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**Information technology — Metamodel  
framework for interoperability (MFI) —  
Part 8:  
Metamodel for role and goal model  
registration**

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*Technologies de l'information — Cadre du métamodèle pour  
l'interopérabilité (MFI) —*

*Partie 8: Métamodèle pour l'enregistrement du modèle de rôle et  
objectif*

ISO/IEC 19763-8:2015

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [http://www.iso.org/obp/ui/#iso:code:tech:info:tech\\_ia:foreword:supplementary:information](http://www.iso.org/obp/ui/#iso:code:tech:info:tech_ia:foreword:supplementary:information).

ISO/IEC 19763-8 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 32, *Data management and Interchange*.

ISO/IEC 19763 consists of the following parts, under the general title *Information technology — Metamodel framework for interoperability (MFI)*:

- *Part 1: Framework*
- *Part 3: Metamodel for ontology registration*
- *Part 5: Metamodel for process model registration*
- *Part 6: Registry Summary*
- *Part 7: Metamodel for service model registration*
- *Part 8: Metamodel for role and goal model registration*
- *Part 9: On demand model selection [Technical Report]*
- *Part 10: Core model and basic mapping*
- *Part 12: Metamodel for information model registration*
- *Part 13: Metamodel for form design registration*

## Introduction

Industrial consortia have engaged in the standardization of domain-specific objects including business process models and software components using common modelling facilities and interchange facilities such as UML (Unified Modelling Language) and XML (eXtensible Markup Language). They are very active in standardizing domain-specific business process models and standard modelling constructs such as data elements, entity profiles, and value domains.

Interoperation among autonomous Web-based applications, such as Web services, is becoming increasingly important. Goals are descriptive statements of the intent of a user or organization, and each goal can be viewed as an objective that a process or a service should achieve. Effective management of goals will facilitate the reuse of information resources in support of those goals. Roles are abstract characterizations of organizational behaviours and responsibilities within a specified organizational context. Descriptions of roles will be helpful in characterizing goals in a complete and correct way, and reusing goals based on roles. Note that any particular set of roles and goals are owned by a specific organization.

There are many existing standards and specifications, typically developed for a specific domain or business area, that can be used to describe or to model goals and the roles associated with these goals. One example is ISO/IEC 14662, Information Technologies - Open-edi reference model, which is a domain specific reference model and introduces the concept of a business goal as a special type of goal that is shared within that community.

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This part of ISO/IEC 19763 provides a framework for registering generic descriptive information about models that describe roles and goals.

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# Information technology — Metamodel framework for interoperability (MFI) —

## Part 8: Metamodel for role and goal model registration

### 1 Scope

The primary purpose of the multipart standard ISO/IEC 19763 is to specify a metamodel framework for interoperability. This part of ISO/IEC 19763 specifies a metamodel for registering the role and goal models of users of services and/or processes.

The metamodel that this part specifies is intended to promote the reuse of goals by roles within/across role and goal model repositories, and further promote services selection across service model repositories based on goals. For this purpose, it provides administrative information and common semantics of role and goal models created with a specific role and goal modelling language, including Goal-oriented requirements modelling (i\*) [1], Keep All Objects Satisfied (KAOS) [2], Non-functional Requirement Framework (NFRF) [3], Business Motivation Model (BMM) [4], Reference Model of Open Distributed Processing (RM-ODP) [5] etc. Figure 1 shows the scope of this part. In this figure, “register” refers to the registration activity of registering administrative and descriptive information for role and goal models into the role and goal model registry based on the metamodel specified in this part of ISO/IEC 19763, as well as the mapping between source role and goal metamodels and MFI Role and Goal metamodel.

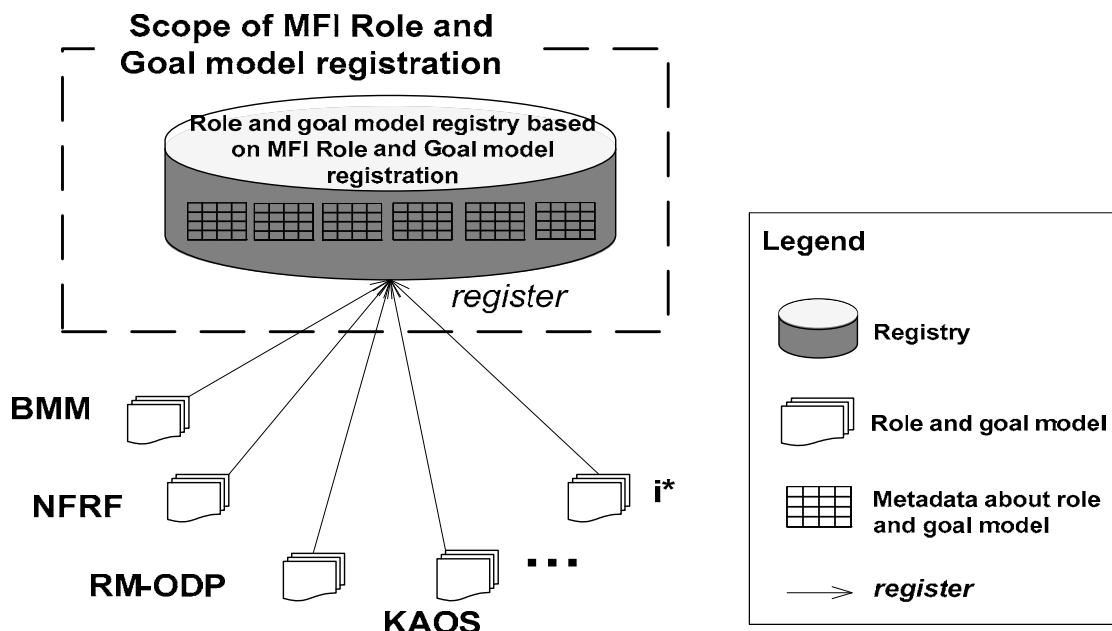


Figure 1 - The scope of MFI Role and Goal model registration

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE One or more terms and definitions of the referenced International Standards listed below are used in Clause 3 Terms and Definitions.

ISO/IEC 19763-5, Information technology – Metamodel framework for interoperability (MFI) – Part 5: Metamodel for process model registration

ISO/IEC 19763-7, Information technology – Metamodel framework for interoperability (MFI) – Part 7: Metamodel for service model registration

ISO/IEC 19763-10, Information technology – Metamodel framework for interoperability (MFI) – Part 10: Core model and basic mapping

## 3 Terms, definitions and abbreviated terms

### 3.1 Terms and definitions

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

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#### 3.1.1

##### goal

intended outcome of user interaction with a process or service

NOTE Adapted from ISO/IEC TR 25060:2010, 2.7 [ISO/IEC 19763-8:2015](https://standards.iteh.ai/catalog/standards/sist/460e3230-238d-4bca-9493-dac06385848d/iso-iec-19763-8-2015)  
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#### 3.1.2

##### functional goal

underlying functionality that a process or service is expected to deliver

#### 3.1.3

##### nonfunctional goal

expected quantitative or qualitative attributes of a functionality

#### 3.1.4

##### involvement type

statement that indicates the type of involvement of a role with a process or service

NOTE Examples are performer, beneficiary, customer

#### 3.1.5

##### organization

unique framework of authority within which individuals act, or are designated to act, towards some purpose

NOTE 1 The kinds of organizations covered by ISO/IEC 6523-1 include the following examples:

a) an organization incorporated under law;

b) an unincorporated organization or activity providing goods and/or services including:

1) partnerships;

2) social or other non-profit organizations or similar bodies in which ownership or control is vested in a group of individuals;



- 3) sole proprietorships;
- 4) governmental bodies.

c) groupings of the above types of organizations where there is a need to identify these in information interchange.

NOTE 2 Adapted from ISO/IEC 6523-1:1998, 3.1

[ISO/IEC 11179-3:2013 3.2.90]

### 3.1.6

#### **process involvement**

statement that specifies how a particular role is engaged in or contributes in a particular process

### 3.1.7

#### **role**

named specific behaviour of an entity participating in a particular context

[ISO 14813-5:2010, B.1.133]

### 3.1.8

#### **service involvement**

statement that specifies how a particular role is involved in a particular service

## 3.2 Abbreviated terms

### **BMM**

Business Motivation Model

### **i\***

Goal-oriented requirements modelling [standards.iteh.ai/catalog/standards/sist/460e3230-238d-4bca-9493-dac06385848d/iso-iec-19763-8-2015](http://standards.iteh.ai/catalog/standards/sist/460e3230-238d-4bca-9493-dac06385848d/iso-iec-19763-8-2015)

### **KAOS**

Keep All Objects Satisfied

### **MFI Core and mapping**

ISO/IEC 19763-10, Information technology – Metamodel framework for interoperability (MFI) - Part 10: Core model and basic mapping

### **MFI Process model registration**

ISO/IEC 19763-5, Information technology – Metamodel framework for interoperability (MFI) - Part 5: Metamodel for process model registration

### **MFI Role and Goal model registration**

ISO/IEC 19763-8, Information technology – Metamodel framework for interoperability (MFI) - Part 8: Metamodel for role and goal model registration

### **MFI Service model registration**

ISO/IEC 19763-7, Information technology – Metamodel framework for interoperability (MFI) - Part 7: Metamodel for service model registration

### **NFRF**

Non-functional Requirement Framework

### **RM-ODP**

Reference Model of Open Distributed Processing

### **UML**

Unified Modeling Language

**XML**

eXtensible Markup Language

## 4 Conformance

### 4.1 General

An implementation claiming conformance with this part of ISO/IEC 19763 shall support the metamodel specified in clause 5, depending on a degree of conformance as described below.

### 4.2 Degree of conformance

#### 4.2.1 General

The distinction between “strictly conforming” and “conforming” implementations is necessary to address the simultaneous needs for interoperability and extensions. This part of ISO/IEC 19763 describes specifications that promote interoperability. Extensions are motivated by needs of users, vendors, institutions and industries, but are not specified by this part of ISO/IEC 19763.

A strictly conforming implementation may be limited in usefulness but is maximally interoperable with respect to this part of ISO/IEC 19763. A conforming implementation may be more useful, but may be less interoperable with respect to this part of ISO/IEC 19763.

#### 4.2.2 Strictly conforming implementation

A strictly conforming implementation

- a) shall support the metamodel specified in clause 5.3;
- b) shall not use, test, access, or probe for any extension features nor extensions to the metamodel specified in clause 5.

#### 4.2.3 Conforming implementation

A conforming implementation

- a) shall support the metamodel specified in clause 5.3;
- b) as permitted by the implementation, may use, test, access, or probe for any extension features or extensions to the metamodel specified in clause 5.

NOTE 1 All strictly conforming implementations are also conforming implementations.

NOTE 2 The use of extensions to the metamodel might cause undefined behaviour.

### 4.3 Implementation Conformance Statement (ICS)

An implementation claiming conformance with this part of ISO/IEC 19763 shall include an Implementation Conformance Statement stating

- a) whether it is a strictly conforming implementation (4.2.2) or a conforming implementation (4.2.3);
- b) what extensions, if any, are supported or used if it is a conforming implementation.

## 5 Structure of MFI Role and Goal model registration

### 5.1 Overview of MFI Role and Goal model registration

A role and goal model is used as a representation of roles and goals. A role and goal model is expressed using a specified role and goal modelling language. A role is a named specific behaviour of an entity participating in a particular context. An organization may consist of one or more roles. In an organizational context, a role sets zero, one or more goals. A goal can be either a functional goal or a nonfunctional goal. A functional goal is described by three attributes: each functional goal must have a goal operation that denotes the action of the goal; each functional goal must have a goal object that denotes the entities affected by the goal operation; and each functional goal may have a goal manner that indicates how the goal operation affects the goal object. A nonfunctional goal specifies an expected quantity or quality attribute such as amount, security, safety, performance, usability or flexibility.

When first proposed, a goal is usually a high-level goal. This then needs to be decomposed in order to obtain a more concrete, operational description of the goal. Each decomposition relates together the decomposed goal (the upper goal) and the associated sub-goals (the lower goals). Each decomposition must be described by a decomposition type, which takes a value selected from 'AND', 'OR', or 'XOR', as follows:

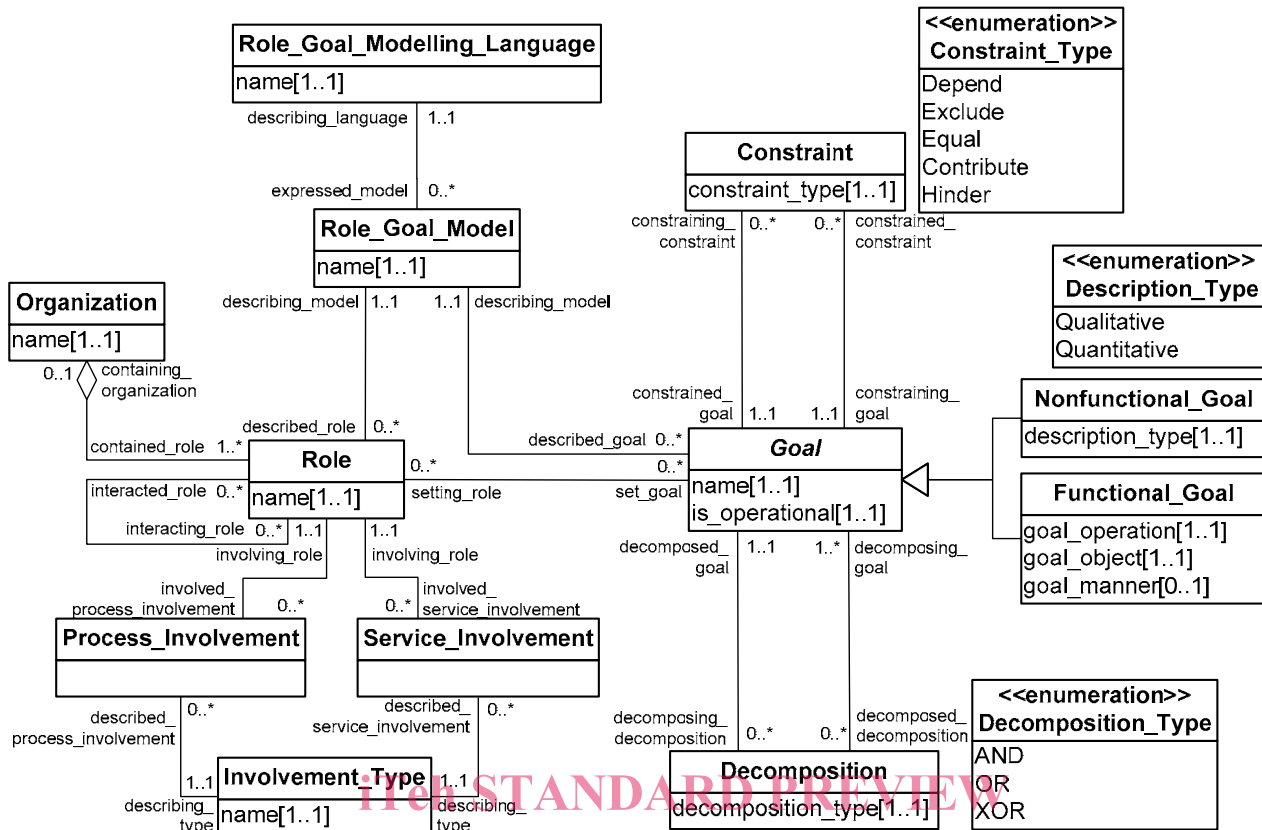
- 'AND' indicates that if the upper goal is selected all the lower goals must be selected.
- 'OR' indicates that at least one of the lower goals must be selected.
- 'XOR' indicates that one and only one goal from the lower goals must be selected.

Goals may constrain other goals. Each constraint represents such a relationship between one and only one constrained goal and one and only one constraining goal. Each constraint must be described by a constraint type, which takes a value selected from 'Depend', 'Exclude', 'Equal', 'Contribute', or 'Hinder', as follows:

- 'Depend' indicates that the realization of the constrained goal depends on the realization of the constraining goal.
- 'Exclude' indicates that the constrained goal and the constraining goal cannot be satisfied simultaneously.
- 'Equal' indicates that the constrained goal and the constraining goal are the same semantically.
- 'Contribute' indicates that the realization of the constraining goal contributes to the realization of the constrained goal.
- 'Hinder' indicates that the realization of the constraining goal hinders the realization of the constrained goal.

Each role can be involved with a process or a service. Each process involvement provides a relationship between one and only one role and one and only one process. Similarly, each service involvement provides a relationship between one and only one role and one and only one service. In addition, each process involvement and each service involvement is described by one and only one involvement type. This involvement type may be as a performer, as a beneficiary, as a customer, or some similar involvement.

The following Figure 2 is the illustration of the Metamodel of MFI Role and Goal model registration.

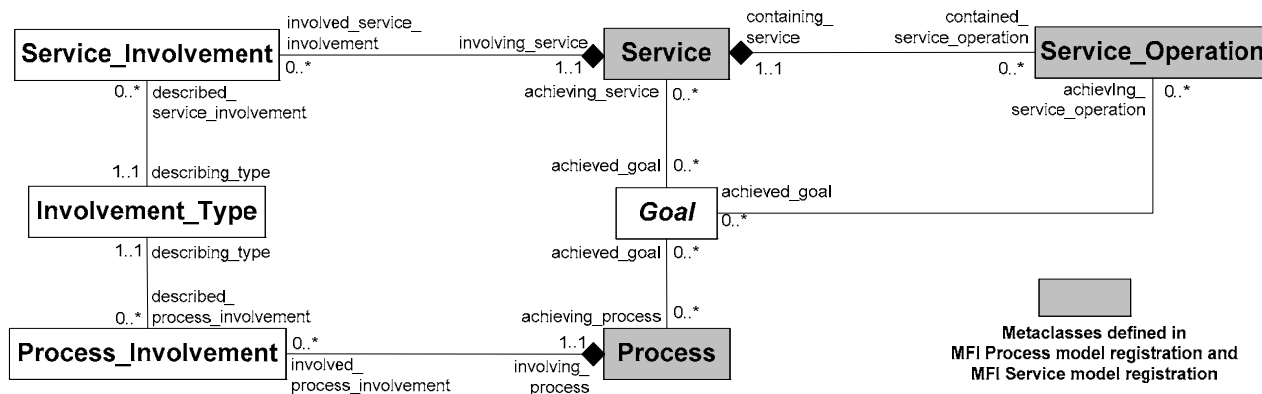


NOTE Metaclasses whose names are italicized are abstract metaclasses

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**Figure 2 - Metamodel of MFI Role and Goal model registration**

## 5.2 Associations between MFI Role and Goal model registration and other parts in MFI

Figure 3 shows the associations between MFI Role and Goal model registration (this part) and MFI Service model registration and MFI Process model registration. Each goal is achieved by zero, one or more services. Each service achieves zero, one or more goals. Each goal is achieved by zero, one or more service operations. Each service operation achieves zero, one or more goals. Each goal is achieved by zero, one or more processes. Each process achieves zero, one or more goals. Each service involvement can be involved in one and only one service. Each service aggregates zero, one or more service involvements. Each process involvement can be involved in one and only one process. Each process aggregates zero, one or more process involvements.



**Figure 3 - Associations between MFI Role and Goal model registration and other parts in MFI**