

# Inscription, Expression & Conceptualization-OS

// Metadata

Name	Inscription, Expression & Conceptualization-OS
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Creation date	September 11 <sup>th</sup> , 2008
Has contributor	Sabine Bruaux, Jean-Yves Fortier, Frédéric Fürst, Gilles Kassel, Pascal Lando, Anne Lapujade
Used ontology engineering methodology	OntoSpec
Is of type	Core ontology
Natural language	English
Has ontology language	OntoSpec
Has formality level	Semi-informal
Ressource locator	<a href="http://www.laria.u-picardie.fr/IC/site/IMG/pdf/Inscription-OS.pdf">http://www.laria.u-picardie.fr/IC/site/IMG/pdf/Inscription-OS.pdf</a>
Version	1.0
Number of concepts (classes)	21
Number of relations (properties)	19

// Relations

Expresses at

## Properties

[EP/R1 & R2 & R3] An EXPRESSION *expresses* a CONCEPTUALIZATION *at* a TIME INTERVAL. [EP/IVL] *Expresses at* mutually implies *is expressed by at*.

Is conceived by at

## Properties

[EP/R1 & R2 & R3] A CONCEPTUALIZATION *is conceived by* an AGENTIVE *at* a TIME INTERVAL. [EP/IVL] *Is conceived by at* mutually implies *conceives at*.

Is expressed by at

## Properties

[EP/DR & RR] A CONCEPTUALIZATION *is expressed by* an EXPRESSION *at* a TIME INTERVAL. [EP/IVL] *Is expressed by at* mutually implies *expresses at*.

Is inscribed on at

## Properties

[EP/R1 & R2 & R3] An INSCRIPTION *is inscribed on* a PHYSICAL ENDURANT *at* a TIME INTERVAL. [EP/IVL] *Is inscribed on at* mutually implies *supports at*.

Is interested in

**Properties**

[EP/DR & RR] An AGENTIVE *is interested in* a CONCEPT.

Is ordered by

**Properties**

[EP/DR & RR] An EXPRESSION *is ordered by* a LANGUAGE. [EP/IVL] *Is ordered by* mutually implies *orders*.

Is a well formed formula of

**Properties**

[EP/DR & RR] An EXPRESSION *is a well formed formula of* a FORMAL LANGUAGE.  
[EP/SL] *x is a well formed formula of* implies that *x is ordered by* *y*. [EP/IVL] *Is a well formed formula of* mutually implies *formally orders*.

Is physically realized by at

**Properties**

[EP/R1 & R2 & R3] A CONCEPTUALIZATION *is physically realized by* an INSCRIPTION *at* a TIME INTERVAL. [EP/IVL] *Is physically realized by at* mutually implies *physically realizes at*.

Is published by at

**Properties**

[EP/R1 & R2 & R3] An EXPRESSION *is published by* a PUBLISHER *at* a TIME INTERVAL.

Is realized by at

**Properties**

[EP/R1 & R2 & R3] An EXPRESSION *is realized by* an INSCRIPTION *at* a TIME INTERVAL. [EP/IVL] *Is realized by at* mutually implies *realized at*.

Is used by at

**Properties**

[EP/R1 & R2 & R3] A CONCEPT *is used by* a PROPOSITION *at* a TIME INTERVAL.  
[EP/SLD] *x is used by y at t* iff *x is a proper part of y at t* and *x is a CONCEPT* and *y is a PROPOSITION*. [EP/IVL] *Is used by at* mutually implies *uses at*.

**Comment**

[DIV] *Uses* is the proper part relation between PROPOSITIONS and CONCEPTS.

Is subject of at

**Properties**

[EP/R1 & R2 & R3] A CONCEPT *is subject of* a PROPOSITION *at* a TIME INTERVAL.  
[EP/SL] *x is subject of y at t* implies that *x is used by y at t*. [EP/IVL] *Is subject of at* mutually implies *has for subject at*.

Physically realizes at

**Properties**

[EP/R1 & R2 & R3] An INSCRIPTION *physically realizes* a CONCEPTUALIZATION *at* a TIME INTERVAL. [EP/NMC] *x physically realizes y at t* implies that there exists *z* such that *x realizes z at t* and *z expresses y at t*. [EP/IVL] *Physically realizes at* mutually implies *is physically realized at*.

Realizes at

**Properties**

[EP/R1 & R2 & R3] An INSCRIPTION *realizes* an EXPRESSION *at* a TIME INTERVAL. [EP/IVL] *Realizes at* mutually implies *is realized by at*.

Classifies at

**Properties**

[EP/R1 & R2 & R3] A CONCEPT *classifies* a PARTICULAR *at* a TIME INTERVAL. [EP/SL] *x classifies y at t* implies that *x references y at t*.

Models at

**Properties**

[EP/R1 & R2 & R3] A MODEL *models* a PARTICULAR *at* a TIME INTERVAL. [EP/SL] *x models y at t* implies that *x references y at t*.

Supports at

**Properties**

[EP/R1 & R2 & R3] A PHYSICAL ENDURANT *supports* an INSCRIPTION *at* a TIME INTERVAL. [EP/IVL] *Supports at* mutually implies *is inscribed on at*.

Uses at

**Properties**

[EP/R1 & R2 & R3] A PROPOSITION *uses* a CONCEPT *at* a TIME INTERVAL. [EP/SLD] *x uses y at t* iff *x has for proper part y at t* and *x* is a PROPOSITION and *y* is a CONCEPT. [EP/IVL] *Uses at* mutually implies *is used by at*.

**Comment**

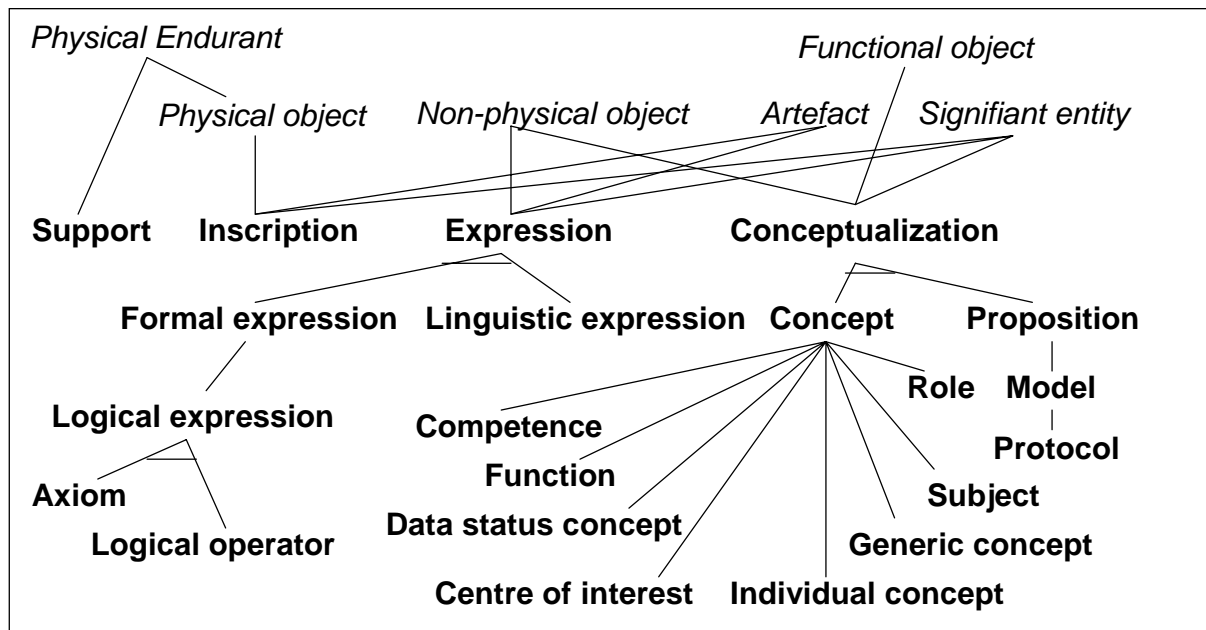
[DIV] Uses is the proper part relation between PROPOSITIONS and CONCEPTS.

Has for subject at

**Properties**

[EP/R1 & R2 & R3] A PROPOSITION *has for subject* a CONCEPT *at* a TIME INTERVAL. [EP/SL] *x has for subject y at t* implies that *x uses y at t*. [EP/IVL] *Has for subject at* mutually implies *is subject of at*.

// Concepts



## Conceptualization

### Meta-properties

CONCEPTUALIZATION is RIGID (+**R**). CONCEPTUALIZATION is CARRYING AN IDENTITY CRITERION (+**I**). CONCEPTUALIZATION is EXTERNALLY-DEPENDENT (+**D**). CONCEPT and PROPOSITION is a non-trivial partition of CONCEPTUALIZATION.

### Properties

[EP/SL] A CONCEPTUALIZATION is a NON-PHYSICAL OBJECT. [EP/SL] A CONCEPTUALIZATION is a SIGNIFIANT ENTITY. [EP/SL] A CONCEPTUALIZATION is an FUNCTIONAL OBJECT.

### Comment

[DIV] This notion is close to the notion of “description” in the DnS ontology [Gangemi and Mika, 2003]. One difference is that a conceptualization can be either private (a MENTAL OBJECT) or social (a SOCIAL OBJECT) whether it depends on a unique agentive or a community of agentives.

[DIV] This notion was named “content” in a first version of the I&DA (Information and Discourse Acts) ontology [Fortier and Kassel, 2004].

## Concept

### Meta-properties

CONCEPT is RIGID (+**R**). CONCEPT is CARRYING AN IDENTITY CRITERION (+**I**). CONCEPT is EXTERNALLY-DEPENDENT (+**D**).

### Properties

[EP/SL] A CONCEPT is a CONCEPTUALIZATION. [EP/ER] Every CONCEPT classifies PARTICULARS at a TIME INTERVAL. [EP/ICL] No CONCEPT is a PROPOSITION.

## Centre of interest

### Meta-Properties

CENTRE OF INTEREST is ANTI-RIGID ( $\sim\mathbf{R}$ ). CENTRE OF INTEREST is CARRYING AN IDENTITY CRITERION ( $+\mathbf{I}$ ). CENTRE OF INTEREST is EXTERNALLY-DEPENDENT ( $+\mathbf{D}$ ).

**Properties**

[EP/SLD] A CENTRE OF INTEREST is a CONCEPT such that at least an AGENTIVE exists which *is interested in* the CONCEPT.

Generic concept

**Meta-properties**

GENERIC CONCEPT is RIGID ( $+\mathbf{R}$ ). GENERIC CONCEPT is CARRYING AN IDENTITY CRITERION ( $+\mathbf{I}$ ). GENERIC CONCEPT is EXTERNALLY-DEPENDENT ( $+\mathbf{D}$ ).

**Properties**

[EP/SL] A GENERIC CONCEPT is a CONCEPT.

Individual concept

**Meta-properties**

INDIVIDUAL CONCEPT is RIGID ( $+\mathbf{R}$ ). INDIVIDUAL CONCEPT is CARRYING AN IDENTITY CRITERION ( $+\mathbf{I}$ ). INDIVIDUAL CONCEPT is EXTERNALLY-DEPENDENT ( $+\mathbf{D}$ ).

**Properties**

[EP/SL] An INDIVIDUAL CONCEPT is a CONCEPT.

Role

**Meta-properties**

ROLE is RIGID ( $+\mathbf{R}$ ). ROLE is CARRYING AN IDENTITY CRITERION ( $+\mathbf{I}$ ). ROLE is EXTERNALLY-DEPENDENT ( $+\mathbf{D}$ ).

**Properties**

[EP/SLD] A ROLE is a CONCEPT which is ANTI-RIGID and which is EXTERNALLY-DEPENDENT

**Comments**

[EX] Examples of ROLES are the concepts [AGENT] and [INSTRUMENT]

Subject

**Meta-properties**

SUBJECT is ANTI-RIGID ( $\sim\mathbf{R}$ ). SUBJECT is CARRYING AN IDENTITY CRITERION ( $+\mathbf{I}$ ). SUBJECT is EXTERNALLY-DEPENDENT ( $+\mathbf{D}$ ).

**Properties**

[EP/SLD] A SUBJECT is a CONCEPT which *is subject of* a PROPOSITION *at* a TIME INTERVAL.

Competence

**Meta-properties**

COMPETENCE is ANTI-RIGID ( $\sim\mathbf{R}$ ). COMPETENCE is CARRYING AN IDENTITY CRITERION ( $+\mathbf{I}$ ). COMPETENCE is EXTERNALLY-DEPENDENT ( $+\mathbf{D}$ ).

**Properties**

[EP/SLD] A COMPETENCE is a CONCEPT which *is the theme of* a COMPETENCY STATE *at* a TIME INTERVAL.

## Data status concept

### Meta-properties

DATA STATUS CONCEPT is ANTI-RIGID (**~R**). DATA STATUS CONCEPT is CARRYING AN IDENTITY CRITERION (**+I**). DATA STATUS CONCEPT is EXTERNALLY-DEPENDENT (**+D**).

### Properties

[EP/SLD] A DATA STATUS CONCEPT is a CONCEPT which *is the theme of* a DATA STATUS STATE *at* a TIME INTERVAL.

## Function

### Meta-properties

FUNCTION is ANTI-RIGID (**~R**). FUNCTION is CARRYING AN IDENTITY CRITERION (**+I**). FUNCTION is EXTERNALLY-DEPENDENT (**+D**).

### Properties

[EP/SLD] A FUNCTION is a CONCEPT which *is the theme of* a FUNCTIONALITY STATE *at* a TIME INTERVAL.

## Proposition

### Meta-properties

PROPOSITION is RIGID (**+R**). PROPOSITION is CARRYING AN IDENTITY CRITERION (**+I**). PROPOSITION is EXTERNALLY-DEPENDENT (**+D**).

### Properties

[EP/SL] A PROPOSITION is a CONCEPTUALIZATION. [EP/ICL] No PROPOSITION is a CONCEPT.

## Model

### Meta-properties

MODEL is RIGID (**+R**). MODEL is CARRYING AN IDENTITY CRITERION (**+I**). MODEL is EXTERNALLY-DEPENDENT (**+D**).

### Properties

[EP/SL] A MODEL is a PROPOSITION which *models* a PARTICULAR *at* a TIME INTERVAL.

## Protocol

### Meta-properties

PROTOCOL is RIGID (**+R**). PROTOCOL is EXTERNALLY-DEPENDENT (**+D**).

### Properties

[EP/SLD] A PROTOCOL is a MODEL.

### Comments

[DIV] In a general meaning, a protocol is a model or description of an ACTION.

[DEF] Adapted from CDISC Clinical Research Glossary: a PROTOCOL describes the objective(s), design, methodology, statistical considerations, and organization of a trial.

## Expression

### Meta-properties

EXPRESSION is RIGID (**+R**). EXPRESSION is CARRYING AN IDENTITY CRITERION (**+I**). EXPRESSION is EXTERNALLY-DEPENDENT (**+D**).

### Properties

[EP/SL] An EXPRESSION is a NON-PHYSICAL OBJECT. [EP/SL] An EXPRESSION is a SIGNIFIANT ENTITY. [EP/SL] An EXPRESSION is an ARTEFACT. [EP/ER] Every EXPRESSION *expresses* at least one CONCEPTUALIZATION *at* a TIME INTERVAL. [EP/ER] Every EXPRESSION *is ordered by* a LANGUAGE.

#### **Comment**

[DIV] This notion of “expression” is close to the notion of “information-object” in DOLCE-Lite-Plus (see [Gangemi *et al.*, 2005, Section 5: An ontology of information objects]).

#### Formal expression

##### **Meta-properties**

FORMAL EXPRESSION is RIGID (+**R**). FORMAL EXPRESSION is CARRYING AN IDENTITY CRITERION (+**I**). FORMAL EXPRESSION is EXTERNALLY-DEPENDENT (+**D**).

##### **Properties**

[EP/SL] A FORMAL EXPRESSION is an EXPRESSION which *is a well formed formula of* a FORMAL LANGUAGE.

#### Logical expression

##### **Meta-properties**

LOGICAL EXPRESSION is RIGID (+**R**). LOGICAL EXPRESSION is CARRYING AN IDENTITY CRITERION (+**I**). LOGICAL EXPRESSION is EXTERNALLY-DEPENDENT (+**D**).

##### **Properties**

[EP/SL] A LOGICAL EXPRESSION is an EXPRESSION which *is a well formed formula of* a LOGICAL LANGUAGE.

#### Axiom

##### **Meta-properties**

AXIOM is RIGID (+**R**). AXIOM is CARRYING AN IDENTITY CRITERION (+**I**). AXIOM is EXTERNALLY-DEPENDENT (+**D**).

##### **Properties**

[EP/SL] An AXIOM is a LOGICAL EXPRESSION.

#### Logical operator

##### **Meta-properties**

LOGICAL OPERATOR is RIGID (+**R**). LOGICAL OPERATOR is CARRYING AN IDENTITY CRITERION (+**I**). LOGICAL OPERATOR is EXTERNALLY-DEPENDENT (+**D**).

##### **Properties**

[EP/SL] A LOGICAL OPERATOR is a LOGICAL EXPRESSION. [EP/ICL] No LOGICAL OPERATOR is an AXIOM.

#### Linguistic expression

##### **Meta-properties**

LINGUISTIC EXPRESSION is RIGID (+**R**). LINGUISTIC EXPRESSION is CARRYING AN IDENTITY CRITERION (+**I**). LINGUISTIC EXPRESSION is EXTERNALLY-DEPENDENT (+**D**).

##### **Properties**

[EP/SL] A LINGUISTIC EXPRESSION is an EXPRESSION which *is ordered by* a NATURAL LANGUAGE. [EP/ICL] No LINGUISTIC EXPRESSION is a FORMAL EXPRESSION.

## Inscription

### Meta-properties

INSCRIPTION is RIGID (+**R**). INSCRIPTION is CARRYING AN IDENTITY CRITERION (+**I**). INSCRIPTION is EXTERNALLY-DEPENDENT (+**D**).

### Properties

[EP/SLD] An INSCRIPTION is a PHYSICAL OBJECT. [EP/SL] An INSCRIPTION is a SIGNIFIANT ENTITY. [EP/SL] An INSCRIPTION is an ARTEFACT. [EP/ER] Every INSCRIPTION *is inscribed on* a SUPPORT *at* a TIME INTERVAL. [EP/ER] Every INSCRIPTION *realizes* at least one EXPRESSION *at* a TIME INTERVAL. [EP/ER] Every INSCRIPTION *physically realizes* at least one CONCEPTUALIZATION *at* a TIME INTERVAL.

### Comment

[DIV] An INSCRIPTION is a TECHNICAL OBJECT which allows to carry out transformations by suggesting or prescribing interpretations.

[CIT] [Bachimont, 2004, p. 67 (translated)]: “An important characteristic of inscriptions is that these objects don’t exist for what they are, but for what they mean. Indeed, ink printed on a paper does not concern us by the fact of its physical nature but by the fact that its form means words borrowed from a language”.

## Support

### Meta-properties

SUPPORT is ANTI-RIGID (~**R**). SUPPORT is NOT CARRYING AN IDENTITY CRITERION (-**I**). SUPPORT is EXTERNALLY-DEPENDENT (+**D**).

### Properties

[EP/SLD] A SUPPORT is a PHYSICAL ENDURANT which *supports* an INSCRIPTION *at* a TIME INTERVAL.