

Information technology — Metamodel Framework for Interoperability (MFI) — Part 8 Metamodel for role and goal registration

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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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: Reference model

Part 2: Core model

Part 3: Metamodel for ontology registration

Part 4: Metamodel for model mapping

Part 5: Metamodel for process model registration

Part 6: Registration Process

Part 7: Metamodel for service registration

Part 8: Metamodel for role and goal registration

Part 9: Registry of Registries

TR: Using RGPS for on demand model selection

Introduction

Due to the spread of e-Business and e-Commerce over the Internet, the effective interchange of business transactions or other related information across countries and cultures is an important concern for people in both the IT industry and other non-IT industries.

To follow the current trends of EB or EC, industrial consortia have engaged in the standardization of domain-specific objects including business process models and software components using common modeling facilities and interchange facilities such as UML and XML. They are very active in standardizing domain-specific business process models and standard modeling constructs such as data elements, entity profiles, and value domains.

Moreover, interoperation among autonomous Web-based applications, such as Web services, business processes, is becoming important. Business goals provide a method that describes business processes in a higher abstraction level. Effective managing goals will be helpful for reusing information resources such as business processes in a larger granularity. A goal is a descriptive statement of business intent of a user or an organization, and it can be viewed as an objective that the business system under consideration should achieve. Roles are abstract characterizations of organizational behaviours and responsibilities within specified organizational context. Description of roles will be helpful in characterizing goals in a more complete and correct way.

User-centric mechanism, that is providing personalized services for users, is becoming a kind of urgent requirements in IT industry. In goal description, OMG's Business Motivation Model (BMM) provides a characterization mechanism of business intent and motivation. However, BMM is absent in directly relating business plan with business implementation, and the relationships among goals described in BMM are insufficient for complex goal decomposition, reasoning and reusing.

This part of ISO/IEC 19763 intends to provide a generic framework for registering descriptive information of roles and goals.

Information technology — Metamodel Framework for Interoperability (MFI) — Part 8: Metamodel for role and goal 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 users' roles and goals in specific domains that can be used to describe users' intention.

The metamodel that this part specifies is intended to promote the reuse of domain information resources with greater granularity.

It does not specify the business model for the elements of business plans, which is the focus of BMM.

2 Conformance

2.1 General

An implementation claiming conformance with this part of ISO/IEC 19763 shall support the metamodel specified in 5.1, depending on a degree of conformance as described below.

2.2 Degree of conformance

2.2.1 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.

2.2.2 Strictly conforming implementation

A strictly conforming implementation

- a) shall support the metamodel specified in 5.1;
- b) shall not support any extensions to the metamodel specified in 5.1.

2.2.3 Conforming implementation

A conforming implementation

- a) shall support the metamodel specified in 5.1;
- b) may support extensions to the metamodel specified in 5.1 that are consistent with the metamodel specified in 5.1.

2.3 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 or a conforming implementation (2.2);
- b) what extensions are supported if it is a conforming implementation.

3 Normative references

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

ISO/IEC 19763-1, Information technology – Metamodel framework for interoperability (MFI) – Part 1: Reference model

ISO/IEC 19763-2, Information technology – Metamodel framework for interoperability (MFI) – Part 2: Core model

ISO/IEC 19763-3, Information technology – Metamodel framework for interoperability (MFI) – Part 3: Metamodel for ontology registration

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

4 Terms, definitions and abbreviated terms

4.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19763-1, ISO/IEC 19763-2 and ISO/IEC 19763-3 and the following apply.

4.2 Broad terms

4.2.1

Goal

a descriptive statement of business intent of a users or an organization.

4.2.2

Role

abstract characterizations of organizational behaviours and responsibilities within specified organizational context.

4.3 Abbreviated terms

BMM

Business Motivation Model

MFI Core

ISO/IEC 19763-2, Information technology –Metamodel Framework for Interoperability – Part-2 : Core model

MFI Role and Goal registration

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

MFI Ontology registration

ISO/IEC 19763-3, Information technology – Metamodel framework for interoperability (MFI) – Part 3: Metamodel for ontology registration

5 Structure of MFI role and goal registration

5.1 Overview of MFI role goal registration

A **Role** can be played by different **Actors**. An **Actor** is an intentional entity that can be either a human actor or a software agent. In an organizational context, **Role_Goals** are the goals that a role is in charge of. Actors also have their personal preferences, and these personal preferences are modelled as **Personal_Goals**.

A goal consists of three parts, that is, a verb that indicates the **Operation**, a noun that indicates the **Object** dealt with by the operation, and the **Manner**, a prefix or a suffix that indicates how the operation affects the object. Each operation has its **Operation_Type**, which should come from verb concepts of domain ontology. Similarly, each object has its **Object_Type**, which should come from noun concepts of domain ontology.

Usually, a **Goal** is a high-level statement when first proposed, and it needs to be decomposed in order to get a concrete and operational description. **Decomposition** is a process that an **Upper_Goal** is decomposed into sub-goals. **Operational_Goals** are a kind of goals that certain processes can directly achieve. The goal decomposition process ends until the leaf-level subgoals are operational goals. The decomposition relations that characterize the relation between the upper goal and the lower goal set can be divided into **Mandatory**, **Optional**, **Alternative** and **OR** relations. When the upper goal is selected, the **Mandatory** relation indicates that the lower goal set must also be selected; the **Optional** relation indicates that the lower goal set may be or not be selected; the **Alternative** relation indicates that exactly one goal from the lower goal set must be selected; the **OR** relation indicates that at least one goal from the lower goal set must be selected.

In addition, the **Constraint** relation may exist among goals, and the **Constraint** relations can be either **Depend** or **Exclude** relations. The **Depend** relation means that the realization of a goal depends on the realization of others, and the **Exclude** relation means that the two goals can't be satisfied simultaneously.

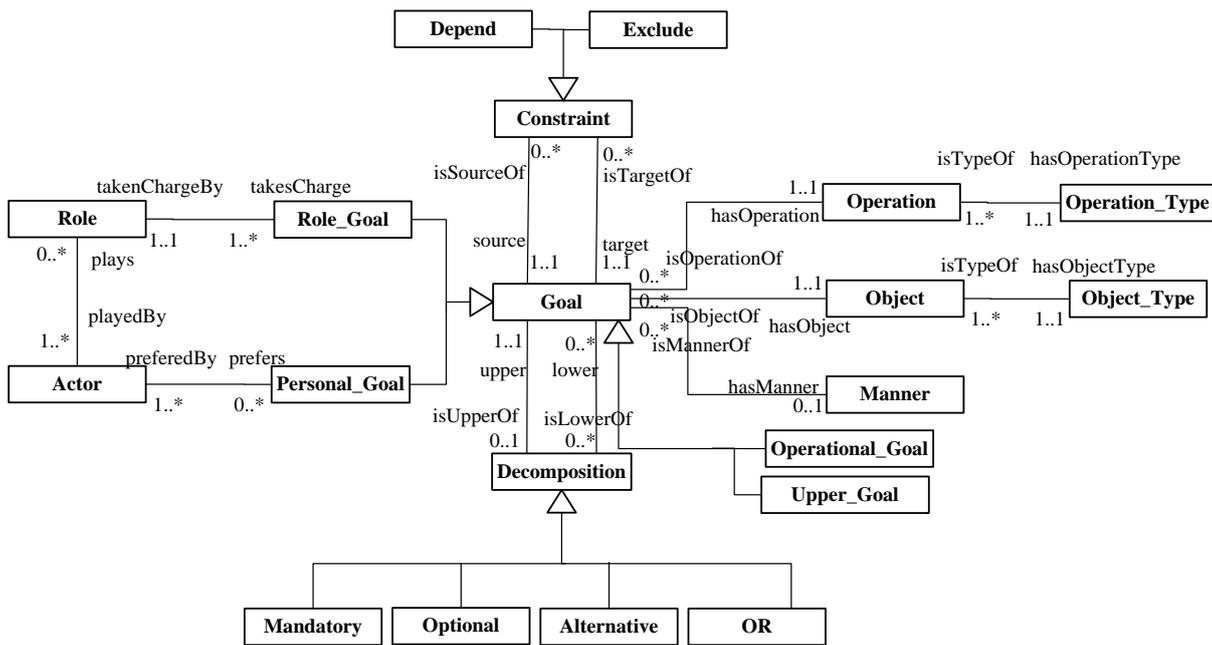


Figure 1 — Metamodel of MFI role and goal registration

5.2 Relationship between MFI role and goal registration and other parts in MFI

Figure 3 shows the relationship between MFI role and goal registration and other parts in MFI. That is, **Goal** will inherit **ModelComponent**, **Object_Type** and **Operation_Type** will inherit **Ontology_Atomic_Construct** in MFI ontology registration.

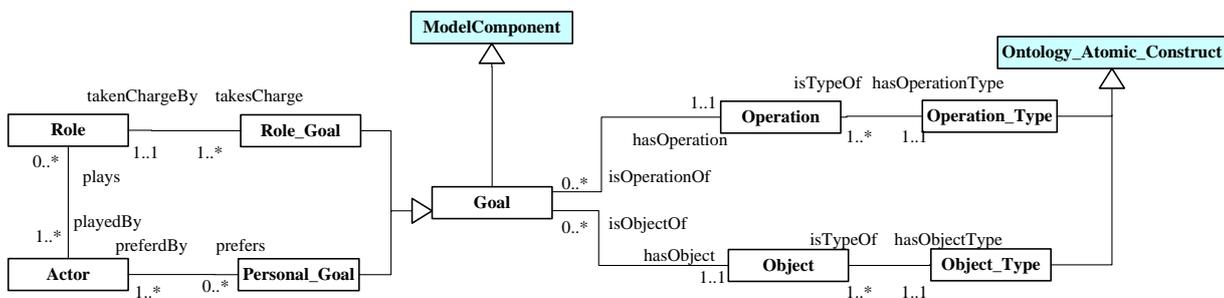


Figure 2 —Relationship between MFI role and goal registration and other parts in MFI

5.3 MFI role and goal registration

5.3.1 Goal

Goal is a metaclass representing the business intent of a users or an organization.

Attribute	Data Type	Multiplicity	Description
name	String	1..1	Name of the corresponding goal
URI	String	1..1	URI where the corresponding goal exists
Reference	Class	Multiplicity	Description
hasOperation	Operation	1..1	Operation that denotes the action that a goal has
hasObject	Object	1..1	Object that denotes the objects dealt by the goal
hasManner	Manner	0..1	Manner that indicates how the operation affects the object
isUpperOf	Decomposition	0..1	Decomposition that the corresponding goal is its upper end
isLowerOf	Decomposition	0..*	Decomposition that the corresponding goal is its lower end
isSourceOf	Constraint	0..*	Constraint that the corresponding goal is its source end
isTargetOf	Constraint	0..*	Constraint that the corresponding goal is its target

Constraints

The value of attribute "URI" has to be unique in this metaclass.

5.3.2 Constraint

Constraint is an abstract metaclass that is a superClass of Depend and Exclude.

Reference	Class	Multiplicity	Description
source	Goal	1..1	The goal that is the source end of the constraint relation
target	Goal	1..1	The goal that is the target end of the constraint relation

5.3.3 Depend

Depend is a metaclass that denotes the dependency relation of two goals

SuperClass

Constraint

5.3.4 Exclude

Exclude is a metaclass that denotes the exclusive relation of two goals

SuperClass

Constraint

5.3.5 Decomposition

Decomposition is an abstract metaclass that is a superClass of Mandatory, Optional, Alternative, and OR. It describes the decomposition relationship between a goal and a goal set.

Reference	Class	Multiplicity	Description
upper	Goal	1..1	The goal that is the upper end of the decomposition relation
lower	Goal	0..*	The goal that is the lower end of the decomposition relation

5.3.6 Mandatory

Mandatory is a metaclass that describes a kind of decomposition relationship. It indicates that when the upper goal is selected, the lower goal set must also be selected.

SuperClass

Decomposition

5.3.7 Optional

Optional is a metaclass that describes a kind of decomposition relationship. It indicates that when the upper goal is selected, the lower goal set may be or not selected.

SuperClass

Decomposition

5.3.8 Alternative

Alternative is a metaclass that describes a kind of decomposition relationship. It indicates that when the upper goal is selected, exactly one goal from the lower goal set must be selected.

SuperClass

Decomposition

5.3.9 OR

OR is a metaclass that describes a kind of decomposition relationship. It indicates that when the upper goal is selected, at least one goal from the lower goal set must be selected.

SuperClass

Decomposition

5.3.10 Operation

Operation is a metaclass that denotes the action that a goal has.

Attribute	DataType	Multiplicity	Description
name	String	1..1	Name of the corresponding goal
Reference	Class	Multiplicity	Description
hasOperationType	OperationType	1..1	The type of operations, which should come from verb concepts of domain ontology
isOperationOf	Goal	0..*	That goal that has this operation

Constraints

The value of attribute “name” has to be unique in this metaclass.

5.3.11 Object

Object is an abstract metaclass that denotes the objects dealt by the goal.

Attribute	DataType	Multiplicity	Description
name	String	1..1	Name of the corresponding object
Reference	Class	Multiplicity	Description
hasObjectType	ObjectType	1..1	The range of the object, which should come from noun concepts of domain ontology
isObjectOf	Goal	0..*	That goal that has this object

Constraints

The value of attribute “name” has to be unique in this metaclass.

5.3.12 Manner

Manner is a metaclass that indicates how the operation affects the object

Attribute	Data Type	Multiplicity	Description
name	String	1..1	Name of the corresponding object
Reference	Class	Multiplicity	Description
hasObjectType	ObjectType	1..1	The range of the object, which should come from noun concepts of domain ontology
isMannerOf	Goal	0..*	That goal that has this manner

Constraints

The value of attribute “name” has to be unique in this metaclass.

5.3.13 Operation_Type

Operation_Type is a metaclass that denotes the type of operations, which should come from verb concepts of domain ontology.

Reference	Class	Multiplicity	Description
isTypeOf	Operation	1..*	The operation that has this corresponding Operation_Type

5.3.14 Object_Type

Object_Type is a metaclass that denotes the type of objects, which should come from noun concepts of domain ontology.

Reference	Class	Multiplicity	Description
isTypeOf	Object	1..*	The object that has this corresponding Object_Type

5.3.15 Upper_Goal

Operational_Goal is a metaclass that denotes a kind of goals that can be the upper end of decomposition.

SuperClass

Goal

5.3.16 Operational_Goal

Operational_Goal is a metaclass that denotes a kind of goals that certain processes can directly achieve.

SuperClass

Goal

Constraints

An Operational goal cannot be the upper end of decomposition.

5.3.17 Role

Role is a metaclass that denotes abstract characterizations of organizational behaviours and responsibilities within specified organizational context

Attribute	Data Type	Multiplicity	Description
name	String	1..1	Name of the corresponding role
Reference	Class	Multiplicity	Description
playedBy	Actor	1..*	The actors who play the role
takesCharge	Role_Goal	1..*	The role_goal that owned by the role

The value of attribute "name" has to be unique in this metaclass.

5.3.18 Actor

Actor is a metaclass that denotes an intentional entity.

Attribute	Data Type	Multiplicity	Description
name	String	1..1	Name of the corresponding actor
Reference	Class	Multiplicity	Description
plays	Role	0..*	The roles that the actor can play
prefers	Personal_Goal	0..*	The personal_goal that owned by the actor

The value of attribute "name" has to be unique in this metaclass.

5.3.19 Role_Goal

Role_Goal is a metaclass that denotes the goals that a role is in charge of.

SuperClass

Goal

Reference	Class	Multiplicity	Description
takenChargeBy	Role	1..1	The role who is in charge of the role_goal

5.3.20 Personal_Goal

Personal_Goal is a metaclass that denotes the goals that an actor prefers.

SuperClass

Goal

Reference	Class	Multiplicity	Description
PerferedBy	Actor	1..*	The actor who prefers the personal_goal