF - maybe reference so don't have to keep text in sync?**

The major goal of the Enterprise Conformance and Compliance Framework (ECCF) is enabling Working Interoperability between different users, organizations, and systems. The ECCF is manifest in a structure called the ECCF Specification stack(SS). This structure identifies, defines, organizes, and relates a set of artifacts that collectively specify the relevant semantics of a software component specification or other system-of-interest. In summary, the ECCF Specification stack provides an organizational framework in which inter-related artifacts are sorted by content – for example, business rules, information constructors, behavioral contracts, and level-of-abstraction.

**SAIF Governance Framework**

This document describes the motivation for, the structure, content and utilization of the Governance Framework (GF). The Behavioral Framework(BF) and Enterprise Conformance and Compliance Framework (ECCF) are discussed in detail in separate documents, and are mentioned in the course of this document only when necessary to either contextualize or logically link GF content to the larger context of the Services Aware Interoperability Framework (SAIF).

**SAIF Implementation guide**

HL7 specified the core components of the “canonical version” of a Service-Aware Interoperability Framework (SAIF). SAIF documents the architectural practices and products which are used to specify interoperability. Any organization choosing to implement SAIF should assemble its own Implementation Guide (IG). An organization's IG contains interpretations and localizations of the canonical constructs defined in the HL7 SAIF. In the referenced document, we discuss how to construct an organization's SAIF IG or include SAIF in an organization's Enterprise Architecture (EA) IG. The Project Services work group is preparing an SAIF Implementation Guide.

## SAIF Information Framework

The Information Framework (IF) is a SAIF-compliant recasting of existing HL7 expertise regarding the specification of static semantics. The Information Framework will draw on the information available from the following sources: Storyboards Domain Analysis Models (DAM) Reference Information Model (RIM) Vocabulary concepts HL7 Core Principles

## Semantic interoperability-SAIF

Semantic interoperability is a term used in computer science as a synonym for "Computable Semantic Interoperability". In this sense, it is the ability of computer systems to communicate information and have that information properly interpreted by the receiving system in the same sense as intended by the transmitting system. "Proper interpretation" means that the transmitted information will be used appropriately by a receiving computer system because the logical implications derivable from transmitted information will be the same as those that the sending system would derive. Semantic Interoperability requires that any two systems will derive the same inferences from the same information. This term is sometimes used as a synonym for "General Semantic Interoperability," the ability of computer systems to place information in a public location and have that information properly interpreted by systems whose developers do not know the creators of the information nor the purpose for which it was created.

## Semantic interoperability (human)-SAIF

Semantic interoperability (human) guarantees that the meaning of a structure is unambiguously exchanged between humans. Documents such as progress notes, referrals, consults, and so on, rely on the specificity of medical vocabularies and common community practice to guarantee semantic interoperability at a clinician-to-clinician level. The ability of a human being to read a clinical discharge summary formatted in multiple ways in multiple contexts and still extract the "true meaning" irrespective of its presentation is an example of human semantic interoperability.

## Semantic profile-SAIF

Semantic profile is a profile that describes the content domain, formalism, and information models supported in the profile.

## Semantics-SAIF

Semantics means pertaining to or arising from the meaning of different words or other symbols.

## Sentence

A grammatical unit of one or more words that generally bear minimal syntactic relation to the words that precede or follow it. A sentence can include words grouped meaningfully to express a statement, question, exclamation, request, command or suggestion.

## Sequence flow

A process flow element that determines the ordering and progression of activities in a process. Typically, a process notation specified in a SAIF IG might denote sequence flows as lines and arrows connecting the activities.

## Serializable Information Model (SIM)-SAIF

Serializable Information Model (SIM) is a model that represents a second level of constraint based on specific use cases. SIMs must have single entry points and navigation paths that allow them to be traversed and unambiguously serialized for a specific implementation target (for example, XML or Java).

SIMs are suitable for use as implementation constructs on information systems. SIMs are generally focused on specific operation or capability rather than an entire subject area or topic.

## Service

1)Fundamental unit used within contracts to specify desired behavior 2)A related set of behaviors that add value by creating, modifying, and/or consuming information, involving collaborations between a responsible agent (the service provider), who expresses some guarantees, and commissioning agent (the service user or consumer), who receives the guarantees.

1)explicitly identifies the responsible and commissioning roles 2)The collaborations may involve a complex series of interactions, organized along operations. 3)provides one or more operations, grouped together into interfaces

1) then 2) and then 1), 2) 3)?



**Service-Oriented Architecture (SOA)-SAIF**

Service-Oriented Architecture (SOA) is a flexible set of design principles used during the phases of systems development and integration in computing. A deployed SOA-based architecture provides a loosely-integrated suite of services that can be used within multiple business domains.

**Service-aware-SAIF**

Service-aware includes the inclusion of services, such as business processes, in the HL7 interoperability standard, as well as the exchange of message and sharing of documents.

**Service classification-SAIF**

Service classification is a scheme that provides a framework that simplifies the effort of integration.

A service classification should: 1) be consistent with a set of principles that provide architectural and design guidance on the usage and crafting of services. 2) provide an easily understood and consistent set of guidelines that provide clarity and reusability, 3) ultimately, the service classification System describes certain patterns, 4) defines certain limits based on experience, best practice, engineering, and design, and the architecture, 5) Constrain and extend the field of software engineering in the context of standardized services. Types of service classifications are process, capability, core, utility. [CBDI, Thomas Erl].

**Service principles-SAIF**

Service principles are principles essential for enterprise-level service specifications. These specifications must explicitly define testable, verifiable multi-dimensional service contracts, such as virtualization, composition, unity of purpose and separation of concerns, parsimony, technology independence, specifications supporting layered conformance and compliance.

**Services-SAIF**

Services are a means of organizing a set of resources according to business-oriented priorities. A service thus provide a primary means of integration between two organization's business processes and/or data in a controlled, managed, and well-defined (contract-based) manner. A service is an abstract specification that explicitly defines both the static ("payload") and dynamic ("functional and behavioral") semantics necessary to unambiguously support a testable, enforceable contract between two enterprise-level components.

**Shared-Purpose Semantics**

Semantics related to the interpretation of the expression of shared purpose between participants in a community. Shared Purpose between participating parties is manifested in cross-enterprise or cross-organizational interoperability, i.e. communication across organizational boundaries. Both parties must decide on the multiple details that collectively define an interaction or set of interactions. There must be an agreed upon value received for cost and effort expended. At minimum, the basic dimensions of a Shared Purpose agreement answer the questions "who," "what," and "when.", which is the essence of any community contract. .

**Signature**

Signature is a way of describing the parameters and parameter types with which a legal call to the function can be made. It contains the name of the function, its parameters and their type, and the return value.

**Software Engineering Process (SEP)-SAIF**

Software Engineering Process (SEP) is any process that integrates the efforts of software development teams to craft implementable code and to deploy that code. Examples include RUP, Agile, UPF, Scrum, and others.

**Solution specification-SAIF**

Solution specification is a set of choices that the specification developer makes regarding how conformance is ultimately measured and certified in any instance of the Working Interoperability in which the solution's particular specification is implemented.

**Specification-SAIF**

Specification is an explicit set of requirements to be satisfied by a material, product, or service.

**Specification stack-SAIF**

Specification stack is a 3-row by 4-column table that identifies, defines, organizes, and relates a set of artifacts that collectively specify the relevant semantics of a software component specification or other system-of-interest. The

ECCF specification stack provides an organizational framework in which inter-related artifacts are sorted by content – for example, business rules, information constructors, behavioral contracts, and level-of-abstraction. [ECCF].

### **Standard-SAIF**

Standard is one-or-more specifications that have been approved by a standards-setting organization acting within its jurisdiction. Standards can be strictly enforced as automated tests against the detailed conformance assertions. Some standards are intended to guide the behavior of people acting in variable circumstances that require human judgment. Clinical process standards may be provided as guidelines or protocols intended for humans or may be automated within Clinical Decision Support systems.

### **Subject-SAIF**

Subject is a particular specification stack instance that defines its scope. See specification stack.

### **Syntactic interoperability-SAIF**

Syntactic interoperability is achieved If two or more systems are capable of communicating and exchanging data, they are exhibiting syntactic interoperability. Specified data formats, communication protocols and the like are fundamental. In general, XML or SQL standards provide syntactic interoperability. This is also true for lower-level data formats, such as ensuring alphabetical characters are stored in ASCII format in both of the communicating systems.

### **Technology Dimension**

SAIF Dimension that reflects the scope of the RM-ODP Technology Viewpoint. It focuses on defining various implementable standards for hardware or software as relevant, which will ultimately support the specification, and where required the specification of existing (legacy) system with which the new implementations based on the specification, need to be integrated.

### **Technology binding-SAIF**

Technology binding is a mapping from an implementable instance to a particular implementation.

### **Technology component-SAIF**

Technology component is a unit of implementation that conforms to one or more conformance statements, as stated in a specification or standard. This component is specified in the RM-ODP technology viewpoint where a specific technology binding asserts conformance via conformance assertions to a set of conformance statements.

### **Template**

Template: The specification of the common features of a collection of Xs in sufficient detail that an X can be instantiated using it. X can be anything that has a type. An X template is an abstraction of a collection of Xs. A template may specify parameters to be bound at instantiation time. The definition given here is generic; the precise form of a template will depend on the specification technique used. The parameter types (where applicable) will also depend on the specification technique used. Templates may be combined according to some calculus. The precise form of template combination will depend on the specification language used This is a general definition that can apply to HL7 V3 'design by constraint' and also 'design by extension' or 'design by composition'. HL7 V3 Definition: a template is an expression of a set of constraints on the RIM which is used to apply additional constraints to a portion of an instance of data which is expressed in terms of some other Static Model. Templates are used to further define and refine these existing models within a narrower and more focused scope. A template is represented as a Static Model, optionally with additional constraints expressed in some computable form. In addition, there is a set of metadata associated with every template to describe the purpose and use of the template.

A template describes a pattern of use of a model fragment. It is a statement of restrictions on the attribute value domains, cardinality and optionality of the information model when it is applied to a particular use case or context. Templates often provide additional definition and documentary material that describe how the information models are applied to very specific use cases or contexts. This material needs to be consistent with the underlying model fragments to which it applies. Templates may be broken down into reusable modules.

### **Terms\_of\_art**

An informal description of key concepts and relationship in some area of interest, typically represented using concept maps.

**Text**

The user view of a coded concept

**Traceability**

Traceability is when system capabilities explicit in a software component can be traced back “up” a given column of a specification stack instance to explicit conformance statements made at “higher” levels-of-abstraction in the same column. Traceability occurs as vertical navigation within a specification stack (SS) instance.

**Trading partners-SAIF**

Trading partners are two parties who want to interoperate in some manner to accomplish a common goal.

**Transaction-SAIF**

Transaction is a set of interactions happening in a defined sequence. A transaction, in computer science, transaction processing is information processing that is divided into individual, indivisible operations, called transactions. Each transaction must succeed or fail as a complete unit; it cannot remain in an intermediate state.

**Unified Modeling Language (UML)-SAIF**

Unified Modeling Language (UML) is a specific modelling notation defined by OMG standard used to represent requirements, design and implementation artifacts of a system. The elements of a UML model can be used to group elements, and to provide a namespace for the grouped elements. A package may contain other packages, thus providing for a hierarchical organization of packages. Almost all UML elements can be grouped into packages. Thus, classes, objects, use cases, components, nodes, and node instances can all be organized as packages thus enabling a manageable organization of the myriad elements that a real-world UML model entails.

**Value set definition**

A set of concepts organized into a group that can be used as fillers for a field in a data entry form.

A value set need not draw all of its member concepts from a single code system.

**Viewpoint-Specific\_Languages**

A set of modelling concepts and their relationships associated with a specific viewpoint, e.g. the concepts of community, community role, party, obligations etc., associated with the enterprise language.

**Vocabulary binding-SAIF**

Vocabulary binding is a connection between a term and a value

**Working Interoperability (WI)-SAIF**

WI is the collection of structures, processes, and components that support Computable Semantic Interoperability (CSI) between two parties (“trading partners”) who are interacting (for example, exchanging information, coordinating behavior) to achieve one or more business goals. Interoperability, in this context, is further defined to be the deterministic exchange of data or information in a manner that preserves shared meaning.

Working Interoperability (WI), in [SAIF-SAIFSAIF], is used to convey a sense of “practical” interoperability between systems that actually works. WI must be measurable in quantitative terms using business-value measurements such as “degree of difficulty (cost)/degree of success (value).” SAIF, which facilitates and enables WI, provides a layered Conformance and Compliance Framework, and a set of constructs that allow explicit expression of the static, functional, and behavioral semantics which collectively define the “WI transactions.” The WI specifications must be usable, useful, durable, and implementable in a repeatable and comprehensible manner.