

IDABC Public eProcurement

Physical Database Model

Updated version in the context of Specific Contract No7 under Framework Agreement ENTR/04/24-INFODIS-Lot 2

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Modification History

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1 Introduction

The current document is created as part of the technical document deliverables of the IDABC Public eProcurement project, and constitutes the technical description of the physical database model of the dynamic demonstrators. It presents the database schema, and describes in detail the function of each element, the relations between different elements, and where necessary, the reasoning behind specific design patterns. In short, it provides a full and clear explanation of the database model and reasoning, in a concise document.

The document is divided into three main sections. In the first section, a diagrammatic aspect of the database schema is presented, both as a whole, and as split into individual logical modules. The complete model presents the full layout of interconnections between the various database tables, but entails little information on the actual tables. It is meant to provide an overview of the complete database model, avoiding in-depth information for each, which is presented in subsequent sections. The function of each table is used to classify it in one of seven groups, thus segmenting the total schema into seven logical modules. Detailed diagrams of all modules are also provided in this section.

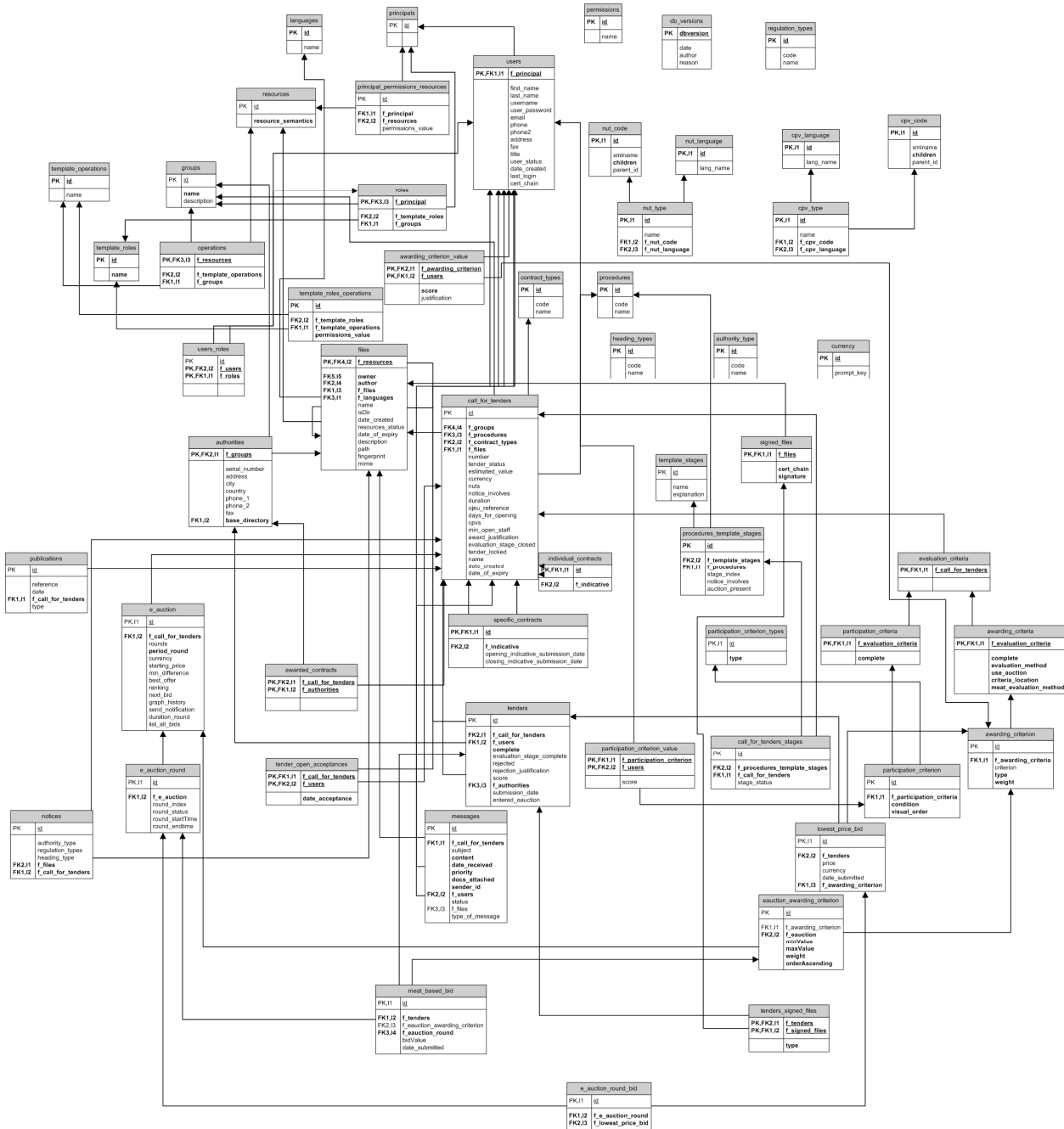
The second section presents an overview of the logical modules of the schema and the tables that each one entails. It contains a list of the modules and their corresponding tables, along with short descriptions for each table. The reader is presented with the overall architecture of the database, and the various logical modules, whereas high-level information is provided for the purpose that each table serves.

The third section constitutes the complete reference manual of the database. A subsection is dedicated to each and every table, and exhibits the exact number of columns, foreign keys and indexes of the table. Furthermore, the nature of each field and each foreign key is explained in detail. After going through this section, the reader can understand the exact structure of the database and how each table is constructed and interconnected with other database elements.

This document follows a “top-down” analysis, in order to offer a comprehensive picture of the database architecture and clarify all subtle points of its design. In this way, both the high-level database design and in-depth table structure is presented, allowing reader to better comprehend both the reasoning and the technical implementation of the physical database model created for the demonstrators.

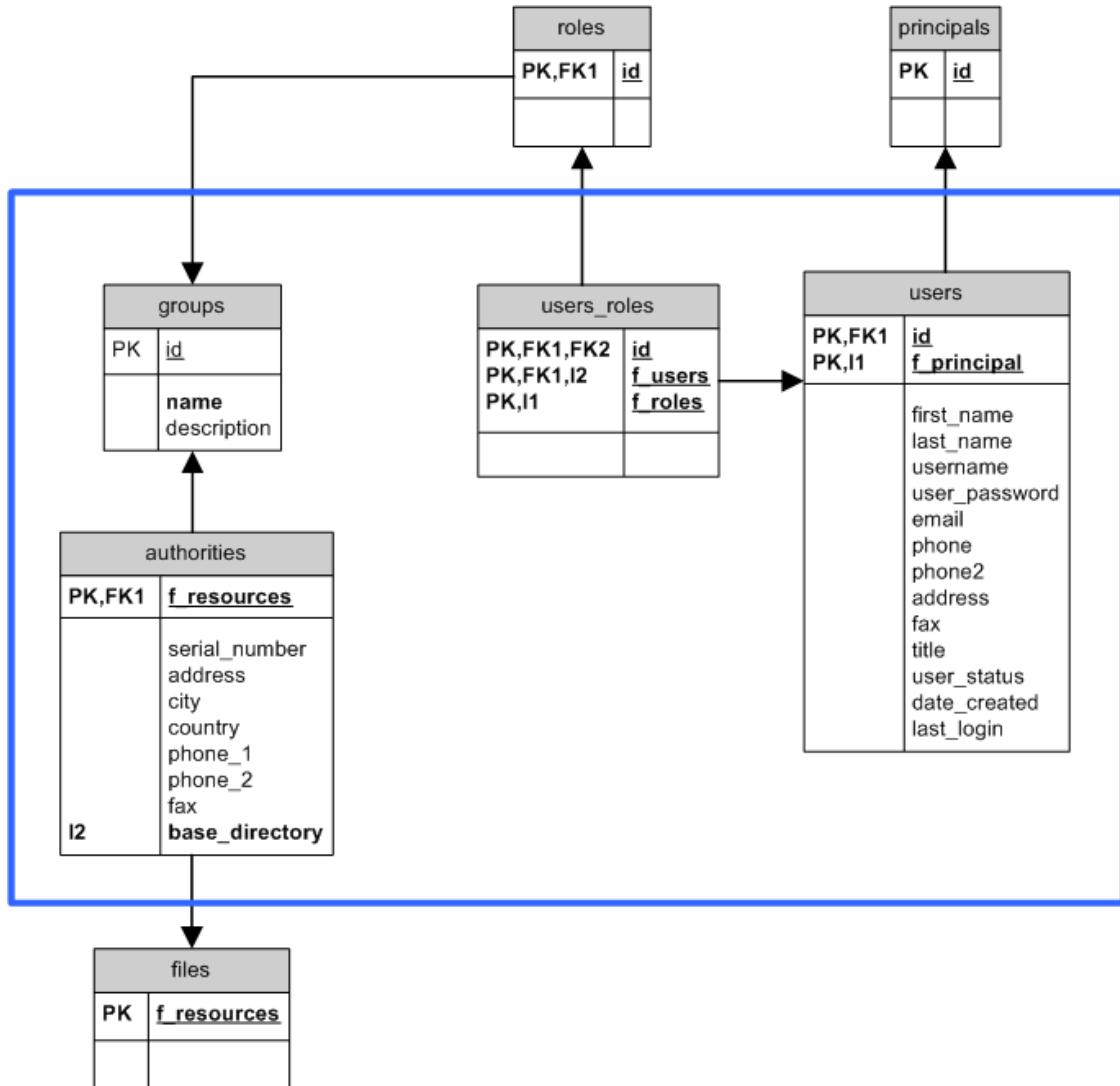
2 Database Diagram

This section displays diagrams of the database to assist the user in understanding the relations between fields, tables and modules. First, a full overview of the schema is presented. Then, specialised diagrams of each module are detailed.

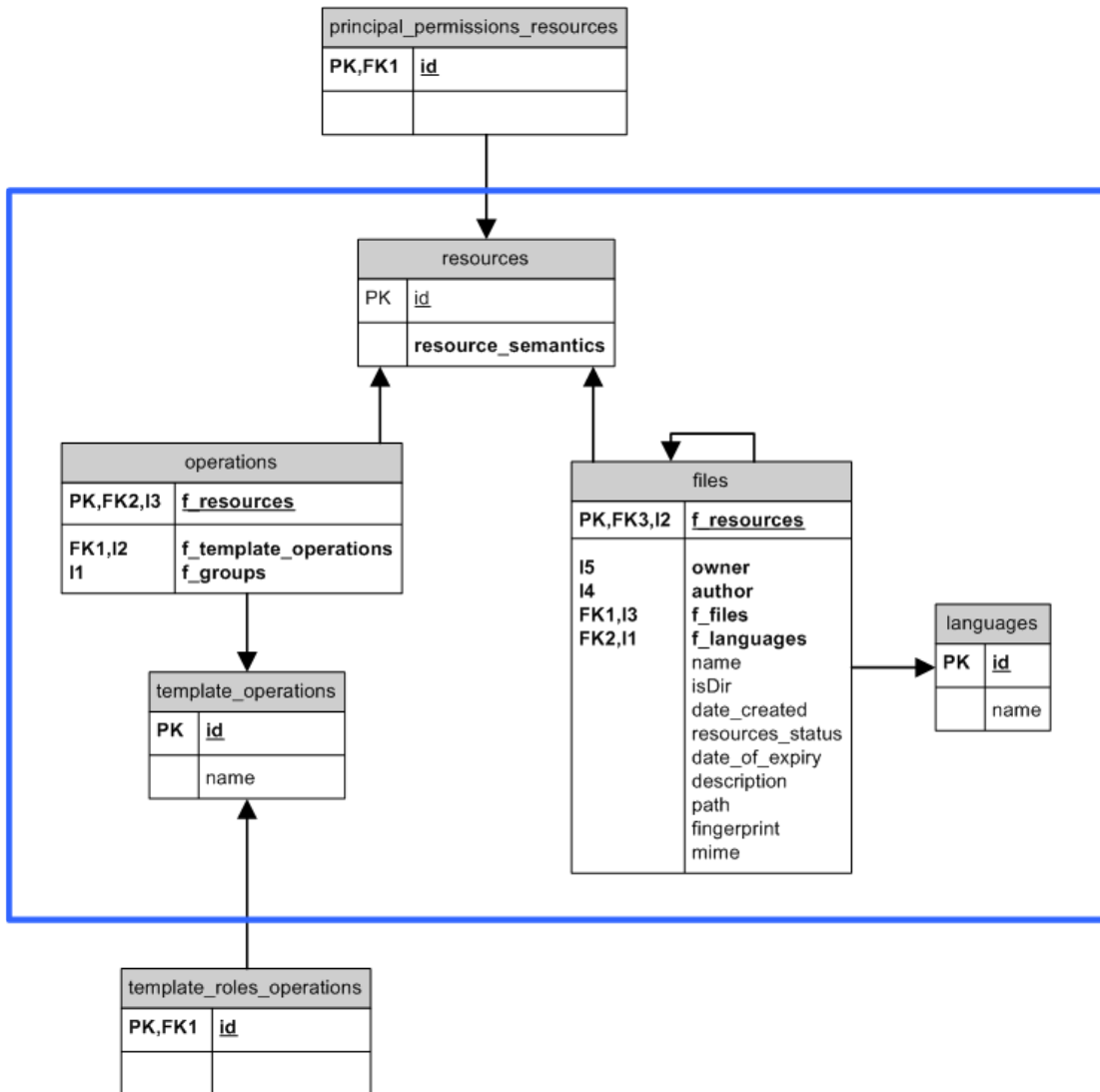


Specific diagrams of each logical module are provided below, also presenting the fields and the relations between the tables of the module, as well as, the relations to tables of other modules:

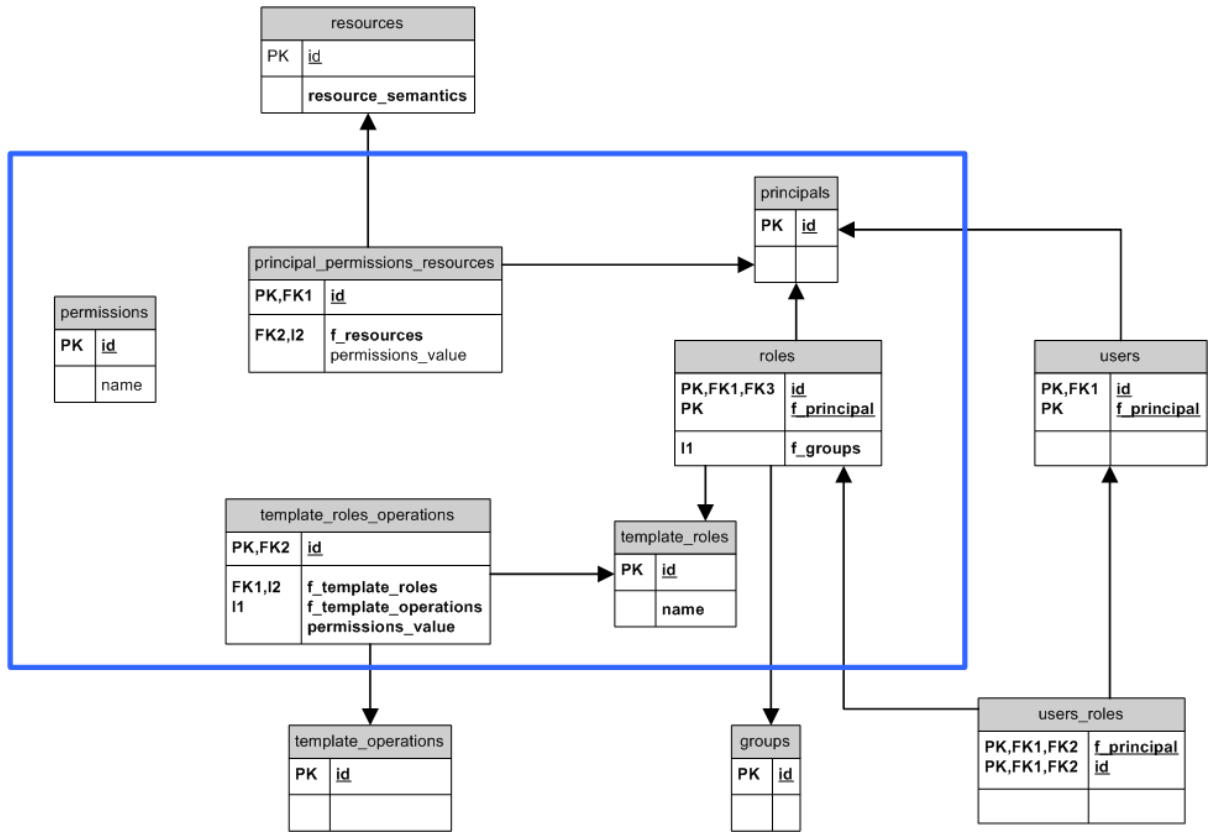
Users module



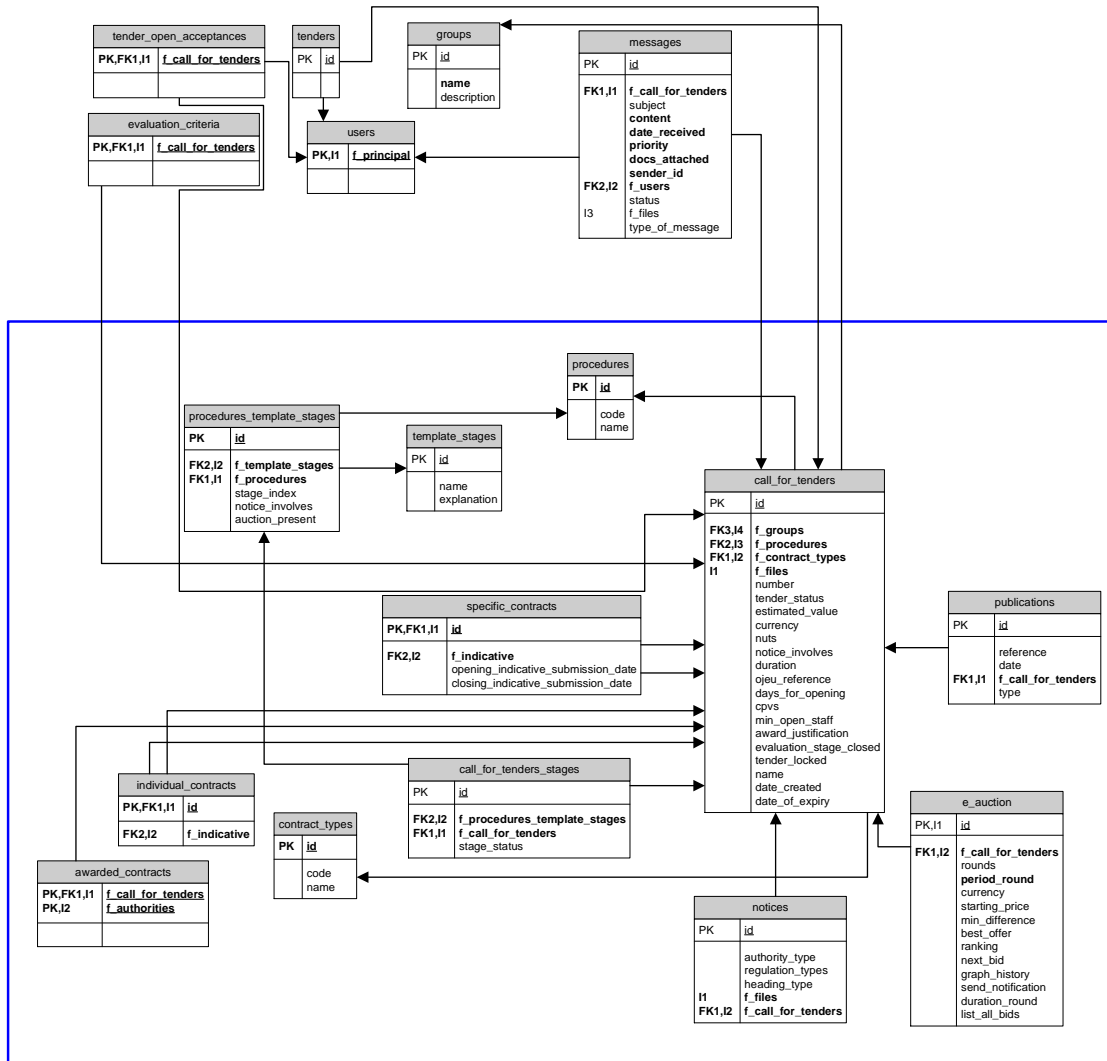
Resources module



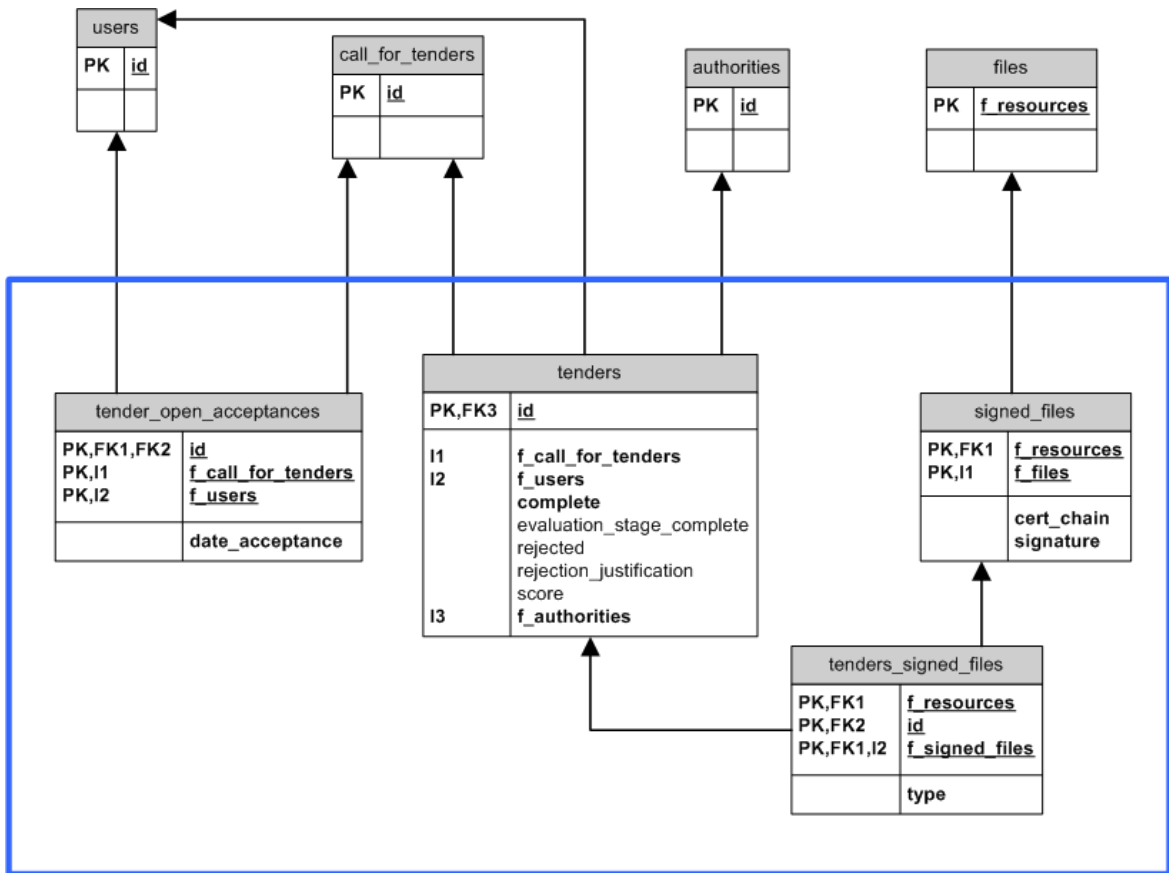
Access module



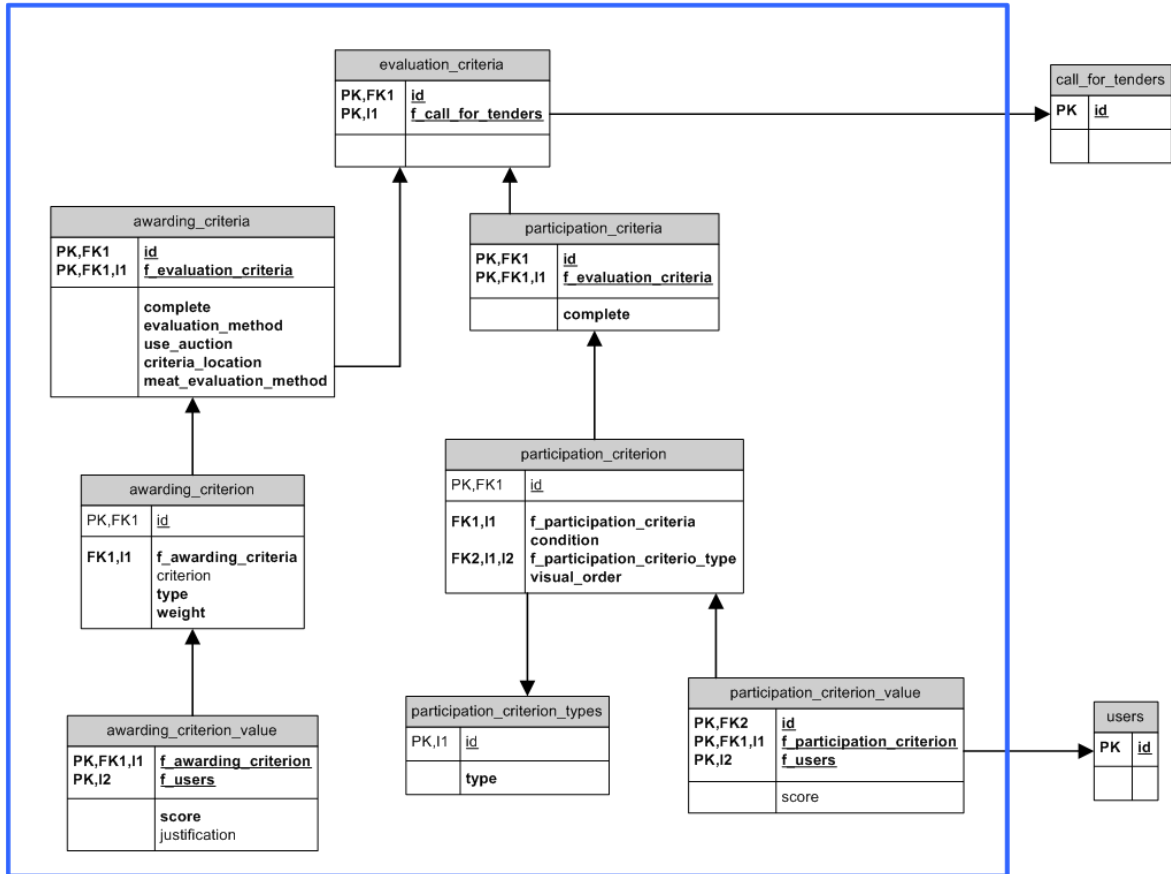
Call for Tenders module



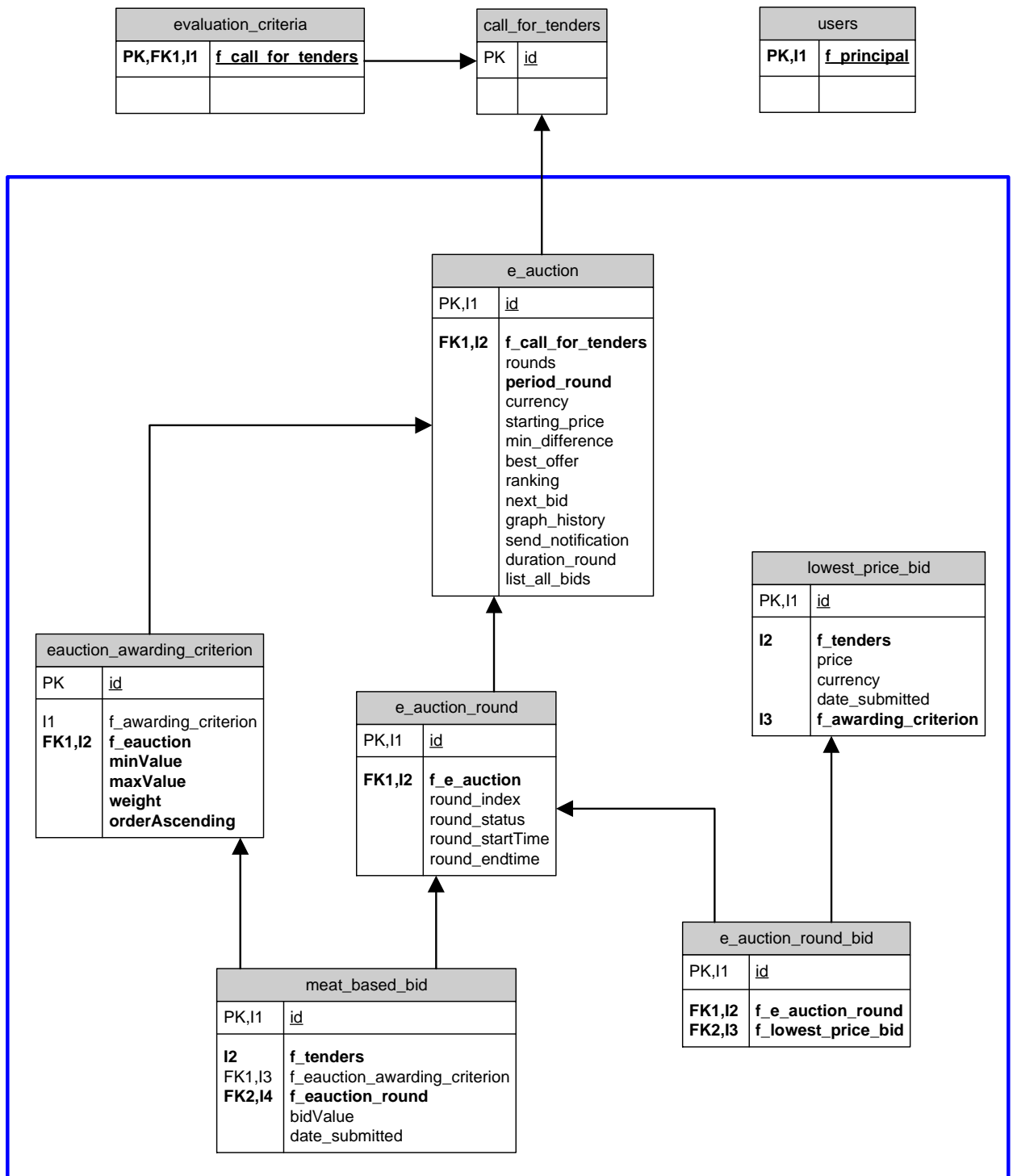
Tenders module



Criteria module



e-Auction module



3 Database Summary

This section presents a list of all tables in the database, grouped together in modules, according to their purpose. A short description of each table is also provided. This list along with the DB schema overview is meant to be the main point of reference, when explaining the function of each element in the database.

Number of tables: 56
Number of columns: 266
Number of indexes: 85
Number of foreign keys: 73

Logical Module	Table	Description
Users	users	Details of the users registered in the application.
	users_roles	Relationships between users and the roles they hold in various groups.
	groups	Details on groups of users.
	authorities	Details on Contracting Authorities, defined as groups of users.
Resources	resources	Primary keys for all resources.
	files	Details on documents and directories.
	operations	Operations by group.
	languages	Short code and full name for all languages.
	template_operations	Operations of the application.
Access	principal_permissions_resources	Definitions of the access rights a principal has on a resource.
	principals	Primary keys of principals.
	permissions	Definition and value of permissions.
	roles	Roles by group.
	template_roles	Roles of the application.
	template_roles_operations	Default access rights on operations for each role.

Calls For Tenders	call_for_tenders	Details for calls for tenders.
	specific_contracts	Details of specific contracts
	individual_contracts	Details of individual contracts
	notices	Contract notices relevant to calls for tenders.
	messages	Application related messages.
	contract_types	Type of contract of a call for tenders.
	cpv_code	CPV codes and XML-names.
	cpv_type	CPV types and names.
	cpv_language	Permissible CPV languages.
	call_for_tenders_stages	Stages by call for tenders.
	template_stages	Stages defined for all types of calls for tenders.
	procedures_template_stages	Stages by procedure.
	awarded_contracts	Contracts awarded for a call for tenders.
	procedures	Type of procedure for call for tenders.
Tenders	publications	Details on publications made before the release of a call for tenders.
	tenders	Details on a tender submission.
	tenders_signed_files	Signed files relevant to a tender submission.
	signed_files	Files authenticated with a digital signature.
Criteria	tender_open_acceptances	References to the opening staff that accept opening the tenders of a specific call for tenders.
	participation_criteria	Reference to participation criteria for a call for tenders.
	participation_criterion	Individual participation criteria.
	participation_criterion_types	Types of participation criteria.
	participation_criterion_value	Value given for a participation criterion.
	evaluation_criteria	Reference to evaluation criteria for a call for tenders.
	awarding_criteria	Reference to awarding criteria for a call for tenders.
	awarding_criterion	Individual awarding criteria.
eAuction	awarding_criterion_value	Value given for an awarding criterion.
	e_auction	Parameterization of eAuction
	e_auction_round	Definition of each eAuction round
	e_auction_round_bid	Reference of a lowest price bid with a round
	eauction_awarding_criterion	Definition of awarding criteria for MEAT based eAuction
	lowest_price_bid	Lowest price bid for a round
	meat_based_bid	MEAT based bid for a round

4 Database Extensive Review

This section provides an extensive description of all seven logical modules of the database and of the tables associated to each logical module. At the beginning of each module's depiction, a short explanation of its purpose and design is provided, although in most cases self-explanatory names are used, whereas the function of the module is intuitively obvious.

4.1 Users Module

This logical module handles all data relevant to users registered with the system. Besides the table of *users*, it includes an other important table, that of *groups*. The *access rights* of users are defined in the context of each group, and users may be members of at least one, but infinitely many groups.

4.1.1 users

Holds the registered users of the application. A *user* is also considered to be a *principal* and has a 1-1 identifying relationship with TABLE principals.

Number of columns: 14
Number of indexes: 1
Number of foreign keys: 1

Columns	Data type	Allow NULLs
f_principal (FK,I1)	NUMBER	Not allowed
first_name	TEXT	Allowed
last_name	TEXT	Allowed
username	TEXT	Allowed
user_password	TEXT	Allowed
email	TEXT	Allowed
phone	TEXT	Allowed
phone2	TEXT	Allowed
address	TEXT	Allowed
fax	TEXT	Allowed
title	TEXT	Allowed
user_status	NUMBER	Allowed
date_created	DATE/TIME	Allowed
last_login	DATE/TIME	Allowed

Foreign keys:

Child	Parent
f_principal	principals.id
awarding_criterion_value.f_users	f_principal
files.author	f_principal
files.owner	f_principal
messages.f_users	f_principal
participation_criterion_value.f_users	f_principal
tender_open_acceptances.f_users	f_principal
tenders.f_users	f_principal
users_roles.f_users	f_principal

Foreign key details (child)

Definition:	Child f_principal	Parent principals.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.1.2 users_roles

Implements the many-many relationship between *users* and *roles*.

Number of columns: 3
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_users (FK,I2)	NUMBER	Not allowed
f_roles (FK,I1)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_roles	roles.f_principal
f_users	users.f_principal

Foreign key details (child)

Definition:	Child f_roles	Parent roles.f_principal
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_users	Parent users.f_principal
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.1.3 groups

Used to identify any group of *users*.

Number of columns: 3
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
name	TEXT	Not allowed
description	TEXT	Allowed

Foreign keys:

Child	Parent
authorities.f_groups	id
call_for_tenders.f_groups	id
operations.f_groups	id
roles.f_groups	id

4.1.4 authorities

Holds the details of the Contracting Authorities that are registered with the system. Each *authority* is also considered to be a *group*, and therefore TABLE authorities has a 1-1 identifying relationship with TABLE groups. Thus, the primary key of TABLE authorities is the primary key of the respective record of TABLE groups.

Each *authority* has its own workspace, where important material is stored. An authority has a 1-1 non-identifying relationship with TABLE files that specifies the root of this workspace.

Number of columns: 9
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
f_groups (FK,I1)	NUMBER	Not allowed
serial_number	TEXT	Allowed
address	TEXT	Allowed
city	TEXT	Allowed
country	TEXT	Allowed
phone_1	TEXT	Allowed
phone_2	TEXT	Allowed
fax	TEXT	Allowed
base_directory (FK,I2)	NUMBER	Not allowed

Foreign keys:

Child	Parent
Base_directory	files.f_resources
f_groups	groups.id
awarded_contracts.f_authorities	f_groups
tenders.f_authorities	f_groups

Foreign key details (child)

Definition:	Child base_directory	Parent files.f_resources
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_groups	Parent groups.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.2 Resources Module

This logical module stores resources – i.e. directories, files – of the application. In essence, the database keeps the meta-data of each stored *resource*, which is essential in ensuring that it secure, not tampered with and not corrupted when it is retrieved.

4.2.1 resources

An abstract entity that represents a *file* – individual file or directory - or an *operation*.

Number of columns: 2
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
resource_semantics	NUMBER	Not allowed

Foreign keys:

Child	Parent
files.f_resources	id
operations.f_resources	id
principal_permissions_resources.f_resources	id

4.2.2 files

Holds references to the *files*, i.e. to the directories and documents relevant to the application. Each entry has a reference to the *user* that created it, and to the user that owns it. A hierarchy of *files* – directories – may be created, and each *file* has a reference to its *parent*.

Number of columns: 14
Number of indexes: 5
Number of foreign keys: 5

Columns	Data type	Allow NULLs
f_resources (FK,I2)	NUMBER	Not allowed
owner (FK,I5)	NUMBER	Not allowed
author (FK,I4)	NUMBER	Not allowed
f_files (FK,I3)	NUMBER	Not allowed
f_languages (FK,I1)	TEXT	Not allowed
name	TEXT	Allowed
isDir	NUMBER	Allowed
date_created	DATE/TIME	Allowed
resources_status	NUMBER	Allowed
date_of_expiry	DATE/TIME	Allowed
description	TEXT	Allowed
path	TEXT	Allowed
fingerprint	NUMBER	Allowed
mime	TEXT	Allowed

Foreign keys:

Child	Parent
f_files	f_resources
author	users.f_principal
f_languages	languages.id
f_resources	resources.id
owner	users.f_principal
authorities.base_directory	f_resources
call_for_tenders.f_files	f_resources
messages.f_files	f_resources
notices.f_files	f_resources
signed_files.f_files	f_resources

Foreign key details (child)

Definition:	Child	Parent
	f_files	f_resources
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child	Parent
	author	users.f_principal
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_languages	Parent languages.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_resources	Parent resources.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	
Definition:	Child owner	Parent users.f_principal
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.2.3 operations

The *operations* that may be executed by a *user* in association to each *call for tenders*.

Number of columns: 3
Number of indexes: 3
Number of foreign keys: 3

Columns	Data type	Allow NULLs
f_resources (FK,I3)	NUMBER	Not allowed
f_template_operations (FK,I2)	NUMBER	Not allowed
f_groups (FK,I1)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_groups	groups.id
f_template_operations	template_operations.id
f_resources	resources.id

Foreign key details (child)

Definition:	Child f_groups	Parent groups.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_template_operations	Parent template_operations.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_resources	Parent resources.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.2.4 languages

A set of all languages supported by the application.

Number of columns: 2
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	TEXT	Not allowed
name	TEXT	Allowed

Foreign keys:

Child	Parent
files.f_languages	id

4.2.5 template_operations

The template – original and unique list – of operations allowed in the application. A set of group-related operations is created following the example of this list, for every new group.

Number of columns: 2
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
name	TEXT	Allowed

Foreign keys:

Child	Parent
operations.f_template_operations	id
template_roles_operations.f_template_operations	id

4.3 Access Module

The task of this logical module is to keep track of the access rights each *principal* – i.e. *user* or *role* assigned to users – has on each of the *resources* of the system. A *principal*, as mentioned above, may be a user – individual – or a role – a concept that encloses any number of users and delegates to them its access rights. Consequently, access rights may be assigned to users as distinct entities or as members of a group's role.

4.3.1 principal_permissions_resources

Holds the rights a principal has on each resource.

Number of columns: 4
 Number of indexes: 2
 Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_principal (FK,I1)	NUMBER	Not allowed
f_resources (FK,I2)	NUMBER	Not allowed
permissions_value	NUMBER	Allowed

Foreign keys:

Child	Parent
f_principal	principals.id
f_resources	resources.id

Foreign key details (child)

Definition:	Child f_principal	Parent principals.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_resources	Parent resources.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.3.2 principals

An abstract entity that represents a user or set of users.

Number of columns: 1
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Allowed

Foreign keys:

Child	Parent
principal_permissions_resources.f_principal	id
roles.f_principal	id
users.f_principal	id

4.3.3 permissions

Defines the name and value of the access-right allowed on a resource – a file or operation - for a principal – a user or role. The principal may have “read”, “write”, “execute” rights or any combination of the above.

Number of columns: 2
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
Name	TEXT	Allowed

4.3.4 roles

A concept that allows users to be classified according to a common set of rights they have on a resource. A *role* is defined in relation to a certain *group* and therefore only involves access to resources that belong to the group.

Number of columns: 3
Number of indexes: 3
Number of foreign keys: 3

Columns	Data type	Allow NULLs
f_principal (FK,I3)	NUMBER	Not allowed
f_template_roles (FK,I2)	NUMBER	Not allowed
f_groups (FK,I1)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_groups	groups.id
f_template_roles	template_roles.id
f_principal	principals.id
users_roles.f_roles	f_principal

Foreign key details (child)

Definition:	Child f_groups	Parent groups.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_template_roles	Parent template_roles.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_principal	Parent principals.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.3.5 template_roles

The template – original and unique list – of roles allowed in the application. A set of group-related roles is created following the example of this list, for every new group.

Number of columns: 2
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
name	TEXT	Not allowed

Foreign keys:

Child	Parent
roles.f_template_roles	id
template_roles_operations.f_template_roles	id

4.3.6 template_roles_operations

The template – original and unique list – of the rights assigned for a role on an operation by default. For every new group that is created, dedicated sets of operations and roles are created anew, and so is the relation between the two, according to this template.

Number of columns: 4
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
f_template_roles (FK,I2)	NUMBER	Not allowed
f_template_operations (FK,I1)	NUMBER	Not allowed
permissions_value	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_template_operations	template_operations.id
f_template_roles	template_roles.id

Foreign key details (child)

Definition:	Child	Parent
	f_template_operations	template_operations.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child	Parent
	f_template_roles	template_roles.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4 Call For Tenders Module

This module holds all the tables relevant to creating, updating, manipulating and following the progress of a call for tenders. In essence, it carries most of the business logic specific to this application.

4.4.1 call_for_tenders

Holds main data regarding *calls for tenders*. This TABLE has a 1-1 non-identifying relationship to TABLE groups that facilitates the collection of *users* associated to the *call for tenders*. Each *call for tenders* is allocated a dedicated workspace. The root of the workspace is a *file*, therefore a 1-1 non-identifying relationship exists between call_for_tenders and TABLE files.

Number of columns: 22
 Number of indexes: 4
 Number of foreign keys: 4

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_groups (FK,I4)	NUMBER	Not allowed
f_procedures (FK,I3)	NUMBER	Not allowed
f_contract_types (FK,I2)	NUMBER	Not allowed
f_files (FK,I1)	NUMBER	Not allowed
number	TEXT	Allowed
tender_status	NUMBER	Allowed
estimated_value	NUMBER	Allowed
currency	TEXT	Allowed
nuts	TEXT	Allowed
notice_involves	NUMBER	Allowed
duration	TEXT	Allowed
ojeu_reference	TEXT	Allowed
days_for_opening	NUMBER	Allowed
cpvs	TEXT	Allowed
min_open_staff	NUMBER	Allowed
award_justification	TEXT	Allowed
evaluation_stage_closed	NUMBER	Allowed
tender_locked	NUMBER	Allowed
name	TEXT	Allowed
date_created	DATE/TIME	Allowed
date_of_expiry	DATE/TIME	Allowed

Child	Parent
f_files	files.f_resources
f_contract_types	contract_types.id
f_procedures	procedures.id
f_groups	groups.id
awarded_contracts.f_call_for_tenders	id
call_for_tenders_stages.f_call_for_tenders	id
e_auction.f_call_for_tenders	id
evaluation_criteria.f_call_for_tenders	id
individual_contracts.id	id
individual_contracts.f_indicative	id
messages.f_call_for_tenders	id
notices.f_call_for_tenders	id
publications.f_call_for_tenders	id
specific_contracts.id	id
specific_contracts.f_indicative	id
tender_open_acceptances.f_call_for_tenders	id
tenders.f_call_for_tenders	id

4.4.2 procedures

Holds the list of procedures that may be assigned to a *call for tenders*.

Number of columns: 3
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
Code	TEXT	Allowed
name	TEXT	Allowed

Foreign keys:

Child	Parent
call_for_tenders.f_procedures	id
procedures_template_stages.f_procedures	id

Foreign key details (child)

Definition:	Child f_files	Parent files.f_resources
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_contract_types	Parent contract_types.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_procedures	Parent procedures.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_groups groups.id	Parent
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.3 publications

Holds previous Contract Notices related to *a call for tenders*.

Number of columns: 5
Number of indexes: 1
Number of foreign keys: 1

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
reference	TEXT	Allowed
date	DATE/TIME	Allowed
f_call_for_tenders (FK,I1)	NUMBER	Not allowed
type	TEXT	Allowed

Foreign keys:

Child	Parent
f_call_for_tenders	call_for_tenders.id

Foreign key details (child)

Definition:	Child f_call_for_tenders	Parent call_for_tenders.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.4 notices

Stores different types of electronic *notices* related to *calls for tenders*.

Number of columns: 6
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
authority_type	NUMBER	Allowed
regulation_types	NUMBER	Allowed
heading_type	NUMBER	Allowed
f_files (FK,I1)	NUMBER	Not allowed
f_call_for_tenders (FK,I2)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_call_for_tenders	call_for_tenders.id
f_files	files.f_resources

Foreign key details (child)

Definition:	Child f_call_for_tenders	Parent call_for_tenders.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_files	Parent files.f_resources
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.5 messages

Informational *messages* created automatically by the application to notify *users* of pending activities.

Number of columns: 11
Number of indexes: 3
Number of foreign keys: 3

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_call_for_tenders (FK,I1)	NUMBER	Not allowed
subject	TEXT	Allowed
content	TEXT	Not allowed
date_received	DATE/TIME	Not allowed
priority	NUMBER	Not allowed
docs_attached	NUMBER	Not allowed
sender_id	NUMBER	Not allowed
f_users (FK,I2)	NUMBER	Not allowed
status	NUMBER	Allowed
f_files (FK,I3)	NUMBER	Allowed

Foreign keys:

Child	Parent
f_call_for_tenders	call_for_tenders.id
f_users	users.f_principal
f_files	files.f_resources

Foreign key details (child)

Definition:	Child f_call_for_tenders	Parent call_for_tenders.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_users	Parent users.f_principal
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_files	Parent files.f_resources
Relationship type:	Non-Identifying	
Cardinality:	Zero-or-One -to- Zero-or-More	
Allow NULLs:	Allowed	

4.4.6 contract_types

Used to specify if a *call for tenders* involves a “Works”, “Supplies” or “Services” contract.

Number of columns: 3
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
code	TEXT	Allowed
name	TEXT	Allowed

Foreign keys:

Child	Parent
call_for_tenders.f_contract_types	id

4.4.7 cpv_code

Holds the cpv xml-names; facilitates searching the cpv tree.

Number of columns: 4
Number of indexes: 1
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Not allowed
xmlname	TEXT	Allowed
children	NUMBER	Not allowed
parent_id	TEXT	Allowed

Foreign keys:

Child	Parent
cpv_type.f_cpv_code	id

4.4.8 cpv_type

Holds the cpv real names; facilitates searching the cpv tree.

Number of columns: 4
Number of indexes: 3
Number of foreign keys: 2

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Not allowed
name	TEXT	Allowed
f_cpv_code (FK,I2)	NUMBER	Not allowed
f_cpv_language (FK,I3)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_cpv_code	cpv_code.id
f_cpv_language	cpv_language.id

Foreign key details (child)

Definition:	Child f_cpv_code	Parent cpv_code.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_cpv_language	Parent cpv_language.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.9 cpv_language

Set of languages supported by the cpv mechanism.

Number of columns: 2
Number of indexes: 1
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Not allowed
lang_name	TEXT	Allowed

Foreign keys:

Child	Parent
cpv_type.f_cpv_language	id

4.4.10 call_for_tenders_stages

Each *call for tenders*, depending on the procedure selected for it, is divided into a discreet set of *stages*. This TABLE is used to hold the stages as well as an indicator for the status of each stage.

Number of columns: 4
 Number of indexes: 2
 Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_procedures_template_stages (FK,I2)	NUMBER	Not allowed
f_call_for_tenders (FK,I1)	NUMBER	Not allowed
stage_status	NUMBER	Allowed

Foreign keys:

Child	Parent
f_call_for_tenders	call_for_tenders.id
f_procedures_template_stages	procedures_template_stages.id

Foreign key details (child)

Definition:	Child f_call_for_tenders	Parent call_for_tenders.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_procedures_template_stages	Parent procedures_template_stages.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.11 template_stages

Definition of the stages that may be included in a *call for tenders*.

Number of columns: 3
Number of indexes: 0
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id	NUMBER	Not Allowed
name	TEXT	Allowed
explanation	TEXT	Allowed

Foreign keys:

Child	Parent
procedures_template_stages.f_template_stages	id

4.4.12 procedures_template_stages

The distinct procedures of *calls for tenders* consist of distinct *stages*. The description of the *stages* that correspond to each procedure is held in this TABLE.

Number of columns: 6
 Number of indexes: 2
 Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Not allowed
f_template_stages (FK,I2)	NUMBER	Not allowed
f_procedures (FK,I1)	NUMBER	Not allowed
stage_index	NUMBER	Allowed
notice_involves	NUMBER	Allowed
eauction_present	NUMBER	Allowed

Foreign keys:

Child	Parent
f_procedures	procedures.id
f_template_stages	template_stages.id

Foreign key details (child)

Definition:	Child f_procedures	Parent procedures.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_template_stages	Parent template_stages.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.13 awarded_contracts

Holds a reference to the authority that submitted the “winning” tender at a given call for tenders.

Number of columns: 2
 Number of indexes: 2
 Number of foreign keys: 2

Columns	Data type	Allow NULLs
f_call_for_tenders (FK,I1)	NUMBER	Not allowed
f_authorities (FK,I2)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_authorities	authorities.f_groups
f_call_for_tenders	call_for_tenders.id

Foreign key details (child)

Definition:	Child	Parent
	f_authorities	authorities.f_groups
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child	Parent
	f_call_for_tenders	call_for_tenders.id
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.4.14 specific_contracts

Specific Contracts within a DPS

Columns	Data type	Allow NULLs
id (FK,I1)	NUMBER	Not allowed
f_indicative (FK,I2)	NUMBER	Not allowed
opening_indicative_submission_date	DATE/TIME	Allowed
closing_indicative_submission_date	DATE/TIME	Allowed

Foreign keys:

Child	Parent
id	call_for_tenders.id
f_indicative	call_for_tenders.id

Foreign key details (child)

Definition:	Child	Parent
	id	call_for_tenders.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

Definition: **Child** **Parent**
 f_indicative call_for_tenders.id
Relationship type: Non-Identifying
Cardinality: One -to- Zero-or-More
Allow NULLs: Not allowed

4.4.15 individual_contracts

Individual Contracts within a Framework Agreement

Number of columns: 2
Number of indexes: 2
Number of foreign keys: 2
Codes: 0
Type: Table

Columns	Data type	Allow NULLs
id (FK,I1)	NUMBER	Not allowed
f_indicative (FK,I2)	NUMBER	Not allowed

Child	Parent
id	call_for_tenders.id
f_indicative	call_for_tenders.id

Foreign key details (child)

Definition: **Child** **Parent**
 id call_for_tenders.id
Relationship type: Identifying
Cardinality: One -to- Exactly-1
Allow NULLs: Not allowed

Definition: **Child** **Parent**
 f_indicative call_for_tenders.id
Relationship type: Non-Identifying
Cardinality: One -to- Zero-or-More
Allow NULLs: Not allowed

4.5 Tenders Module

This module concentrates all information relevant to the tenders submitted for a call for tenders.

4.5.1 tenders

The main entity that represents the official submission of a tender by an Economic Operator.

Number of columns: 9
Number of indexes: 3
Number of foreign keys: 3

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_call_for_tenders (FK,I1)	NUMBER	Not allowed
f_users (FK,I2)	NUMBER	Not allowed
complete	TINYINT	Not allowed
evaluation_stage_complete	NUMBER	Allowed
rejected	NUMBER	Allowed
rejection_justification	TEXT	Allowed
score	NUMBER	Allowed
f_authorities (FK,I3)	NUMBER	Not allowed
submission_date	DATE/TIME	Allowed
entered_eauction	NUMBER	Allowed

Foreign keys:

Child	Parent
f_authorities	authorities.f_groups
f_users	users.f_principal
f_call_for_tenders	call_for_tenders.id
tenders_signed_files.f_tenders	id

Foreign key details (child)

Definition:	Child f_authorities	Parent authorities.f_groups
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_users	Parent users.f_principal
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	
Definition:	Child f_call_for_tenders	Parent call_for_tenders.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.5.2 tenders_signed_files

Holds references to the (signed) *files* uploaded as part of a tender submission.

Number of columns: 3
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
f_tenders (FK,I1)	NUMBER	Not allowed
f_signed_files (FK,I2)	NUMBER	Not allowed
type	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_signed_files	signed_files.f_files
f_tenders	tenders.id

Foreign key details (child)

Definition:	Child f_signed_files	Parent signed_files.f_files
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_tenders	Parent tenders.id
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.5.3 signed_files

A special type of *file* that is “signed” – its authenticity is certified– by the *user* that uploads it.

Number of columns: 3
Number of indexes: 1
Number of foreign keys: 1

Columns	Data type	Allow NULLs
f_files (FK,I1)	NUMBER	Not allowed
cert_chain	TEXT	Not allowed
signature	TEXT	Not allowed

Foreign keys:

Child	Parent
f_files	files.f_resources
tenders_signed_files.f_signed_files	f_files

Foreign key details (child)

Definition:	Child	Parent
	f_files	files.f_resources
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.5.4 tender_open_acceptances

Holds a reference to the users that have accepted the opening of the *tenders* after the “Tender Submission” has been terminated.

Number of columns: 3
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
f_call_for_tenders (FK,I1)	NUMBER	Not allowed
f_users (FK,I2)	NUMBER	Not allowed
date_acceptance	DATE/TIME	Not allowed

Foreign keys:

Child	Parent
f_call_for_tenders	call_for_tenders.id
f_users	users.f_principal

Foreign key details (child)

Definition:	Child f_call_for_tenders	Parent call_for_tenders.id
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_users	Parent users.f_principal
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.6 Criteria Module

This logical module encapsulates the criteria that are set for a call for tenders, for guiding the tender evaluation processes. The criteria are classified into two categories, one for participation and one for awarding, a fact reflected from the existence of two sets of criteria-tables, one for each category.

4.6.1 participation_criteria

Holds the root of the participation criteria related to a *call for tenders*. A set of individual *participation criterios* are attached to the root.

Number of columns: 2
Number of indexes: 1
Number of foreign keys: 1

Columns	Data type	Allow NULLs
f_evaluation_criteria (FK,I1)	NUMBER	Not allowed
complete	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_evaluation_criteria	evaluation_criteria.f_call_for_tenders
participation_criterion.f_participation_criteria	f_evaluation_criteria

Foreign key details (child)

Definition:	Child	Parent
	f_evaluation_criteria	evaluation_criteria.f_call_for_tenders
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.6.2 participation_criterion

The individual participation criterios related to a *call for tenders*. This TABLE has a *-1 non-identifying relationship to TABLE participation_criteria. This structure was selected to group together the *participation criteria* of a *call for tenders*.

Number of columns: 5
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_participation_criteria (FK,I1)	NUMBER	Not allowed
condition	TEXT	Not allowed
f_participation_criterio_type (FK,I1,I2)	NUMBER	Not allowed
visual_order	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_participation_criteria	participation_criteria.f_evaluation_criteria
f_participation_criterio_type	participation_criterion_types.id
participation_criterion_value.f_participation_criterion	id

Foreign key details (child)

Definition:	Child	Parent
	f_participation_criteria	participation_criteria.f_evaluation_criteria
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child	Parent
	f_participation_criterio_type	participation_criterion_types.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.6.3 participation_criterion_types

Defines the type of each *participation criterion*.

Number of columns: 2
Number of indexes: 1
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Allowed
type	TEXT	Not allowed

Foreign keys:

Child	Parent
participation_criterion.f_participation_criterio_type	id

4.6.4 participation_criterion_value

Defines the score set for each *participation criterion*.

Number of columns: 3
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
f_participation_criterion (FK,I1)	NUMBER	Not allowed
f_users (FK,I2)	NUMBER	Not allowed
score	NUMBER	Allowed

Foreign keys:

Child	Parent
f_participation_criterion	participation_criterion.id
f_users	users.f_principal

Foreign key details (child)

Definition:	Child f_participation_criterion	Parent participation_criterion.id
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_users	Parent users.f_principal
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.6.5 evaluation_criteria

Signifies which calls for tenders already have conditions for participation.

Number of columns: 1
Number of indexes: 1
Number of foreign keys: 1

Columns	Data type	Allow NULLs
f_call_for_tenders (FK,I1)	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_call_for_tenders	call_for_tenders.id
awarding_criteria.f_evaluation_criteria	f_call_for_tenders
participation_criteria.f_evaluation_criteria	f_call_for_tenders

Foreign key details (child)

Definition:	Child	Parent
	f_call_for_tenders	call_for_tenders.id
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.6.6 awarding_criteria

Holds the root of the awarding criteria related to a *call for tenders*. A set of individual *awarding criterios* are attached to the root.

Number of columns: 6
Number of indexes: 1
Number of foreign keys: 1

Columns	Data type	Allow NULLs
f_evaluation_criteria (FK,I1)	NUMBER	Not allowed
complete	NUMBER	Not allowed
evaluation_method	NUMBER	Not allowed
use_auction	NUMBER	Not allowed
criteria_location	NUMBER	Not allowed
meat_evaluation_method	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_evaluation_criteria	evaluation_criteria.f_call_for_tenders
awarding_criterion.f_awarding_criteria	f_evaluation_criteria

Foreign key details (child)

Definition:	Child	Parent
	f_evaluation_criteria	evaluation_criteria.f_call_for_tenders
Relationship type:	Identifying	
Cardinality:	One -to- Exactly-1	
Allow NULLs:	Not allowed	

4.6.7 awarding_criterion

The individual awarding criterios related to a *call for tenders*. This TABLE has a *-1 non-identifying relationship to TABLE awarding_criteria. This structure was selected to group together the *awarding criteria* of a *call for tenders*.

Number of columns: 5
 Number of indexes: 1
 Number of foreign keys: 1

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_awarding_criteria (FK,I1)	NUMBER	Not allowed
criterion	TEXT	Allowed
type	NUMBER	Not allowed
weight	NUMBER	Not allowed

Foreign keys:

Child	Parent
f_awarding_criteria	awarding_criteria.f_evaluation_criteria
awarding_criterion_value.f_awarding_criterion	id

Foreign key details (child)

Definition:	Child	Parent
	f_awarding_criteria	awarding_criteria.f_evaluation_criteria
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.6.8 awarding_criterion_value

Holds the score given to the awarding part of an Economic Operator's submission.

Number of columns: 4
Number of indexes: 2
Number of foreign keys: 2

Columns	Data type	Allow NULLs
f_awarding_criterion (FK,I1)	NUMBER	Not allowed
f_users (FK,I2)	NUMBER	Not allowed
score	NUMBER	Not allowed
justification	TEXT	Allowed

Foreign keys:

Child	Parent
f_users	users.f_principal
f_awarding_criterion	awarding_criterion.id

Foreign key details (child)

Definition:	Child f_users	Parent users.f_principal
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_awarding_criterion	Parent awarding_criterion.id
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.7 e-Auction Module

The e-Action model captures the state of any defined e-Auction, e-Auction round and eAuction bid in at any time.

4.7.1 e_auction

Holds the information for a given e-Auction

Number of columns: 14
Number of indexes: 2
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Allowed
f_call_for_tenders (I2)	NUMBER	Not allowed
rounds	NUMBER	Allowed
period_round	NUMBER	Not allowed
currency	TEXT	Allowed
starting_price	NUMBER	Allowed
min_difference	NUMBER	Allowed
best_offer	NUMBER	Allowed
ranking	NUMBER	Allowed
next_bid	NUMBER	Allowed
graph_history	NUMBER	Allowed
send_notification	NUMBER	Allowed
duration_round	NUMBER	Allowed
list_all_bids	NUMBER	Allowed

Child	Parent
e_auction_round.f_e_auction	id
eauction_awarding_criterion.f_eauction	id

Foreign key details (child)

Definition:	Child	Parent
	f_users	users.f_principal
Relationship type:	Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.7.2 e_auction_round

An auction round

Number of columns: 6
 Number of indexes: 2
 Number of foreign keys: 1

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Allowed
f_e_auction (FK,I2)	NUMBER	Not allowed
round_index	NUMBER	Allowed
round_status	NUMBER	Allowed
round_startTime	DATE/TIME	Allowed
round_endtime	DATE/TIME	Allowed

Child	Parent
f_e_auction	e_auction.id
e_auction_round_bid.f_e_auction_round	id
meat_based_bid.f_eauction_round	id

Foreign key details (child)

Definition:	Child	Parent
	f_e_auction	e_auction.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.7.3 e_auction_round_bid

Connects a lowest price bid with a round in the e-Auction.

Number of columns: 3
Number of indexes: 3
Number of foreign keys: 2

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Allowed
f_e_auction_round (FK,I2)	NUMBER	Not allowed
f_lowest_price_bid (FK,I3)	NUMBER	Not allowed

Child	Parent
f_e_auction_round	e_auction_round.id
f_lowest_price_bid	lowest_price_bid.id

Foreign key details (child)

Definition:	Child f_e_auction_round	Parent e_auction_round.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

Definition:	Child f_lowest_price_bid	Parent lowest_price_bid.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.7.4 eauction_awarding_criterion

Corrponds to an awarding_criterion that was chosen and applied to the e-Auction.

Number of columns: 7
 Number of indexes: 2
 Number of foreign keys: 1

Columns	Data type	Allow NULLs
id	NUMBER	Allowed
f_awarding_criterion (I1)	NUMBER	Allowed
f_eauction (FK,I2)	NUMBER	Not allowed
minValue	NUMBER	Not allowed
maxValue	NUMBER	Not allowed
weight	NUMBER	Not allowed
orderAscending	NUMBER	Not allowed

Child	Parent
f_eauction	e_auction.id
meat_based_bid.f_eauction_awarding_criterion	id

Foreign key details (child)

Definition:	Child	Parent
	f_eauction	e_auction.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	

4.7.5 lowest_price_bid

Holds the score given to a round bid on based on lowest price.

Number of columns: 6
Number of indexes: 3
Number of foreign keys: 0

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Allowed
f_tenders (I2)	NUMBER	Not allowed
price	NUMBER	Allowed
currency	TEXT	Allowed
date_submitted	DATE/TIME	Allowed
f_awarding_criterion (I3)	NUMBER	Not allowed

Child	Parent
e_auction_round_bid.f_lowest_price_bid	id

4.7.6 meat_based_bid

Holds the score given to a round bid on a certain eauction awarding criterion.

Number of columns: 6
 Number of indexes: 4
 Number of foreign keys: 2

Columns	Data type	Allow NULLs
id (I1)	NUMBER	Allowed
f_tenders (I2)	NUMBER	Not allowed
f_eauction_awarding_criterion (FK,I3)	NUMBER	Allowed
f_eauction_round (FK,I4)	NUMBER	Not allowed
bidValue	NUMBER	Allowed
date_submitted	DATE/TIME	Allowed

Child	Parent
f_eauction_awarding_criterion	eauction_awarding_criterion.id
f_eauction_round	e_auction_round.id

Foreign key details (child)

Definition:	Child f_eauction_awarding_criterion	Parent eauction_awarding_criterion.id
Relationship type:	Non-Identifying	
Cardinality:	Zero-or-One -to- Zero-or-More	
Allow NULLs:	Allowed	
Definition:	Child f_eauction_round	Parent e_auction_round.id
Relationship type:	Non-Identifying	
Cardinality:	One -to- Zero-or-More	
Allow NULLs:	Not allowed	